

The Politics of HIS Restructuring in Pakistan: The Importance of Policy Analysis

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Abstract

In 1991, the Ministry of Health decided to transform its routine reporting system for first-level care facilities into an integrated and comprehensive health management information system (HMIS/FLCF). This paper illustrates the importance of the contextual and process factors involved in the restructuring process.

HMIS/FLCF was designed through a consensus-building process involving future information users at all levels of health services. Senior managers from provincial health departments, vertical program managers, district health officers, and peripheral users were involved in the design process from the very first stage of planning. With initial financial support from USAID, HMIS/FLCF implementation of the new system started at the end of 1992, but came to a halt in 1994 when USAID's bilateral assistance program ended. At that time, barely 50 percent of health districts had been trained to use the new system. It took major advocacy efforts to identify support from other donors. With financial assistance from UNICEF and the World Bank, HMIS/FLCF was implemented nationwide by 1997.

The restructured system's integrated and simplified information-generating process tailored to the needs of the peripheral health services makes it a potentially powerful tool for planning and management of health services in Pakistan. Unfortunately, the overall weak management environment of basic health services, together with the absence of a real "information culture," seriously limits appropriate use of the information generated by the new system. Without appropriate strategies to improve the health services management environment and develop more accessible and more relevant health services, the information system will remain underused.

Three main lessons can be learned from this effort regarding the design of appropriate health information systems:

- The outcome of health information system reform is heavily dependent on the administrative and broader sociocultural context in which the reform takes place.
- Consensus building among future users in the process of restructuring the routine health information system is central to developing local ownership of the system.
- Donor-assisted health information system reform requires close coordination between the Ministry of the Health and various donors to mobilize the required resources in a timely fashion.

Introduction

In Pakistan, as in many developing countries, the existing institution-based routine reporting system in first-level health care facilities did not include essential health indicators, such as coverage for preventive

services in the community, information on quality of care provided, and data on resource use. Large amounts of data were collected through a complex system of registers and report forms, mostly consisting of lists of diseases by sex and age category, but data was of poor quality. Health information systems assessment studies¹ showed that health workers perceived data collection activities as burdensome and of little use to their daily work. They received virtually no feedback concerning the data reported to higher levels. The quality of the data was compromised further by inefficient manual data processing. The only reliable data on health indicators came from sporadic sample surveys. Public health managers, supervisors, and care providers lacked training in the use of information for management. Public health professionals in the country felt that only an in-depth, overall restructuring of the health information system could address these problems in the long run.

In May 1991, the Ministry of Health, in coordination with the Provincial Health Departments, organized a national workshop on health information systems. Based on the recommendations of an in-depth assessment study by a team from Harvard Institute for International Development², it was decided to transform the existing routine reporting system of government-managed first-level care facilities into a comprehensive health management information system.

The main strategy underlying the restructuring process was the use of a consensus-building approach. During the design phase, an extensive consensus-building process was used both to win over potential opponents of the system and to ensure that the newly designed health information system would respond to the information needs of all health services levels. As many future users of the information system as possible were actively involved in the design phase. HMIS working groups were constituted at the federal level and in the provinces that included managers of the health services and categorical disease programs and health care providers from selected primary-level care facilities. For several months, these HMIS working groups met to discuss the content and the structure of the future HMIS. First, an agreement was reached on a standard and comprehensive package of health care services and resource management activities to be performed in every first-level care facility. Essential indicators for each of these services and activities were then defined. Designers then defined data collection instruments, reporting procedures and data flows within the health services. Finally, for the first time in Pakistan, it was decided to computerize data processing for the reports sent by the first-level care facilities, initially at divisional levels, and later at district levels as well. Therefore customized data processing software was developed.

Priority was given to FLCF because it could address most of the population's priority health problems. The intention was to develop the HMIS at a later stage into a comprehensive, nationwide system, to include inpatient/referral services information, information for personnel and financial management information from private sector health services, vital events registration, and a community-based survey system.

In July 1992, after several months of field-testing in a sample of health facilities, the newly designed HMIS/FLCF was approved by the Federal Ministry of Health and by the departments of health of all the four provinces, including the Northern Areas and AJK. It was decided at the third national workshop in Islamabad to implement the system throughout the whole country. Initial funding for the system was provided by USAID and UNICEF, and technical assistance came from the Pakistan Child Survival Project team.

This paper recounts the importance of the contextual and process factors involved in the restructuring of the HMIS in Pakistan.

Background

The health services delivery system in Pakistan is a mix of public (i.e., government) and private providers. In the *public sector*, provincial, federal, and some local governments operate tertiary care

hospitals for the larger urban areas. In rural areas and smaller towns, the provincial governments (and the governments of FANA, AJK, ICT, and FATA) operate an extensive infrastructure of first-level care facilities and secondary care hospitals, supported by several federal programs. The government is by far the largest provider of hospital care in rural areas, and it is also the main provider of preventive care throughout the country. The majority of curative care is provided through the private for-profit sector.

The public health care delivery system is composed of four tiers:

- (1) outreach and community-based activities that focus on immunization, sanitation, malaria control, maternal and child health, and family planning;
- (2) primary care facilities, mainly for outpatient care;
- (3) *tehsil* (i.e., subdistrict) and district headquarters hospitals for basic inpatient care and outpatient care; and
- (4) tertiary care hospitals located in the major cities for more specialized inpatient care. Primary care facilities are mostly managed by a Medical Officer, except for Maternity and Child Health Centers, which are managed by Lady Health Visitors (LHV - i.e., trained midwives), and dispensaries, which are managed by medical assistants.

Health Infrastructure

Basic Health Units (BHUs) provide curative and preventive services for a catchment population of about 10,000–20,000 people. *Rural Health Centers (RHCs)* provide more extensive outpatient services and some inpatient services, usually limited to short-term observation and treatment of patients who do not require transfer to a higher-level facility. RHUs serve catchment populations of about 25,000 to 50,000 people, and employ about 30 staff, including several doctors and a number of paramedical staff. They typically have 10–20 beds and X-ray, laboratory, and minor surgery facilities. *Tehsil Headquarters Hospitals* provide basic inpatient and outpatient services. They serve a catchment population of about 100,000–300,000 people with 40 to 50 beds and appropriate support services, including x-ray, laboratory, and surgery facilities. *District Headquarter Hospitals* serve catchment populations of about 1 to 2 million people and provide a range of specialist care in addition to basic hospital and outpatient services. They typically have about 80100 beds.

The District Health Officer (DHO) is responsible for all health services in his district. Managers of all Tehsil Headquarters Hospitals and first-level care facilities report to him. District Headquarters Hospitals are headed by Civil Surgeons, who, along with the DHOs, report to the Director General of Health at the provincial level. Tertiary care hospitals are directly under the Provincial Secretary of Health.

Table 1 Province-wise Distribution of Health Facilities (December 2000)

Province	DHO	THO	Disp.	TB	MCH	RHC	BHUs	Total
Punjab	28	57	1006	46	404	307	2494	4342
Sindh	11	44	309	1	41	119	781	1306
*NWFP	15	10	623	24	112	100	1135	2019
Balochistan	18	-	652	9	76	58	432	1227
*AJK	3	6	105	1	10	29	181	335
*Nas	3	21	99	0	1	0	15	139
ICT-	-	-	6	0	1	3	13	23
Grand	78	138	2800	81	645	616	5051	9409

*NWFP=North West Frontier Province, AJK=Azad Jammu & Kashmir, NA= Northern Areas

Private Health Services

The *private health sector* is dominated by more than 20,000 "clinics," small, office-based practices of general practitioners. These practices include more than 300 MCH Centers (also known as maternity

homes); about 350 dispensaries, which are outpatient primary health care facilities; and more than 450 small to medium-size diagnostic laboratories. There are also more than 500 small and medium-size private hospitals with about 30 beds per hospital on average. They are equipped only for basic surgical, obstetric, and diagnostic procedures, and concentrate on low-risk care. In addition, there are a few large private hospitals, mainly run by NGOs and located in major cities. Private health services are concentrated in urban areas.

Assessing the need for HIS restructuring in Pakistan

Public health specialists, health service managers, and information technology experts all recognized that the existing routine institution-based reporting system was of little help to their specific needs. The system did not include essential health indicators, such as coverage for preventive services in the community or information on quality of care provided and resource use. Moreover, the health workers saw data collection activities as burdensome and of little use to their daily work.

In 1990, a team from the Harvard Institute for International Development³ carried out an in-depth assessment study of Pakistan's institution-based information system. The main findings from this study were:

- 1) Disease indicators are unfocused. Information on more than 100 health problems is being collected, but it is vague and of poor quality.
- 2) So much information is collected that it becomes virtually impossible to consolidate or draw some meaningful conclusion from it.
- 3) The system lacks management indicators, such as those on personnel, equipment, and supplies/drugs.
- 4) Data collection methods are improper. Staff motivation, data standardization, and printed supplies are lacking.
- 5) Data reporting is fragmented, with many overlapping and chaotic transmission procedures.
- 6) Data processing is mostly manual and grossly deficient, and data analysis is virtually nonexistent, with no use of computers.
- 7) The higher-level information feedback/guidance, both to field supervisors and facility staff, are lacking.
- 8) Central Information Management is very weak, both at the federal and the provincial levels, so technical support from these levels is meager.

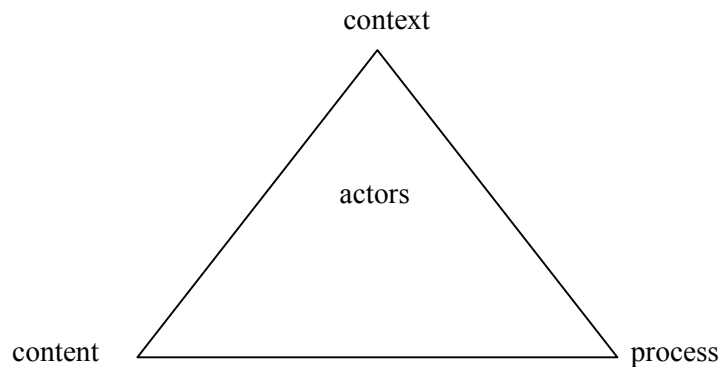
In light of these findings, and taking into account the growing concerns of various stakeholders, it was decided to transform the existing routine reporting system of government-managed first-level care facilities into a comprehensive health management information system. By health management information system, it was understood that the system would provide all necessary indicators for decision making at different management levels of the health services: patient/client management level; health unit management level; and health system management level.

HIS restructuring in Pakistan: Content, process, and context

Walt and Gilson's model⁴ for health policy analysis is well suited to describe health information system reform in Pakistan between 1992 and 1994. In the following paragraphs we analyze, first, how the specific technical content of health information system reform influenced the reform outcome. Second, we examine

the process of health information system reform itself. Third, we focus on the role contextual factors have played in health information system reform in Pakistan.

Figure 1



The content of the system

The new system provides most of the information needed for decision making on various health services provided by an FLCF: information on maternal mortality, priority health problems in children under age five, quantity and coverage of services provided, quality of case management of mothers and children, and essential resources to operate health services adequately. HMIS/FLCF also has an epidemiological dimension, since the data collected can be related to selected population groups in the catchment areas of first-level care facilities. Compared to the former system, the set of indicators generated by the new system is more focused on specific information needs for planning and management of health services. The information needs of care providers in the peripheral health facilities, in particular, are taken into account. One of the main causes explaining the poor quality of data from routine reporting systems is the irrelevance of the indicators to the operational levels in the health system.⁵

While providing important information for planning and management, indicators on continuity of care of patients/clients and on coverage of MCH services are also directly useful to the care provider in his or her daily activities. This will motivate the care provider to ensure the quality of the data collected.

Through its simplified and standardized data collection and reporting procedures, HMIS/FLCF has the potential to generate timelier, more valid, and more reliable information. To ensure immediate correct application of all these procedures, intensified supervision in the health facilities was necessary, in addition to the introductory four days of training. The supervisors scrutinized the incoming reports regularly to improve the quality of data collection and reporting under the new system.

Computerization of the data processing system greatly facilitated, sped up, and improved the quality of data aggregation and the production of action-oriented feedback reports. The technology is simple enough to be handled by available statistical and clerical staff after a short training course. All district headquarters offices are computerized. This approach is consistent with the government's current decentralization efforts that call for delegating more and more decision-making power to the districts.

The feedback system permits immediate use of the data collected by health care providers and supervisors and through computerized feedback reports. Through the choice of relevant indicators and appropriately designed data collection instruments, most of the data collected can be used immediately for daily operations in the health unit and at the district level. For example, the mother health register and the child health register permit identification of mothers who did not show up for their appointments and planning

for home visits. The monthly report provides a direct estimate of coverage for preventive MCH services. The supervisory checklist permits supervisors to identify service delivery problems and discuss them immediately with the health unit team. The computerized feedback reports provide a series of easily generated and user friendly formats to managers at different levels in the health services system.

The implementation process

During the design phase, an extensive consensus-building process was used to win over potential opponents of the system and to ensure that the newly designed health information system would respond to the information needs of all health services levels. First, a series of meetings were held with national program managers. Initially, Expanded Program on Immunization managers were very worried that by dismantling vertical information systems, health information system reform would disrupt effective programmatic and logistic management. Potential problems in defining indicators and information flows were discussed openly until satisfactory compromises could be found.

Then the Ministry of Health set up health information system working groups in each province. These groups included district managers, care providers, and statistical officers. During two workshops, the members of these health information system working groups discussed the content and structure of the future HMIS. Representatives presented a provisional list of indicators and a proposed macrostructure for HMIS/FLCF from each province during a national workshop in January 1992. Representatives from the federal Ministry of Health, national programmers, professional medical groups, and the donor community also participated. Although the Ministry would have accepted provincial differences in indicators and data collection procedures, all of the participants felt it would be more efficient to develop a national list of indicators and a uniform reporting system. It took some heated debate and tedious compromises to reach that objective. The biggest stumbling block was disease reporting. Everyone agreed that the previous reporting on more than 100 disease categories was cumbersome and needed to be simplified, but they had difficulty agreeing on the ideal number of disease categories and which ones to choose. The final list of 18 health problems included primarily those for which potential action programs already existed, so that monitoring trends for these problems was important for programmatic decision making.

It was also decided to delegate the development of data collection instruments and the computerized data processing system to a team of experts. After six months of design and field-testing, during which the experts maintained close contact with the provincial work groups, the final design and implementation plan of HMIS/FLCF was approved at the end of another national workshop. One of the compromises developed at these meetings concerned data transmission procedures. While vertical programme managers wanted to maintain parallel reporting procedures until HMIS/FLCF implementation was complete, district managers objected to the additional time and work burdens this would engender for care providers. The compromise solution was that all separate reporting would be discontinued as soon as a full district had been trained in using the new system.

Although this entire consensus-building process took more than a year, the benefits became obvious during the implementation phase. Managers at provincial and district levels who had been involved in the design phase started using preliminary computerized feedback reports in discussions with their staff. Also, every time an attempt was made to change the content of or procedures for HMIS/FLCF implementation, members of the workgroups objected vehemently. For ammunition they cited the written agreements of the national workshop, which had been distributed widely throughout the country.

The context for implementation

The outcome of health information system reform is heavily dependent on the broader sociocultural context in which the reform takes place. In this paper, we address two main contextual issues encountered in the restructuring of HMIS/FLCF in Pakistan.

1) Role of International Donors

Pakistan is a poor country, with less than 1 percent of its GNP spent in the health sector. Because health information system reform was initiated within the public sector framework, the financial and administrative capacity of the government is a critical determinant in the outcome of the reform.

The new HMIS/FLCF obviously has recurrent cost implications. A study performed in 1993 showed that the new system would not cause a substantial increase in recurrent costs over the former system. But one of the reasons the former system did not function well was the insufficient allocation of funds to operate the system. Therefore, the net effect of the HMIS/FLCF meant increased expenditures for the health departments.

The role of international donors in the initial phase of HMIS restructuring is absolutely vital for implementation and future sustainability of the system. Health information system reform was initiated in 1991 in Pakistan, with the funding and technical assistance provided through USAID. Unfortunately, after one year, during which time about half of the districts in Pakistan had worked with the new system, USAID's financial support stopped, and alternative funding did not become immediately available. This financial constraint slowed down the pace of implementation, and at various periods during the implementation phase, the lack of financial resources and the premature withdrawal of the technical assistance team threatened HMIS/FLCF survival. It took major advocacy efforts to identify support from other donors. Eventually, with financial assistance from UNICEF and the World Bank, HMIS/FLCF was implemented nationwide by 1997. Table 2 shows the status of reporting between at the end of 2000.

Table 2 Districts Covered for HMIS, Reporting (December 2000)

Province	Total Districts	Districts Reporting	# Districts Computerized	# District Computer Centers Functioning
Punjab	34	34	34	34
Sindh	21	21	21	21
NWFP	28	24	26	20
Balochistan	26	25	10	10
A.J.K.	05	05	5	5
ICT-Islamabad	01	01	1	1
N.A.'s	05	05	5	1
Total:	120	115	102	92

2) Absence of an "Information Culture"

In spite of the clearly improved structure of the information-generating process, we have reason to believe that use of this information within the prevailing context of Pakistan's health services will remain problematic in the years to come, unless other, more fundamental interventions are envisioned. Indeed, prevailing contextual factors, in particular the management environment of health services and, more generally, the sociocultural environment in Pakistan, could threaten the potential of HMIS/FLCF to improve health care services in general and maternal and child health services in particular.

Generation of more relevant and more reliable information in itself is not sufficient. Care providers and managers of basic health services in Pakistan are not ready to use this information for improved planning and management. Most district managers have been trained as clinicians, but they are ill prepared for their tasks as information managers, health planners, and supervisors of basic health services. Also, they consider their decision-making power to be minimal in a health system centralized at provincial and

federal levels. Whatever decisions they are allowed to make have always been made without information. The heavy bureaucratic demands of the system take up most of their time. Their recurrent budget is insufficient to ensure regular supervision and print data collection instruments in time. A supervisory visit to an FLCF mostly consists of a five-minute stop to check on the presence of staff or to verify some records.

This situation also applies to the care providers themselves. The basic training of most FLCF staff does not prepare them to set up efficient, community-based preventive services and to use information effectively to manage such services daily. Most health facilities lack the necessary drugs and equipment to offer essential services of acceptable quality. In the absence of substantial financial incentives or other measures to improve quality, the simple addition of a more efficient data collection system is not an immediate reason for the staff to change behavior overnight.

Yet, the deficient management environment of basic health services is not the only factor explaining the inadequacy of health services for the population of Pakistan. The problem has deeper roots related to the broader sociocultural context. Without the development of innovative strategies to deal with these contextual constraints, it is unlikely that the new health management information system will be used widely for the planning and management of health services. Yet, HMIS/FLCF as a planning and management tool can contribute to further research on such strategies.

The consensus developed during the HMIS/FLCF design to provide preventive mother and child health services as part of a comprehensive minimum package offered in each first-level care facility triggered interest at the highest levels in initiating the necessary policy and system reforms. Both the Social Action Program and the Family Health Project, created in 1992 with World Bank funds, call for health services reorganization with decentralization of administrative and financial powers, and for improvement of gender staffing imbalances. Also, HMIS/FLCF can become the main monitoring instrument to measure progress toward a better-managed health services system where women can have access to culturally acceptable health care. For these reasons, it was decided in March 1995, during a national meeting of the Social Action Program, to give full support to nationwide implementation of HMIS/FLCF.

Lessons Learned from HMIS design and implementation

A policy analysis of the health information restructuring in Pakistan points to three important lessons.

1. Consensus building among future users in the process of restructuring the routine health information system is key to ownership of the system:

For successful health information system restructuring, it is vital to involve all relevant stakeholders at all levels from the very start. In the design phase, this consensus-building process provided ownership, commitment, and built-in understanding of how the system worked. It helped to ensure that existing strong vertical programs do not ultimately maintain a separate, vertical reporting system. Consensus building in the design phase ensured participation during the implementation phase, which helped to achieve 90 percent reporting rates from the new system. It also ensured some degree of decentralized analysis and use of information. However, the absence of a real “information culture” in the weak management environment of basic health services limits appropriate use of the information generated by the new system. Without optimum participation, it would probably be impossible to establish a real health information system that delivers the benefits described.

2. The outcome of health information system reform is heavily dependent on the administrative and broader sociocultural context in which the reform takes place.

The success of health information reform depends not only on technical improvements, but also on an in-depth understanding of the country’s political, sociocultural, and administrative factors. Establishment of

a health information system must closely match the structure of the health services delivery system to support the decision-making process fully at various levels of the health system.

Contextual factors, such as the country's political environment, administrative capacity of the government, and information use culture in the society, can heavily influence the health information system reform process. This is well illustrated in our case study. In Pakistan, the reform took place within the bureaucratic arena. During the two-year design phase of HMIS/FLCF, consensus building among the provincial health departments was seriously hampered by the frequent changes of directors general heading the delegations of each province.

In a weak health system management environment, decisions are made on the basis of value judgments and power relations, and there is an almost total lack of perception about the link between information and management. This is more prevalent at the lower levels of a health care delivery system, where managers typically have no control over the production and use of information. This lack of an "information culture" can be the biggest constraint to any health system reform.

It is necessary, therefore, that a careful preliminary analysis of these contextual factors must be made at a very early stage of the program. This will help to identify the potential constraints these factors will place not only on the reform process, but also on potential strategies to cope with such problems during the design and the implementation phase.

3. Donor-assisted health information system reform needs close coordination between the Ministry of the Health and various donors to mobilize the required resources in a timely fashion.

Another part of the political context is the international donor community and the role it plays in health information system reform. Restructuring of health information systems in developing countries is typically donor driven. Mostly, the donors promote their own indicators while providing financial assistance to develop routine recording system for capturing the necessary data. But it is obvious that without mobilizing national support, such projects ultimately cannot be sustained and may actually damage the existing health information system in the country.

The second problem arises when several agencies support the health information system development process. Each agency has its own approach and may find it difficult to collaborate with others. The national administration may find it difficult to coordinate the effort when most of the resources, both financial and human, are provided by donor agencies.

The sustainability of the restructured system is very much reliant on the availability of resources—specifically, skilled manpower and money for supplies. Problems arise when the total cost of the project is not well planned at the outset. The Pakistan case study illustrates this situation very well. Due to a lack of funding, the process of HMIS/FLCF implementation was slowed down and practically came to a standstill. Fortunately, UNICEF supported the Ministry of Health with funds to hire a full-time, motivated HMIS National Coordinator. He took up the challenge of implementation during the vulnerable period after the withdrawal of the Pakistan Child Survival Project's technical assistance, and when the system's implementation was only half-completed. Implementation was finally completed in 1997, with the financial support of the World Bank and UNICEF.

¹ Frere, Jean-Jacques. *Health And Management Information System for Child Survival Project in Pakistan*. December, 1987. PRITECH.

² Lippeveld, T., Gul, Z. Limprecht, N. *Assessment Study on Health Information Systems in Pakistan*. Final Report prepared for the Ministry of Health and the United States Agency for International Development, Islamabad, Pakistan, 1991.

³ Ibid.

⁴ Walt, G., and L. Gilson. Reforming the health sector in developing countries: The central role of policy analysis. *Health Policy and Planning*. 9(4), 1994.

⁵ Lippeveld, T. et al. 1991.