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THE HIGH COSTS OF HEALTH CARE IN BRAZIL¹

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INTRODUCTION

Brazil retains the option of taking the low-cost (UK) or high-cost (USA) path for future health system development. This choice can be expected to have a major influence on health policy and public sector investment in health. Information relevant to making that choice includes analysis of how expenditures in the health sector have changed over the past 40 years and how such factors as the public-private balance, the role of public finance, and externally generated medical technology have all promoted an expansion of curative medical care.

The medical-hospital system is the largest component of Brazil's health care services. It includes a number of public hospitals (those of INAMPS,³ the states, the municipalities, and the universities with their associated public medical schools), private nonprofit hos-

pitals, and private for-profit hospitals. The relative importance of these groups of hospitals is indicated by their share of the total hospital admissions paid for by INAMPS in 1981. As Table 1 shows, private contract facilities accounted for 85% of these hospitalizations in 1981.

Overall, about 56% of all INAMPS expenditures in 1981 went to private contract hospitals and ancillary service organizations (such as laboratories that conduct tests and give X-ray and other examinations). The next largest components of INAMPS expenditure were paid for services at INAMPS facilities (18.5% of the total) and for administration (5.4%). Smaller amounts were paid for services under agreements with state and municipal facilities (4.7%), university and teaching hospitals (2.2%), philanthropic institutions (3.4%), and enterprises that provided their own health services (3.5%). Other classes of payments accounted for the remaining 6.3% (1).

These data show that most medical-hospital services were delivered

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³ INAMPS = *Instituto Nacional de Assistência Médica de Previdência Social* (National Institute for Medical Care and Social Security), the health branch of Brazil's Ministry of Welfare and Social Security (MPAS).

TABLE 1. Hospitalizations paid for by INAMPS in 1981.

Service provider	Hospitalizations	
	No. (thousands)	(%)
Private contract hospitals	9,202	(85.4)
INAMPS' own facilities	215	(2.0)
Federal, state, and municipal facilities	565	(5.2)
University hospitals	179	(1.7)
Union and company facilities	509	(4.7)
Other	108	(1.0)
Total	10,778	(100.0)

Source: Brazil, MPAS, INAMPS, 1982 (1).

through the private sector, with expenses being reimbursed by the government through INAMPS.⁴

THE SITUATION IN 1981-1982

By December 1981 the Consultative Council for Health Administration (CONASP) had already issued orders to reduce the inordinately high costs of renal dialysis, cardiovascular surgery, organ transplants, chemotherapy, CAT scanning, nuclear medicine, physiotherapy, and outpatient treatment (2). In the first half of 1982 CONASP took up analysis of overall objectives for the health sector and stated that one key objective, among others, was "The search for lower unit costs and greater budgetary foresight, by means of a gradual reversal of the prevailing health model based on fee for service, and by institution of a pay-

ment schedule based on population coverage (prepayment), thus making possible the introduction of actuarial calculations for health costs" (2).

The May 1982 report of CONASP (2), said by its members in June 1982 to represent the likely future path of health policy, included these important points:

- Priority was to be given to full coverage of the population through basic health services and primary health care.
- The criteria of regionalization and hierarchic organization, used to describe the Curitiba Plan (see p. 148), would be used to create a network of levels and a complexity reserved for specialized services.
- Administrative, financial, and accounting systems were to be decentralized and deregulated.
- State, municipal, federal, and private institutions were to jointly determine overall budget planning and public responsibility for health policy and programs.
- The public sector was to be predominantly responsible for ambulatory patients and the private sector predominantly responsible for hospital patients.
- Public and private health referral networks were to be functionally articulated.
- Priority utilization was to be made of existing public sector facilities.
- Clients would have access to the health system through the basic health services network, except in cases of emergency.

⁴ These data do not include direct payments by private individuals or private insurance schemes for hospital services. Golden Cross, the largest private health insurance company, served less than 2% of the whole population in 1984, but as of 1987 its market share seemed likely to grow somewhat.

- The existing system of agreements with private enterprises would be used for coverage of specific population groups.

Over the short term the report called for implementation of the Curitiba Plan throughout Brazil. It also proposed that over the medium term a new health assistance model be adopted, one based on a system of prepayment that would be justified, above all, by the fact that it would permit more accurate anticipation of the total medical bill than did the existing fee-for-service system.

Under this latter proposal, established health parameters (e.g., eight hospitalizations per hundred population per annum) would be applied, and specific hospital payments would be authorized for designated private providers serving an identified population group. An audit system could then concentrate on cases that exceeded norms, could analyze why excess service use occurred, and could rule on the acceptability of the resulting charges. In the longer run it would presumably be possible to establish prepayment rates for health services, so that it would no longer be necessary to use the medium-period system of paying private hospitals to maintain a set number of bed-days for an area's population. At that stage the health system would have achieved its objective of being a true health insurance program financed by the sum of individual contributions. Finally, it was indicated that at an 'opportunity moment' it would prove useful to effect a consolidation of INAMPS and

the Ministry of Health (2). The future functioning of CIPLAN, the Interministerial Commission for Health Planning, and of CONASP would presumably aid such streamlining of the health sector organization chart.

INAMPS Changes

The INAMPS system made considerable progress cutting 1981 expenses below the 1980 level. Among other things, in an effort to control costs, INAMPS experimented with several reforms in private contracts—including restrictions on emergency visits, requirements for more detailed cost reporting, and alternative payment arrangements. Beginning in 1981, INAMPS attempted to limit emergency visits to 15% of the ambulatory visits made to private contract institutions. This new action appeared to reduce emergency visits to about 35% of all visits for the first six months of 1981 (3).

Four important changes occurred in INAMPS policy between the latter part of 1981 and February 1982. These were as follows: (1) A new payment system was established for university hospitals that rewarded them more fairly for services rendered to INAMPS-financed patients. (2) Restrictions were placed on elective hospitalizations in private hospitals. (3) Priority was given to INAMPS and university hospitals over private ones for the conduct of sophisticated, costly, and difficult examinations. And (4) studies were initiated that were directed at abolition of the fee-for-service system of payment (4).

These significant changes, coming toward the start of a process of further change, help to illustrate how fluid the current policy situation is in Brazil. (The specific orders for change were issued by CONASP on 14 December 1981 and signed by the Minister of Social Security on 6 January 1982.)

The Curitiba Plan

Curitiba is the capital of the state of Paraná, a prosperous coffee-growing region just south of São Paulo. Beginning on 8 January 1981, the state superintendency of INAMPS began a pilot program to deal with such problems as high-cost treatment in private hospitals, long lines at INAMPS facilities, and ineffective attention to primary health care needs of the Curitiba population. The program provided for triage at the INAMPS and other public (state and municipal) facilities where each walk-in patient was examined by a physician-auditor and either treated there or referred to higher-level services as needed. It also altered the fee system by paying a fixed amount for a given procedure prescribed at the public facility, rather than paying for all items charged by the secondary-level facility (usually private) to which the patients were referred. (This fee system differed from past practice in a number of ways that affected overall system costs.)

In addition, walk-ins were not authorized to go directly to private facilities that might be unnecessarily specialized or inappropriately specialized for a given patient's needs. This change had the potential to substantially reduce the number of patients treated as emergencies, since in the past many walk-ins were treated by private hospitals as emergency cases—and thereby received substantially higher fee-for-service allotments from INAMPS.

The Curitiba system also promised to reduce the number of walk-ins admitted to hospital beds as a result of their consultations. Indeed, according to Dr. Alceni Guerra (one of the directors of the Curitiba project and superintendent for INAMPS in the state of Paraná) 85% of the ambulatory patients seen had their cases resolved without referral

to another level of service and without having to return to any long waiting line. Hospitalizations were reduced to 5% of the initial consultations, somewhat below the 1981 Brazilian average of 6.5%. And public sector hospitals were said to be absorbing 60% to 65% of the people referred for inpatient services (5).

By mid-1982 INAMPS' management felt the plan had reduced the number of hospital admissions by 30% (presumably all those were walk-in patients who in fact did not need hospitalization). Also, a preliminary evaluation performed in September 1981 clearly showed that the service had improved in the users' eyes. Specifically, 78% of those queried said service was better, and 93% said they had seen a physician within 15 minutes of their arrival at the clinics surveyed (6).

These latter features of the Curitiba Plan seem similar to those of the British National Health Service, which makes extensive use of general practice with referral of patients from primary and secondary to tertiary care. Over 80% of the illness episodes reaching the National Health Service are dealt with from start to finish by general practitioners who account, with associated prescribing costs, for well under 20% of total expenditure (7). (In the British system, less than 2% of the cases of recognized illness are hospitalized.) Because the UK has among the lowest levels of expenditures on health as a share of GNP among the developed countries, in terms of cost considerations the fact that the Curitiba Plan has some characteristics of the British system should be taken as a positive sign.

The other way that the Curitiba Plan departed from past practice was by altering the fee-for-service system to permit a lump-sum payment to private providers for an identified procedure. The triage system in the clinics puts the decision about appropriate treatment in the hands of the INAMPS physician-auditor rather than in the hands of the private hospital and physician to which the patient is referred. By specifying treatment in accord with the diagnosis, the INAMPS system can thus use its past experience with costs for a given procedure as the basis for assigning a fair number of *unidades de serviço* for the payment to the private hospital. Then, if the private hospital incurs additional costs, it must absorb them out of profits; similarly, if the private hospital can effectively perform the procedure at less cost, it can enhance its profits. The system of reimbursement—unlike the previous method of paying for each test, examination, medication, and service offered—encourages the private hospitals to economize on materials and services. If, as Landmann and others in Brazil suggest, many tests, examinations, and services are not really useful, this new system of payment could reduce costs while maintaining the quality of service.

By mid-1982 there was still no evidence that costs to INAMPS for hospital care were distinctly lower under the Curitiba Plan. During the first year of operation there was a reduction in the number of admissions in Paraná, but there was also a proportional increase in treatment costs. The net effect was a one-year growth in expenditures that was only slightly below that of the rest of the nation (8, 9). Preliminary analyses were

unable to determine the causes of the higher cost per admission. One possibility was that an undesirable “diagnostic-related group creep” had occurred, this being a tendency to substitute costly for cheap diagnoses (a tendency found to occur in the United States—9). Another possibility was that initial payment rates had been set somewhat high in order to avoid resistance to the new scheme.

The Curitiba Plan was first implemented at six clinics in that city. Subsequently, it was extended to other parts of the state of Paraná. In mid-1982 the management of INAMPS was considering further extension of the plan to other cities and states. The district of São Mateus in the Greater São Paulo area was identified as one pilot area for the plan where it would be executed under terms of a cooperative agreement involving INAMPS, the São Paulo State Health Secretariat, and the Prefecture of the Municipality of São Paulo. The latter organizations already had working health posts and clinics in São Mateus that could serve as the first level of care for potential clients entering the health system. INAMPS’ management indicated in June 1982 that plans for extending the program to other states were under active discussion.

Shortly before stepping down as INAMPS President, Dr. Aloisio Salles strongly defended the new payment plan (10). Nevertheless, at that time its efficacy had not yet been proven, and it began operating in the midst of scandals and fraud that further undermined already deteriorating public confidence in the system. In 1986 interviews, INAMPS staff members noted that the Hospitalization Certification payment system (*Atestado de Interna ao Hospitalar—AIH*) had been expanded further, and that INAMPS’ management continued to rely on this payment system as the principal mechanism for cost containment at private hospitals.

OTHER ACTIVITIES

Cost Containment at INAMPS

INAMPS has introduced a number of important innovations since 1983 aimed at controlling costs. These include a plan for regionalization and hierarchic organization of medical-hospital services; closure of some outdated and inefficient facilities; a change in the manner of payment to private providers that offers greater incentives for efficient service delivery; and, most recently, comprehensive long-range planning for service delivery under guidelines established in 1982.

Projections issued in 1985 included specific targets for consultations, hospitalizations, and expenditures, as shown in Table 2. These targets were based on growth of medical consultations at 7% per year, hospitalizations at 4.5% per year, and total expenditures at 6.4% per year (11). If such average rates were maintained, it would bring the level of health service delivery to two consultations and 0.1 hospitalization per person-year in 1989. Overall, it appears that these projections provided good general guidelines for health service expansion.

Two key elements in any health care strategy are designed to increase equity and efficiency. That is, such a strategy should (1) emphasize primary, preventive health care provided through a basic health service delivery system; and (2) it should change the basis for paying providers of medical and hospital services so as to encourage more efficient use of services. In general, policies affecting the delivery of hospital-based care have been much more complex and harder to develop than have policies affecting basic health services. One reason is that many special interests benefit from the high technology involved in hospital-based care.

To control hospital costs, INAMPS began introducing the Hospitalization Certification payment system (AIH) in 1983.⁵ This system replaces the

⁵ Under the AIH system, an INAMPS physician assigns a patient to a service group prior to hospital admission; that assignment determines the payment to the hospital. If the hospital can deliver the service for less than this public payment, it will profit; and, conversely, a private hospital must absorb any additional costs above the predetermined payment.

TABLE 2. INAMPS' 1985 projections of consultations, hospitalizations, and expenditures for 1985-1989.

Year	Projected consultations (millions)	Projected hospitalizations (millions)	Projected expenditures (Cr\$trillions) ^a
1985	236	13	17.8
1986	252	13	18.9
1987	270	14	20.2
1988	288	14	21.4
1989	308	15	22.8

Source: Brazil, MPAS, INAMPS, 1985 (11).

^a Cr\$6,224 = US\$1.00. Thus, 1987 expenditures were projected at approximately US\$3.3 billion.

Hospitalization Guide system (*Guia de Interna ao Hospitalar—GIH*).⁶ The managers of INAMPS consider the new system to be markedly more efficient. These changes represent important advances in the effort to control expenditures; nonetheless, additional steps could be needed for the following reasons:

- There are no incentives for patients to try and control costs, because they are not required to cofinance their medical care.
- The system still encourages hospital admission in cases where outpatient care might be as effective and cheaper.
- There are still no ethical guidelines that fairly limit access to services that require high-cost medical technology.

Were health care a tiny corner of the economy it would not command our attention. In fact, however, the value of the medical sector's output in Brazil is already half the size of the agricultural sector's. To slow its past explosive growth will probably require additional measures that contribute to achievement of several sometimes conflicting goals for providing and financing health services.

The shift within INAMPS toward emphasis on cost containment, greater equity in health service delivery, and preventive rather than curative services is evident in the comparison of budget allocations for 1984 and 1985

⁶ The GIH was a basic service order on the basis of which the physician or hospital charged for each procedure, service, test, and material provided to the patient (2,600 possible items appeared in the price list). There was no incentive for a private hospital to limit services or materials, since INAMPS paid the full cost.

shown in Table 3. Budget increases for INAMPS' own facilities, organizations, teaching facilities, and philanthropic institutions could all contribute to greater equity, provided there were no loss in efficiency. It was planned that these increased shares would come out of the proposed payments to private contractors.

Because INAMPS enjoys a degree of budgetary autonomy far greater than the health ministry and most state health secretariats, it has so far been able to effect the aforementioned policy and program changes without creating any conflict with the other components of the government. Indeed, state health secretariats in the poorer states of Northeast Brazil have welcomed these changes because INAMPS is now beginning to pay for a significant share of the services they deliver through state health posts, clinics, and hospitals when these services are given to INAMPS beneficiaries.⁷ Nonetheless, the existence of so much public health activity outside the domain of the health ministry gives rise to ques-

TABLE 3. Distribution of INAMPS expenditures in 1984 and expenditures budgeted for 1985.

Expenditure component	1984 (Actual)	1985 (Budget)
Operation of INAMPS facilities	19.0%	22.8%
Government organizations (state health secretariats and others)	4.8	10.1
University and teaching hospitals	2.7	3.4
Philanthropic institutions	2.1	3.4
Contract services (private)	58.3	43.3
All other	13.1	17.0
Total	100.0	100.0

Source: Brazil, MPAS, INAMPS, 1986 (12).

⁷ In 1981 only about 1% of all INAMPS funds were spent on basic health services; that share has been growing, but as of 1987 it was still less than 5%.

tions about the advisability of some reorganization that would shift INAMPS out of the social security ministry to the health ministry. Movement in that direction is proceeding by means of transfer of facilities from INAMPS to state health secretariats.

The most important quantitative effect of the recession of 1981–1983 was on the INAMPS budget, which was cut severely. Accompanying changes in INAMPS policies were of immediate importance to health service delivery. These changes were based on 1982 decisions to limit hospital admissions, cut back on some services (several large psychiatric and tuberculosis facilities were closed), and shift the emphasis to ambulatory care and referral procedures that could reduce health service costs without impairing their availability. Between 1980 and 1983 the number of ambulatory visits per capita, perhaps the best measure of primary and preventive care offered by the public sector, rose by 16%. In contrast, per capita hospital admissions fell by 13% (13). These changes were broadly consistent with the long-sought aim of reversing the health services' growing concentration on curative care while augmenting preventive care.

The medical-hospital share of spending by the social security system declined precipitously in the early 1980s. During the 1970s this share never fell below 26%, and in 1978 it accounted for 32% of the system's receipts. However, it declined to 24.3% in 1981, 23% in 1982, and 22% in 1983. Also, between 1980 and 1983 INAMPS' real per capita spending fell by 30% (13). The budget pinch resulting from lower wage taxes (in

turn a function of modern sector employment reductions) fell disproportionately on the health component of social security, since pension payments are mandated by law. As a result, both the quality and quantity of services may have suffered, even though this cannot be accurately assessed from available data.

SOME GENERAL CONSIDERATIONS

High Costs in the Health System

Costs in Brazil's medical-hospital system deserve special attention. Both systematic and anecdotal information indicate that these costs are often higher than in developed countries. The few tangible facts available provide some initial guidance on how to identify areas of excessive costs, but it is less clear how the prevailing structure of costs developed. Policies designed to encourage the private sector to build hospitals and the payments system established for physicians were both important. As in more developed countries, however, the role of the physician, rather than the physician's income, is the key to why costs are high.

The Physician's Role

A major cause of high health system costs is what Brazilians refer to as '*a dupla militancia*' (conflict of interest), which riddles the system. Most Brazilian physicians, particularly those in larger cities, work as part-time employees at several jobs—some salaried and some paid on a fee-for-service basis. In metropolitan São Paulo, which has more doctors than any other city, physicians had an average of 3.5 separate employments in 1981 (14). Similarly, a 1985 survey of the whole of São Paulo State found physicians to have an average of 2.7 separate

employments (15). Virtually every physician works for at least one public health facility—such as a municipal clinic or hospital, a state clinic, a university hospital, or an INAMPS facility. (Brazil's Constitution prohibits most people from holding more than one public job, but physicians are allowed to hold two—15).

Besides their work in public clinics, each physician normally works with some private facility. And, typically, the physician uses his employment at one or more public clinics as a means of recruiting patients into a private facility where, from the doctor's point of view, he can offer better-quality service on a fee-for-service basis, and where the client can enjoy more personal attention. The physician can also control service delivery and profit at the private facility. Thus, government-sponsored facilities (pertaining to the states, municipalities, universities, and INAMPS) were responsible for 43% of all medical and dental consultations in 1981, but for only 10% of all hospital admissions. Private physicians, dentists, and hospitals handled only 30% of all medical and dental consultations but accounted for 86% of all hospital admissions if one includes all admissions of rural INAMPS clients listed under other agreements (16).

The total extent of INAMPS facilities nationwide (36 facilities with 8,000 beds) was only slightly greater in 1982 than it had been 20 years earlier (14). Furthermore, anecdotal evidence drawing on newspaper reports from 1981 and early 1982 points strongly to underutilization of public facilities in major cities. For instance, one of the five INAMPS hospitals in São Paulo remained closed for a year after its completion. The Darci Vargas Pediatric Hospital in Morumbi, a São Paulo suburb, had only a third of its beds occupied in May 1982. The INAMPS Heliópolis Hospital was less than 50% occupied at the same

time. The INAMPS Leonor Mendes de Barros Maternity Hospital in the Tatuapé neighborhood of São Paulo was also less than half full (17). In a similar vein, the private but nonprofit Mercy Hospital in Santos had only 72 patients occupying its 1,400 beds; similar underutilization of other nonprofit facilities was occurring throughout the country, partly because the buildings were outmoded and inefficient but also because their regulated agreements with INAMPS left them with much lower remunerations than those received by profit-making private hospitals (18). It should also be noted that individual physicians played a major role in advising patients about which facility they should enter for hospital treatment.

At present, most initial consultations occur at public facilities, but there is excess capacity in public hospitals. The conflict of interest between the public and private sector roles of the physician, who in fact dominates the referral decision, must be responsible for this underuse of public facilities. The overhead cost of maintaining these underutilized facilities falls entirely on the public sector.

A factor exacerbating this physician conflict of interest is the fee structure (see 19, pp. 58–74 for comparison). This structure has been undergoing a slow evolution since the 1960s. That evolution has been influenced by such factors as changing medical technology, procedures followed in other countries (especially the United States), and the desire of many physicians to keep a private relationship with their patients despite the growing role of third-party INAMPS payments.

By 1981, all medical services for which INAMPS compensated private contractors, hospitals, or physicians were reimbursed at rates expressed in terms of "Service Units" (*Unidades de Serviço*, US). An initial office or clinic consultation was worth 8 US, which in mid-1982 was equivalent to US\$2.80; an ordinary electrocardiogram was worth 18 US; and a dynamic two-channel electrocardiogram was worth 300 US. Psychological testing was worth 70 US, but a psychotherapy session was worth only 10 US. (The value of the US, along with many other prices, was indexed to adjust for inflation in the value of the Brazilian cruzeiro.)

The fee-for-service system can enhance physician income through addition of services beyond the initial consultation. Moreover, the physician is likely to have recruited the client at a public facility, where he was paid 8 US by INAMPS for the consultation, and then to have offered additional services in a private hospital setting, where he could admit the patient to a hospital bed and provide a deluge of tests and services. International standards cite an average of 25 complementary examinations for every 100 patient consultations, whereas in 1981 the private hospitals contracted by INAMPS provided 130 examinations per hundred patient consultations, a rate five times the norm (19). The public and private systems taken together provided 95 examinations per hundred consultations (Brazil, MPAS, INAMPS—unpublished data), as many as 80% of which may have been unnecessary (see 4 for

comparison). Indeed, growing revelations of fraud among hospitals and medical laboratories in São Paulo during 1985 seem to have proved beyond any doubt that the services charged to INAMPS were excessive. Within this context, the outgoing health minister, Mr. Jarbas Passarinho, suggested that the cost of such fraud to the government would approach Cr\$2 trillion (US\$150 million), about 20% of the 1985 INAMPS budget.

By international standards, Brazilian physicians earn high incomes despite low public sector salaries. A physician working for the state health service in São Paulo earned about five minimum salaries in 1981, i.e., about US\$385 monthly for four hours of work per day (20). He could make up for this low salary by working fewer hours than scheduled—and by doing such things as holding two public sector jobs and maintaining a half-time private clinic or practice. A 1981 study of 795 physicians in Metropolitan São Paulo found that half of them earned 15 minimum salaries or more (14). Similarly, a 1985 survey of physicians in São Paulo State revealed an average income of about 18 minimum salaries, the equivalent of US\$1,000 monthly.⁸

Rapid inflation, imperfect information about real incomes, and lack

⁸ The average of minimum salaries was calculated from data in Vianna and Piola, p. 45 (15). However, the estimate in US dollars is highly speculative, inasmuch as differences in price levels are poorly reflected by international exchange data. In November 1981 the minimum salary was Cr\$11,928 and the US dollar was worth Cr\$115.86, yielding a presumptive minimum salary of about US\$103 per month. Thus, a median physician income at 15 times the minimum salary was about US\$1,545 per month, or US\$18,540 per annum. With a moving peg and so-called maxidevaluations in the 1981–1985 interval, the presumed dollar value of the minimum salary was cut in half, to less than US\$60, by late 1986.

of comparability of indicators will make any international comparison of physician incomes controversial; nevertheless, the approach of Maxwell (7) is useful. This author takes 14 developed countries and compares average physician income to GDP per capita (mean ratio = 6.2) and average physician income to the production worker's gross earnings (mean ratio = 4.4). Table 4 shows these ratios for Maxwell's 14 developed countries (pre-1981 data) and for the Brazilian state of São Paulo.

These ratios indicate that the incomes of Brazilian physicians may bear a similar relationship to incomes of the population as a whole as do physician incomes in the industrial countries. Also, as in those countries, the incomes of different physicians are unequal. That is, a few doctors earn very large incomes derived largely from ownership of medical enterprises. A medical "middle class" of physicians—old enough to have a decade or more of experience but not owning large hospitals or clinics—also earn large incomes from fee-for-service practices combining part-time employment in the

public sector. A significant number of young doctors just starting their careers earn considerably less and form the groups that have led strikes in São Paulo and Rio de Janeiro against public facilities in an effort to improve working conditions and raise their incomes (4).

Survey data gathered in 1981 and again in 1985 show that, despite the claims of some observers, there is no substantial unemployment among physicians in Brazil. The Donnangelo survey (14), conducted with the cooperation and financial support of the São Paulo Medical Association, found only two physicians out of 795 interviewed who considered themselves unemployed in 1981. More than 40% of the physicians interviewed said they worked over 50 hours per week, and 27% said they worked over 60 hours per week. Fewer than 20% reported being employed for less than 20 hours a week. The 1985 FUNDAP survey found no cases of unemployed physicians; 85% of those interviewed said they worked at two jobs or more (23).

There has been a striking increase in the number of Brazilian physician graduates in recent years, so that currently between 8,000 and 10,000 enter the labor market each year (24). Each of these new entrants hopes for the income and prestige of a top income earner in a profession that counts among its

TABLE 4. A comparison of physician earnings relative to per capita GDP and worker earnings in 14 developed countries and Brazil's São Paulo State.

Indicator	Indicator ratio in:	
	14 developed countries (7)	São Paulo State ^a
Physician income: Per capita GDP	6.2:1	6.1 to 12:1
Physician income: Production worker gross earnings	4.4:1	4.5:1

Sources: Maxwell, 1981 (7) and Vianna and Piola, 1986, p. 45 (15).

^a Brazilian GDP per capita was estimated at US\$2,050 in 1980, US\$1,860 in 1984, and US\$1,640 in 1985 (21, 22, internal World Bank memorandum 1986). The ratio of physician income to per capita GDP in the 1980s may have been as low as six or as high as 12, depending on which combination of physician and average incomes one employs.

numbers plastic surgeons and cardiologists commanding world-class income and status. Naturally, many are disappointed.

What is more worrisome, leaders of the health sector are concerned that only half the new graduates can be absorbed in productive medical employment. When the São Paulo office of INAMPS advertised 910 available medical positions in 1981, 6,810 physicians applied. A former Minister of Social Security stated at a conference in August 1980 that there were 33,000 doctors unemployed or underemployed in Brazil (*Jornal do Brasil*, 23 Aug. 1980, quoted on pp. 5–6 of Echeverry—20). This assertion is not consistent with the findings of the Donnangelo survey. Nevertheless, graduate MDs may have unrealistic expectations of their income-earning potential; moreover, they demonstrate an unwillingness to leave large cities, where they are in oversupply. Physicians may also believe their incomes should be higher because they compare themselves with colleagues in developed countries where the overall standard of living is several times higher than it is in Brazil. For whatever reasons, there has as yet arisen no consensus in Brazil on the problem of incomes for health care personnel (25).

The Fee Schedule

In 1982 the INAMPS fee schedule provided that an initial consultation would be paid Cr\$480, less than US\$3, an amount too low to compensate for the real cost of a physician's time.⁹

⁹ Faced with a physicians' strike in 1986, INAMPS distributed coupons for medical consultations that could be used to pay for a private physician visit reimbursable by that doctor through INAMPS in the amount of CR\$40, about US\$3. This indicates that the quoted price of a physician visit changed little in the 1980s.

As Landmann points out, the most cost-effective stage of a physician's services is at the initial interview or physical examination; additional tests rarely contribute to change or improve the diagnosis made at that time (4). Hence, by underpaying for this most valuable service, the INAMPS payment system encouraged overuse of services, tests, facilities, and operations that might have been avoided were it not for the physician's incentive to prescribe such additional things in order to enhance his own income.

With this in mind, INAMPS began testing an alternative payment system in 1982 that is somewhat like the diagnostically related groups introduced about the same time in the United States. Three years later, in 1985, the President of INAMPS said he was satisfied with the result; but other observers remained skeptical of the agency's ability to control costs and possible fraud (interview with Dr. Aloisio Salles—10).

In a peculiar way, high physician income poses less of a problem in terms of medical costs than does an ample supply of physicians. As Maxwell notes,

The direct costs of physicians, about one-sixth of total health costs [in developed countries] at present, do not pose the problem. . . . The economic threat lies more in the discretionary work generated by each physician, since decisions on what services patients should have depend very largely on the judgment of the physician whom they consult. It is therefore highly probable, without assuming any malign conspiracy, that if the number of physicians at work increases, total health services activity and expenditure will also rise (Maxwell, p. 76—7).

The Brazilian system, in other words, may not be very different from those of the developed countries, in which costs for ancillary services have accelerated with the growth of the physician population (26). One mechanism by which this cost expansion occurs, in Brazil as well as in other countries, is through the inordinate expansion of medical services, particularly in conjunction with high medical technology prescribed and administered by physicians.

High Medical Technology

The growth of Brazil's medical system since the early 1970s has been fueled particularly by expansion of high-technology medical equipment. Total medical consultations, taking 1970 as a base of 100, climbed to 565 by 1981 (24). Hospitalizations grew somewhat less (to 469), and total laboratory examinations somewhat more (to 551). But X-ray examinations grew at a much higher rate (to 1,036), and other complementary examinations grew even faster (to 1,530).

About 40 million X-ray examinations, most of them having no diagnostic value and many of them potentially contributing to iatrogenic disease, were given to Brazilians in 1979. When the Rio de Janeiro State University Hospital cut the number of X-rays by 40%, there was no loss in diagnostic efficiency. A publication by Guimarães in 1977 revealed that chest X-rays, which in 1974 accounted for 42.3% of all X-ray examinations, found no diagnostically significant abnormalities among patients 0-19

years old, found them in only 5.6% of those 20-50 years old, and found them in only 11.8% of those over age 50 (27, cited in Landmann—4). Many of these X-rays were required for reasons unrelated to suspected illness, e.g., for participation in sports or in connection with job applications. The dangers of excessive exposure to X-rays are better known today in developed countries, but it is surprising that the medical system in Brazil continues to permit patent overuse of these tests. Most X-rays and the costs associated with them could be eliminated with no real loss of diagnostic accuracy. As McClenahan wrote in 1970, "It is easier to ask for an X-ray than it is to think" (4).

Studies have shown that better doctors ask for fewer tests, and vice versa (28, cited in Landmann—4). However, there now exists in Brazil a sizeable medical-industrial complex that sells X-ray film and related products to the health system and thus has reason to resist change.

Besides X-rays, in 1979 INAMPS paid for 1.7 million electrocardiograms, 0.7 million electroencephalograms, and more than 10 million other laboratory examinations. Many of these tests could have been avoided without interfering with treatment. Between 1979 and 1981 the total number of complementary examinations increased by 22% per year (i.e., at a rate comparable to previous years even while INAMPS was reducing overall expenditures—24).

Most of these services have no curative or pain-relieving value; their role is to assist diagnosis prior to treatment. Studies in the United States (29), Canada (30), and the United Kingdom (31) have demonstrated the inefficacy of many tests in diagnosis. The overuse of such tests in Brazil is thus similar to the pattern in other countries but more per-

icious because the country can ill-afford such waste.

The overprescription of drugs (particularly antibiotics) that has been observed elsewhere in the world is probably common in Brazil (4). At the INAMPS Hospital de Ipanema in Rio de Janeiro, a study that began in 1973 found the medical staff to be prescribing 32.8 doses of antibiotics per patient. A third of the patients were being given two different antibiotics, and 12% were being given four or more different drugs simultaneously. As a result of a special educational program for the medical staff, the number of doses per patient treated was reduced to 16.75 in 1974 and 9.6 in 1975 (i.e., to less than a third of the level that prevailed before the start of the education program). A positive side-effect, probably attributable to reduction of this excessive drug prescription, was a marked reduction in the rate of patient infections (from 6.8% in 1973 to 4.9% in 1975—32, cited in 4).

Brazilians who are not physicians self-prescribe and obtain drugs such as antibiotics or birth control pills much more easily than laymen in developed countries, where access to the pharmacopoeia is limited by the medical profession and the government. Thus, overuse and even abuse of drugs is common.

The extent of private use of drugs without physician consultation was the subject of a special study in Nova Iguaçu, an urban center near Rio de Janeiro. The study found that over a third of the antibiotics taken were consumed without a doctor's prescription, and two-thirds of the contraceptive pills taken were unprescribed. Only in cases of hypertension or of chest pains that people thought related to suspected myocardial infarction were most drugs taken under prescription (33).

In a 1974 expenditure survey, the Brazilian census bureau found expenditures on health to vary from 3.4% of income in the poorer states of the Northeast to 4.3% in Rio de Janeiro and 5.3% in the richer states south of São Paulo. The share of expenditures on patent medicines showed some tendency to vary inversely with the income share devoted to health; that is, the relatively poor Northeast spent most (57%) of its small health budget on such medicines; the Rio sample spent 34% on them; and the southern states spent 37.6% (33).

In this same vein, Brazil is the world's eighth-largest consumer of pharmaceuticals (after the United States, Japan, West Germany, France, Italy, Spain, and the United Kingdom, but ahead of Mexico and Canada). However, consumption per capita is only one-third the level found in Canada and one-sixth the level in France (James, 1977, cited in 33). Among 19 developing countries assessed in the early 1980s, Brazil was second in drug expenditures per capita; also, the country imported US\$260 million of drugs in 1985, more than any other country outside Europe, Japan, and North America (34). Brazil has also been a particularly heavy user of antibiotics, which constitute some 13% of all the drugs used in the world as a whole but 18% of the drugs sold in Brazil in 1973 (33).

Much of the drug purchase and use in Brazil occurs outside the control or influence of the medical profession. Hence, physicians are not entirely responsible for excessive drug use. As in the case of X-ray overuse, however, the

government does not do enough to inform people about the dangers of antibiotic overuse and the misuse of other common drugs, or about the possible uselessness of many patent medicines.

Behavior and Health Costs

There was a period in the late 1970s when the Brazilian Government promoted cigarette smoking. An unnamed government minister was quoted in the press as saying "If Brazilians stop smoking, the country will go broke" (35). Between 33% and 55% of a sales tax levied on manufactured products was generated by tobacco sales in the years 1970 through 1979. The government thus came to be a major beneficiary of an annual 8% increase in tobacco consumption in the early 1970s (35). Tobacco consumption continued to grow in Brazil at 4.1% per annum in the late 1970s, after the growth of smoking had been stunted in the US and a decline had begun in the UK. These circumstances led at least one Brazilian physician to suggest that lung cancer might eventually join the list of diseases of underdevelopment (4).

An effective health policy should at least prevent the government from promoting behavior injurious to health. Brazilian use of social drugs such as caffeine, alcohol, and tobacco are currently at high levels that appear potentially unhealthy. The use of these drugs (accompanied in the case of coffee-drinking with a high intake of sugar) can certainly present health hazards and impose very large costs on the curative health system.

Of course, it is easier to identify remedies than to induce people to change their behavior. However, partly because the Brazilian Government pays such a large share of the national health bill, it has much to gain from encouraging healthful behavior.

Choice of Services

The Brazilian medical-hospital system offers a number of services that involve major expenditures on a relatively small number of patients. These include renal dialysis, coronary bypass surgery, and operation of intensive care units.

In 1978 there were 1,428 patients (about 12 patients per million inhabitants) on renal dialysis who were being cared for at the expense of INAMPS. This number had risen to about 3,000 (or nearly 25 per million inhabitants) by May 1981, a level above that found in East European countries but still well below the 200 such patients per million inhabitants in the United States. Brazil is not very different from other countries regarding the extent of renal dialysis use relative to per capita product (36). The total cost to maintain these 3,000 patients was estimated by Landmann at about Cr\$12 billion in 1981, a sum equivalent to 4% of the total INAMPS budget (4).

In 1976 INAMPS spent 1% of its budget on heart bypass operations, a share that has probably increased in recent years (4). A single private hospital in São Paulo performs more heart bypass operations than are performed in Holland, a country with low mortality and a somewhat larger population (13.8 million) than Greater São Paulo (12.5 million). A principal reason for this is that the Dutch Government made a specific policy decision to limit such operations on the grounds that they tended to be ineffective and costly (37, cited in 4). (The government decided in 1982 to limit

these and many other high-cost medical procedures to public sector facilities.)

Brazil also spends large amounts of money to provide a few patients with special treatment outside the country. Specifically, in 1984 INAMPS spent US\$15 million (US\$110,000 per patient) for the treatment of 137 persons outside Brazil. That amount was equal to 15% of all federal health resources passed through to state health secretariats for the coverage of 60 million people in North and Northeast Brazil (11).

Intensive care units have expanded considerably in Brazilian private hospitals. On the average, a hospital bed-day in one of these units costs six times as much as other hospital bed-days. Many medical specialists believe these units generally provide no more effective treatment than home care, so that in many cases their use may be superfluous as well as costly. Also, substantial use is made of angiograms, electrocardiograms, and CAT scans, at great cost and, in the view of some health experts, with marginal real health benefit in Brazil (4, 38).

The use of these high-technology services in private hospitals at public expense diverts health care resources to a tiny fraction of the population, instead of providing a potentially much larger group with basic health care. In 1981 there were some 3,000 renal dialysis patients and at most 9,000 patients who entered intensive care units or received coronary bypass operations. These patients are estimated to have absorbed some Cr\$22 billion, about 6% of the 1981 INAMPS budget.

In that same year the budget for basic health services and communicable disease control totaled Cr\$19 billion (24). Those programs are designed chiefly to provide primary and preventive health care for the 41 million people living in North and Northeast Brazil. Thus, incredible as it may seem, Brazil's government spent more in 1981 on some 12,000 high-cost patients than on the sum total of basic health services and disease control efforts intended to serve 41 million people.

Cesarean Births

As Table 5 indicates, there is a very high rate of cesarean deliveries in Brazil, most of which are paid for by INAMPS. The data shown indicate that 72% of all the cesarean deliveries were paid for totally or partially by INAMPS. At the same time, cesarean deliveries accounted for 31% of all hospital births in Brazil, giving Brazil the highest national rate of cesarean deliveries in the world. (The rate was about 20% in the United States and far lower in many European countries.)

These cesarean births are a major drain on the resources of the social security system. Deliveries (both normal and cesarean) constitute the largest single category of hospital bed use paid for by INAMPS. While normal deliveries (1.8 million were reported in 1981) outnumber cesarean deliveries, the 0.8 million cesarean deliveries that year required an average of 1.6 hospital days more than normal deliveries. The average length of hospital stay for a normal delivery reported in data from the National Household Survey Study (*Pesquisa Nacional por Amostra Domiciliar*—PNAD) was 2.76 days, compared to 4.37 for a cesarean delivery. As a consequence, cesarean deliveries accounted for 45% of the total hospital days, even though they repre-

TABLE 5. Patients in Brazil given cesarean deliveries in 1981, grouped according to their payment status and share in payment.

Payment status	Number and % of cesarean deliveries, classified by patient share of costs						Total No. (thousands)	Total (%)
	Full		Partial		None			
	No. (thousands)	(%)	No. (thousands)	(%)	No. (thousands)	(%)		
Private	114.1	(14.9)	—	—	—	—	114.1	(14.9)
INAMPS	—	—	146.0	(19.1)	404.9	(52.9)	550.9	(72.1)
Prepaid	—	—	18.5	(2.4)	4.3	(0.6)	22.8	(3.0)
Employer	—	—	23.7	(3.1)	30.0	(3.9)	53.7	(7.0)
Other	0.6	(0.1)	2.6	(0.3)	20.0	(2.6)	23.2	(3.0)
Total ^a	114.7	(15.0)	190.8	(24.9)	459.2	(60.0)	764.7	(100.0)

Source: Merrick (39), based on special PNAD81 tabulations.

^a The total excludes 33,140 patients who did not provide information.

sented "only" 30% of overall hospital deliveries.

Under the Hospitalization Guide payment system that prevailed through 1983, the attending physician at a normal birth received the equivalent of 90 service units. The physician attending a cesarean birth was paid at the same rate, but an additional payment equivalent to 60 service units was made to cover the services of an anesthesiologist; and by adding a hysterectomy to the cesarean birth the total payment by INAMPS rose from 150 units to 270.

One public health specialist in Brazil has estimated that the high rate of cesarean deliveries in 1979 alone resulted in an estimated 186,000 unnecessary surgical procedures at a cost to INAMPS of CR\$920 million (US\$34 million at the then-prevailing exchange rate) (40). This amount was equal to 1% of total INAMPS expenditures that year. However, it should be noted that half the births which patients paid for with their own resources (i.e., not involving any public-sector payments) at the Catholic University Hospital Santa Lucinda in São Paulo in 1977 were by cesarean section—a rate even higher than the one that prevailed among INAMPS beneficiaries (40).

Since the risk of birth complications rises with maternal age, one would expect cesarean delivery rates to rise steadily with age. However, as Table 6 indicates, this is not true in the Brazilian case, a circumstance suggesting that factors other than medical indications account for the patterns of cesarean delivery in Brazil.

As of 1981, the cesarean rate for Brazil as a whole peaked with women in the 30–34 age group rather than the over 34 group. However, these national averages masked important regional and socioeconomic differences in cesarean rates. For instance, in São Paulo State,

TABLE 6. Age-specific rates of cesarean deliveries (as a percentage of all deliveries) in the United States (1965 and 1981), in São Paulo (1981), in Northeast Brazil (1981), and in Brazil as a whole (1981).

Age group (in years)	Brazil (1981)	São Paulo State (1981)	Northeast Brazil (1981)	United States	
				1965	1981
< 20	17.9	32.5	7.6	3.1	13.2
20-24	21.2	35.5	9.5	3.5	16.0
25-29	28.5	44.6	14.6	4.3	19.4
30-34	30.3	53.4	14.9	6.4	21.3
≥ 35	21.7	49.1	11.8	7.9	24.4

Source: Merrick, 1984 (39).

where nearly all deliveries occurred in hospitals or maternity clinics, the overall cesarean rate was 42.9%, compared to an average of only 12% in the Northeast, where 40% of all deliveries occurred outside health service facilities. Rates were also significantly higher among middle and upper income groups; that is, the cesarean rate exceeded 50% among women in the two highest family income categories (above 10 minimum salaries), but fell below 15% for those in the two lowest categories (below two minimum salaries). A minimum salary at the time of this survey (November 1981) was equal to about US\$100 per month. The type of health care provider also affects the cesarean rate, with private patients having higher rates than those for whom services are covered by INAMPS. All this suggests that consumer preferences and ability to pay are playing a significant role in Brazil's high cesarean delivery rate.

In this regard, there is cause for concern about the impact of high cesarean delivery rates on the costs of maintaining the Brazilian health system and

extending benefits to groups not presently covered by it. While the cesarean rate is lower for those presently covered by INAMPS, the number of cesarean births covered by the system is five times the number provided for private patients. Also, as previously noted, deliveries (both normal and cesarean) account for the largest single number of hospital utilization days, and cesarean deliveries involve about twice as many hospital days, on the average, as do normal deliveries. Hence, an important policy question is whether the expansion of maternal health services to groups not currently receiving such services could be accomplished without increasing the costs of the system substantially in the event that high cesarean delivery rates are maintained. It also appears, since cesarean deliveries cost about 50% more than normal deliveries, that if the rate could be reduced just to the United States level, significant cost savings would result.

In this regard, one way of cutting INAMPS costs would be to ensure that middle-income and upper-income beneficiaries pay for cesarean births, or at least pay the additional costs of cesarean over normal birth procedures. A statistical analysis based on the PNAD81 survey data shows that middle and upper income groups relying on INAMPS for free

services accounted for 38% of all cesarean deliveries. Two-thirds of these patients used private hospital facilities, and private hospitals show a significantly higher likelihood of being the locus of a cesarean delivery than do public hospitals (39). Hence, these deliveries constitute a potential target for measures designed to increase the share of delivery costs recovered by the social security system.

An important policy question for Brazilian health authorities is whether the current subsidy implicit in allowing people with middle and upper level incomes to choose free cesarean section births should be continued. If the costs that are currently being incurred in providing nearly 300,000 annual free cesarean deliveries for patients in these income groups could be recovered by requiring payment from most of the patients, resources would be freed for application to other needs within the system.

In 1985, the AIH payment system provided a hospital payment of Cr\$303,000 for a normal birth and Cr\$587,500 for a cesarean birth (INAMPS August 1985 price list, pp. 33 and 34). At the then current exchange rates, the amount saved by not paying this difference of Cr\$284,500 to 300,000 patients would be equal to US\$13.4 million. This amount is roughly equivalent to the assistance provided by the United Nations Fund for Population Activities to support Brazil's federal program for maternal and child care (PAISMA). In this regard it should be noted that in 1981 29% of the 4.86 million Brazilian women who were pregnant or gave birth during the year had no prenatal care. Partial cost recovery within INAMPS for 300,000 surgical deliveries would provide a substantial resource for extending maternal health services to women who would otherwise receive no services whatever.

CONCLUDING REMARKS

The choice between high technology for a few and low technology for many is not one that individual physicians should be forced to make. In the health field, however, the principal decisions about health service utilization are not made by consumers but by providers. It is chiefly the physicians who decide what services to offer; and they therefore determine how resources are used in the health sector as a whole. For this reason, the quantity and quality of medical services tend to rise to the point where, in the judgment of providers, the marginal benefit of further services is zero. And while it is true that doctors and hospitals paid for each item of service no doubt ask themselves whether an additional item will benefit the patient, they do not ask whether the patient or organization paying the bill would prefer to spend the money some other way (7).

To date there have been few restraints on use of high technology and some outright encouragements favoring its use. If an office consultation is underpaid but a coronary bypass is amply rewarded, for example, the physician will accept the pricing signal and act accordingly by doing his consultations in public clinics and his operations, in numbers beyond those which a second opinion might consider essential, in a private hospital with an intensive care unit. The physician normally does not make choices between patients but offers such services as he can to the patients with whom he

deals. An exception occurs when, at particular moments, there is excess demand on the physician's time and talent, e.g., in an emergency room after a major accident or with battlefield casualties. A triage system then maximizes survival by giving up on some patients to save others.

Moreover, physicians are generally asked to deal with a specific patient and to offer such help, no matter the cost, as medical science can provide. There is little point in blaming the individual physician for choosing technologies that seem effective. What is needed is creation of a system or environment of choice for the physician that will encourage a more socially efficient use of health resources; and in this regard it is important to recall that creation of such a system requires a more effective use of prices as signals to physicians, who are the system's decision-makers.

SUMMARY

Most of Brazil's medical and hospital services are delivered through the private sector but are paid for by the government through the National Institute of Medical Care and Social Security (INAMPS).

During 1981 and 1982, INAMPS took a number of measures designed to cut costs and improve operation of this system. These included restrictions on emergency visits, establishment of a new payments system for university hospitals, assignment of priority to INAMPS and university hospitals over private ones for certain services, and study of possible changes in fee-for-service payment arrangements. It also introduced a pilot program known as the Cu-

ritiba Plan that was designed to expedite provision of health services while reducing unnecessary referrals and hospital admissions.

INAMPS has also introduced a number of changes since 1983 directed at cost control. These include closure of some older and less efficient facilities, modification of the system for compensating private health care providers, and adoption of comprehensive long-range planning under guidelines established in 1982. In addition, the recession in Brazil sharply reduced INAMPS' budget in the early 1980s, cutting real per capita spending by 30% between 1980 and 1983.

Still, it appears that health costs in Brazil are frequently higher than those in developed countries. This seems partly due to policies designed to encourage private hospital construction and partly to the payments system established for physicians. However, a major cause is the role played in the health system by physicians. That is, there has been a marked tendency for the physician to hold jobs in both the public and private sectors, to direct patients toward the private sector, and to prescribe additional services for private sector patients whose cost and extent are subject to only limited regulation and control.

This problem has gone hand in hand with substantial expenditures on high-technology services that are frequently not needed or that are very costly and benefit relatively few patients. The former include unnecessary or overprescribed cesarean sections, X-rays, and medications (especially antibiotics),

while the latter include renal dialysis, coronary bypass surgery, intensive care unit activities, and special services provided outside Brazil.

In seeking to confront and ameliorate these problems, there seems little point in blaming individual physicians for choosing particular services and technologies. Rather, what is needed is development of a system or environment that will encourage a more socially efficient use of health services. In this regard it is important to recall that creation of such a system requires a more effective use of prices as signals to physicians, who are the system's decision-makers.

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