

# HEALTH INDICATORS OF Pakistan

## Gateway Paper II

Sania Nishtar

[heartfile.org/gwhiop.htm](http://heartfile.org/gwhiop.htm)

*Heartfile*

In collaboration with



Statistics Division  
Government of Pakistan

*Pakistan's  
Health  
Policy  
Forum*



World Health  
Organization



Ministry of Health  
Government of Pakistan



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**Sania Nishtar**

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Further information or copies of this publication can be obtained by sending an e-mail to [requests@heartfile.org](mailto:requests@heartfile.org); calling +92 512243580; faxing a request at +92512240773 or by writing to the Heartfile central office, 1-Park Road, Chak Shahzad, Islamabad, Pakistan.

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The idea of collating the health statistics of Pakistan was jointly developed by Sania Nishtar (President, Heartfile) and Asad Elahi (Secretary, Statistics Division). Sania Nishtar conceptualized the idea of the Gateway Health Indicators, made a voluntary pro-bono contribution of her time to author the publication, selected the indicators, led the data collection and compilation efforts and authored the narrative sections of this document. The Federal Bureau of Statistics of the Government of Pakistan, in collaboration with the Ministry of Health, will be responsible for institutionalizing data collation and reporting on this template as per the Communiqué.

The author gratefully acknowledges the input of a number of contributors in providing data for this publication and for their reviews of various sections and comments in general. The list of contributors is enclosed as Appendix A.

Data were assembled into tabulated and graphical form by Narjis Rizvi, Mustafa A. Sarfaraz, and Yasir Abbas Mirza. Syed Mazhar Hussain Hashmi, Shahzad Ali Khan, Munir Ahmad Aslam, Muhammad Shahan Khattak, Muhammad Zaiwar, Abdul Latif Rashid and Azhar Iqbal helped with data collection.

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## What is this publication?

This publication is the second output of a series of initiatives – the Gateway Publications – that Heartfile is undertaking in its capacity as an independent health-sector think tank to strengthen the evidence base for health reforms in Pakistan.

Entitled 'Health Indicators of Pakistan,' the publication sets forth a set of health indicators for Pakistan and reflects data collected from various data sources in the country as these indicators. In doing so, it serves the following purposes:

1. yields information of relevance to the health status of the people of Pakistan and the health system and health information systems of Pakistan. However, due to data gaps, comprehensive information on health systems performance could not be included herewith;
2. offers recommendations to strengthen Pakistan's health information system by focusing on institutional arrangements and strengthening data sources and collection mechanisms;
3. forms a template for periodic reporting of health indicators within the country – a process which Heartfile is helping to establish and institutionalize at the Federal Bureau of Statistics,<sup>1</sup> and the Ministry of Health; and
4. constitutes the situational analysis for the draft of the upcoming national and provincial health policies entitled '*The Gateway Health Policy Scaffolds*,' which will be based on the Gateway Paper's approach to health systems.<sup>2</sup> The Gateway Paper entitled '*Health Systems in Pakistan – A Way Forward*,' was the first in the series of Gateway publications and can be accessed at <http://heartfile.org/phpfgw.htm>

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1. Heartfile is supporting the Federal Bureau of Statistics under a Memorandum of Understanding: *Appendix B*. Details can be accessed at <http://heartfile.org/hsamou.htm>

2. Heartfile is supporting the Ministry of Health to develop a national health policy for Pakistan under a Memorandum of Understanding: *Appendix C*. Similarly, a provincial health policy is also being developed to bring clarity in roles and responsibilities at the federal-provincial interface. The provincial policy is being developed for NWFP under a separate MoU: *Appendix D*. Details of both can be accessed at <http://heartfile.org/mou.htm>

*Heartfile is making these contributions on a voluntary pro-bono basis in national interest in its capacity as a civil society health-sector think tank.*



## Communiqué

This publication, which collates available health statistics in Pakistan and reports them as a set of health and health-related indicators, is the first effort of its kind within the country – an initial step to facilitate the transformation of data into meaningful information as a means of fostering a culture of evidence-based decision-making within the health sector. The publication consolidates a set of outcome, output, process and input indicators that measure *health* or *factors associated with health*, capturing their status and indicating change over time with a view to enhancing the critical body of evidence relevant to policy and operational decision-making.

The publication has been set forth within the context of the realization that evidence from data is central to the health policy and planning process and must form the basis of practices in each healthcare domain and that health statistics is a key component of needs assessments that inform policy and is therefore critical to decision-making in public health.

In its capacity as a think tank agency, Heartfile has played the role of a strategic partner in this effort by making a voluntary pro-bono contribution to develop this publication, which will serve as a template for future biannual reports on health.

The Federal Bureau of Statistics is committed to playing its mandated role in collecting data from source agencies, inclusive of the Ministry of Health and the provincial departments of health and other health data reporting and collecting agencies; collating data, reporting data on uniform standards, building linkages with appropriate sources to ensure regular flow of data and creating channels of communication with stakeholders to facilitate the utilization of evidence. The World Health Organization has had the privilege of contributing to the process of developing capacity to generate data that have been reflected in this publication and wishes to build further on this commitment.

The four agencies are keen to explore further options to work together in order to strengthen the evidence and policy linkage within the health sector in Pakistan.

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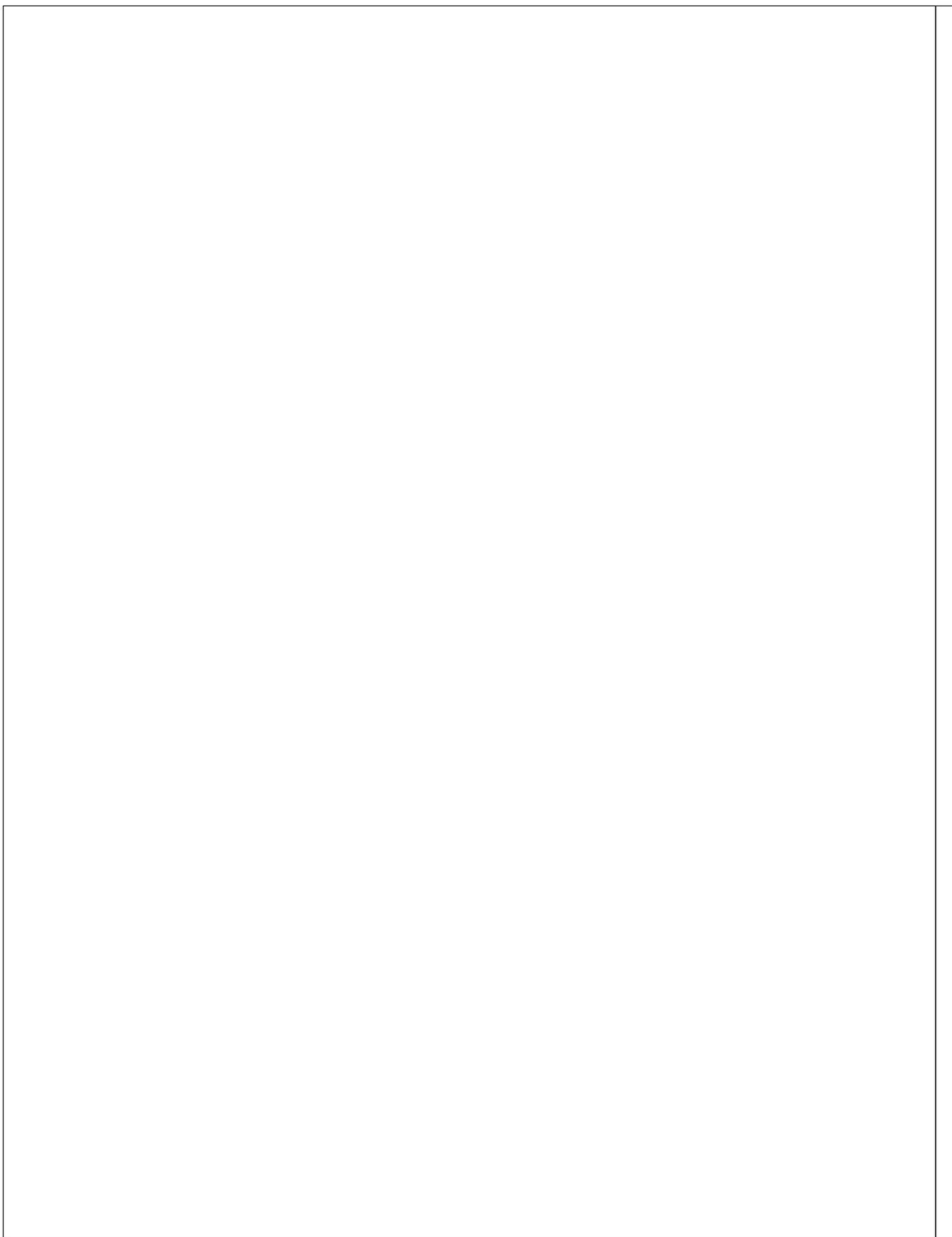
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## Executive summary

### About this Publication

**Purpose:** this publication, which collates available health statistics in Pakistan and reports them as a set of health indicators, is the first effort of its kind within the country. Its purpose is to yield information of relevance to the health status of the people of Pakistan and the health system and health information systems of Pakistan; offer recommendations to strengthen Pakistan's health information system; form a template for periodic reporting of health indicators within the country - a process which Heartfile is helping to institutionalize at the Federal Bureau of Statistics and the Ministry of Health; and constitute the situational analysis for the draft of the forthcoming national health policy entitled 'The Gateway Health Policy Scaffold,' which will be based on the Gateway Paper's approach to health systems.

**Categories of Indicators:** the indicators reflected in this publication have been divided into different categories: Demographic, Burden of Disease, Cause-Specific Deaths, Outcome, Output and Process, Input, Inter-sectoral and Indicators by Districts. The Outcome indicator category has been further sub-classified into *Maternal and Child Health, Communicable Diseases, Non-Communicable Diseases, Injuries, Mental Illnesses and Disabilities*. Indicators have also been tagged to reflect their status with respect to inclusion in the Millennium Development Goals and the targets stipulated as part of the Medium Term Development Framework of the Government of Pakistan. Indicators have been tracked over time where data availability made it possible to do so or else data have been reported at one point in time.

**Sources of data:** the data captured in this publication have been collected from several sources. These include stand-alone/periodic surveys, management information systems of the national public health programmes, infectious diseases epidemic reporting surveillance systems, modeling projections, Health Management and Information System, population-based Non-Communicable Disease surveillance system, and State documents in the public domain or those that were provided on request.

**Presentation of data:** most of the data in this publication are presented in five standard graphical forms. Line charts have been used to show trends over time, scatter plots in cases where data were tracked over time but where trend-estimations were not possible and bar charts and staggered bar charts to show frequency distributions. Where data were segregated by districts, Geographic Information Systems (GIS) based thematic maps have been used.

**Cautions in interpretation:** data presented herewith are verifiable back to the original documents and have not been manipulated; data were compiled in a uniform way in order to improve the comparability of statistics. *Nevertheless, many factors such as variation in definitions as well as specificities in data recording and processing may influence the validity, accuracy and comparability of statistics; therefore, comparisons across time as well as among places should be interpreted with caution.* In the case of time trends, a consultative process weighed a variety of surveys to create time trends; the choice of surveys presented are based on the best technical advice from groups. Notwithstanding, differences between surveys and methodological factors may cause distortion in trends, as for example in the case of differences between definitions and terms used in the Pakistan Integrated Household Surveys (PIHS) and the Pakistan Social and Living Standards Measurement Surveys (PSLMS). Furthermore, facility-based data should be interpreted bearing in mind that these only provide information on those whose care and that too from public sector health facilities.

Ideally, health indicators within Pakistan should be able to provide comparisons between provinces and districts geographically, between the rural and the urban areas of the country, across genders and socio-economic groups and between the type of facilities where applicable, particularly in the case of mortality and morbidity data. However, paucity of data in many areas limits the ability to do such comparisons for some indicators. International comparisons were possible only in some of the indicators where strict international definitions and data standards were applied. International comparability is, however, a major limitation of most data systems in Pakistan; therefore no international comparisons are offered here.

There are several data-related limitations in Pakistan; notwithstanding these limitations, an effort has been made to present the best available data in the clearest possible manner and in a policy-relevant format. The narrative sections of this document provide a brief snapshot of the status of health relevant to each indicator and touch upon the mechanisms for monitoring the relevant indicator. These sections have not been designed to discuss the health and health-related implications of the data presented in detail. It is for this reason that the indicators presented herewith and the tabulations and graphical representation of these data should be interpreted in the light of the narration in the parent document of this publication, *The Gateway Paper, Health Systems in Pakistan: a Way Forward*, which is accessible through the URL <http://heartfile.org/gwhsa.htm>

The indicators captured in this document yield information of relevance to: a) *the health status of the people of Pakistan*; b) Pakistan's health systems; and c) Pakistan's Health Information System.

## **Health Status of the People of Pakistan**

The health of the nation has to be contextualized to the demographic and epidemiological transition it is undergoing. With reference to the former, Pakistan is the sixth most populous country in the world; although the annual population growth rate has declined

from over 3% in the 1960s and 1970s to the present level of 1.9% per annum, it still remains high. This rapidly changing denominator is one of the most critical challenges for the health sector. The health and population sectors need to invigorate a concerted approach to face this challenge. With reference to the epidemiological transition, the burden of disease and cause of death data show that an equal burden cannot be attributable to infectious vis-à-vis Non-Communicable Diseases in Pakistan; furthermore, projections indicate that the ratio will continue to reflect a progressively shifting burden towards NCDs. This calls for a review of allocations for preventive programmes – communicable vis-à-vis NCDs.

With this as a context, there are three hallmarks of the health of the nation; 1) the double burden of disease (high burden of Communicable as well as Non-Communicable Diseases); 2) maternal and child health-related challenges; and 3) emerging health issues. These are compounded by a number of health systems challenges.

**At the Outcome level**, it was possible to estimate trends over time for some health domains such as in the case of maternal and child health and a few infectious disease indicators. For others, it was not possible due to data gaps or where comparability issues owing to methodological considerations prevented the determination of trends. Here, morbidity was determined by the most recent and the most representative data.

Overall, outcome level trends show that although there have been some improvements in the health status of the Pakistani population over the last 60 years, key health indicators still lag behind in relation to international targets articulated within the Millennium Declaration. The areas where some improvements have occurred include life expectancy, maternal, neonatal and child health and infectious diseases. With reference to **maternal and child health**, MMR has declined from 800 per 100,000 live births in 1978 to presently reported figure of 350 and the Infant Mortality Rate has declined from 142 per 1,000 live births in 1970 to 74.6 in 2006 (MNCHD 9). However, these data should be interpreted in the light of three caveats; *firstly*, issues inherent to the measurement of some of these outcome indicators as a result of which a conclusive opinion about their current status cannot be given. *Secondly*, the relativity of benchmarks against which these data are pitched. Here, it may be important to note that Pakistan's key maternal and child health indicators lag behind, not only in the South Asian region but also with reference to averages for other low-income countries. *Thirdly*, these indicators show significant regional disparities within the country as evidenced by the wide provincial variation in Infant Mortality Rates (IMRs) with IMRs of 71, 104, 77 and 79 per 1,000 live births reported for Sindh, Balochistan, Punjab and NWFP, respectively. These highlight the need for locally-suited health systems interventions – an approach which is now operationally feasible in view of political and administrative devolution in the country.

**Infectious disease** is another area where some improvements have occurred. Mortality data from the Pakistan Demographic Survey (PDS) show that mortality due to infectious

diseases such as Diarrhea and vaccine-preventable diseases has reduced over the last decade. However, improvements have not occurred in other areas such as ARI (CSD). The PDS data should, however, be interpreted in the light of the aforementioned cautions as there are several data inconsistencies which remain unaccounted for. In view of this consideration, there is a need to strengthen capacity to collect population-based data on infectious diseases mortality so as to gain further insight into these trends. On the other hand, trends in immunization coverage have been positive as is evidenced by the increase in overall immunization coverage from 44% in 1995-96 to 77% as reported for the year 2004-05 (MNCHD 16). However, again as in the case of MCH, improvement has to be contextual and relative regional comparisons highlight the need for further improvements in this area. The case of polio eradication can be used to illustrate this point further. Pakistan is one of the few countries where polio is yet to be eradicated; at the same time, poliovirus transmission is at its lowest compared to the situation in the 1990s, and if the present trend continues, polio eradication may be a likely reality over the next three years (PL 1 & 2).

Some other indicators also clearly show that a few outcomes have remained slow to change; the classical example of this is the case of Neonatal Mortality Rate (MNCHD 8), which registered only a moderate decline from 59 per 1,000 live births in 1987 to 43 in 2003; other indicators in this category include the percentage of Stunted, Underweight and Wasted children less than five years of age (MNCHD 11, 12 & 13).

In view of the aforementioned considerations, it can be concluded that although there have been some improvements in the health status of the Pakistani population over the last 60 years, key health indicators lag behind in relation to international targets articulated in the Millennium Declaration and in comparison to averages for low-income countries.

Where trends in morbidity could not be ascertained, data were captured at one point in time from various sources; a snapshot of these data is indicative of high burden of diseases.

With respect to some common **Communicable Diseases**, a recent community-based survey has shown that 37% children developed symptoms of ARI and 28% suffered symptoms of Diarrhea in the preceding two weeks of the interview. The proportion of post-neonatal deaths due to ARI varies from 11-46%, depending on age studied and location and diarrheal deaths account for 43.3% of all post-neonatal deaths, reflecting a very high burden. In relation to other Communicable Diseases, the situation stands as follows: current estimated incidence of Tuberculosis, despite progress at the intermediate outcome level, still stands at 177 per 100,000 population (TB 1); estimated prevalence of Hepatitis C in the general population is 5.31% whereas amongst high-risk groups, prevalence ranges from 5.44 to 30.6% for Hepatitis C to 6.02 to 22.8% for Hepatitis B (HEP 2, 3 & 4); however, on the other hand, Malaria accounts only for 0.5% of deaths

(Pg 83). These data show that infectious diseases continue to remain a public health challenge despite the ongoing public health efforts aimed at prevention and control.

A high burden of **Non-Communicable Diseases** (NCDs) is also evident in these data; in terms of morbidity, nationally representative data show that more than 24.3% of the population over the age of 18 years has high blood pressure (Pg 115); 10% of the adult population suffers from Diabetes (DM 1 & 2); 1% of the population is blind (DL 3); 34% suffers from depressive disorders (MI 1 & 2) and 2.54% of the total population could be labeled as being disabled (DL 1). Regional studies have also shown that more than 25% men and women over the age of 40 years suffer from coronary heart disease (CS 1); that the incidence of serious injuries is estimated to be around 41.2 per 1,000 persons per year (IJ 1) and that the incidence of Cancers is on the rise (C 1-12). Data also show high prevalence of lifestyle and biological risks of NCDs as well as injuries; 80% drivers do not wear seatbelts in cars and more than 86% motorcycle drivers do not wear helmets (IJ 4 & 5). These data snapshots signify a high burden of NCDs in Pakistan.

Burden of disease data reported in 1998 show that an equal burden could be attributable to infectious vis-à-vis Non-Communicable Diseases in Pakistan (38.4% vs. 37.7%) [(BoD)]; the latter clearly surpassing if the burden of injuries (11.4%) is added. More recently, cause of death data from the Pakistan Demographic Survey show that the percentage of deaths attributed to NCDs has increased from 34.1% in 1992 to 54.9% in 2003 (CSD). This distribution is instructive to current resource allocations for prevention and highlights the need to bring allocations for NCD prevention, control and health promotion at par with allocations for infectious diseases.

In addition to the unfinished agenda of MCH and the double burden of diseases, there are a number of **emerging challenges** that merit attention. With respect to HIV and AIDS, the current population prevalence is estimated to be 0.1% (HIV 1). Prevalence among high-risk groups ranges from 0.5-23%; 23% prevalence among Injecting Drug Users in Karachi shifts the entire epidemic scenario of the country to a higher stage – at a 'concentrated level' (HIV 2). This indicates that the current momentum in HIV and AIDS needs to be further built upon. In addition, other contemporary health challenges merit attention such as the threat of emerging infections like SARS and Avian Influenza and re-emerging infections (the recent outbreak of Dengue Hemorrhagic Fever being a case in point) and highlight the need to strengthen the capacity for surveillance of emerging and re-emerging infections and their prevention and control. In the aftermath of the October 8, 2005 earthquake in the Northern Areas of Pakistan, a renewed emphasis on emergency preparedness as another stream of public health planning also deserves attention.

At an **intermediate outcome level**, some improvements have been seen. In MCH-related services, the percentage of pregnant women who receive at least one ante-natal consultation has increased from 30 to 50% (MNCHD 2); the percentage of women receiving post-natal consultations has increased from 11 to 23% (MNCHD 6) and the

proportion of births attended by Skilled Birth Attendants has increased from 18 to 31% (MNCHD5) over a ten-year period (from 1996-97 to 2005-06). Contraceptive Prevalence Rate also improved, increasing from 12% in 1991 to 36% in 2006 (DG 10). There are also indications of increased utilization, particularly of private sector healthcare facilities as is evidenced by an increase in the percentage of post-natal consultations from 35% in 1998-99 to 46% in 2004-05 (HSU 9). However, this can also be interpreted as a relative shift away from public sector services utilization; this is also supported by the latest PSLM data (HSU 1), which shows that two-thirds of the consultations take place in the private sector.

Some improvements at the intermediate outcome level need to be contextualized as in the case of intermediate outcome data for Tuberculosis control (TB 2, 3 & 4). The actual burden of Tuberculosis may be higher because these data do not capture cases from private sector sources, which is where more than 60% of the outpatient contacts occur.

## **Pakistan's Health Systems**

Indicators that track health systems functioning are as important as indicators that track health status. These include indicators on governance, stewardship, various aspects relating to the delivery of services, health financing and inputs into the health sector at the level of human resources and medicines.

Although some indicators on health financing have been included herewith, the list is not complete due to data gaps. The health financing indicators show that although allocations have increased, Pakistan still spends only 0.67% of its GDP on health with a percentage of the budget going unutilized (HF 13). In addition, some allocation disparities are evident, and alternative mechanisms of financing health have not been mainstreamed into the delivery of care. Therefore, in addition to the need for greater increments in allocation, there is a need to address allocation disparities, improve utilization and develop alternative approaches to health financing, albeit with safeguards against creating access and affordability issues for the poor.

At the inputs level, quantitative information is available. With respect to human resource, the output of most categories of healthcare providers has increased; increments in numbers have been considerably higher for doctors and Lady Health Workers (HR 1-6). However, these quantitative increases should be interpreted in the light of the skewed human resource ratios (HR 7-13) and qualitative and deployment-related gaps; the latter have not been captured in this publication owing to data gaps. Increases have also been seen in the number of healthcare facilities (HFC 1-7). However, at the same time, there is convincing anecdotal evidence related to gaps at the levels of delivery and quality of services.

In conclusion, therefore, these indicators give some valuable information about the health status of Pakistan's population and some information about the health status of Pakistan's health system; with respect to the latter however, several gaps abound.

Notwithstanding the weaknesses of these data and their need for further development, some useful interpretations can be drawn; these have been articulated in the relevant sections. In a nutshell, these data show that *despite improvements, many challenges still remain to be addressed*. Extrapolation of these data to its parent document, 'The Gateway Paper: Health Systems in Pakistan – a Way Forward,' shows that improvements have occurred in a system where gaps abound and it is logical to assume that quantum leaps in health outcomes cannot be achieved if systems are not supportive to deliver programmes, if alternative financing and service delivery arrangements are not mainstreamed in the delivery of care and if there are gaps in capacity at a governance level. A strategic systems strengthening approach should, therefore, focus on several dimensions; for some of these dimensions, these indicators provide linkages such as the need for resource allocation decisions and decisions in general to be based on evidence, the need to work more closely with the population programme, a focus on the inter-sectoral dimensions of health, prioritizing human resource-related issues and reconfiguring the mode of primary healthcare delivery within the country. However, there are several other problems that these indicators have not captured, given the absence of data in relevant areas. The next section focuses more specifically on bridging these gaps.

### **Pakistan's Health Information System**

There are several gaps in the reporting of indicators in this document owing to data gaps in respective areas. Important indicators necessary for policy and planning missing from the list of indicators included herewith are: a) indicators that measure specific functions of the health systems such as fair financing, responsiveness, stewardship, governance, transparency and accountability. Some indicators on financing have been included but comprehensive data on health expenditures from a consolidated and institutionalized National Health Accounts base are missing; b) indicators to assess the quality and efficiency of services provided at all levels of the healthcare systems; c) indicators to assess the utilization of secondary and tertiary healthcare facilities in the public sector; this has been identified as a major gap of the Health Management and Information System (HMIS); d) indicators to gauge the different aspects of service provision at the level of private sector healthcare facilities; this again is a weakness of the HMIS; e) indicators on cost-effectiveness of available strategies; and f) comprehensive information on inequities in health status, health determinants and access to and use of health services.

Moreover, as part of the exercise of collating data for this document, a number of other gaps in data collection mechanisms and their linkages were also observed. Notwithstanding, it must be recognized that Pakistan has several institutional data sources as well as periodical surveys. The analysis offered in this publication, therefore, focuses on bridging existing gaps and leads to two sets of recommendations in order to consolidate and strengthen Pakistan's Health Information System.

*The **first set of recommendations** is focused on institutional arrangements:*

As a first step, there is a need to develop a comprehensive policy and an apex institutional arrangement for consolidating a national health information system – the Health Information Apex Agency. Such a body should be established with broad-based consensus and ownership, should be placed within a legal and policy framework and its governance and administrative arrangements should be clearly mandated and institutionalized. The agency should be adequately resourced and supported to establish the necessary infrastructure and acquire human resource with appropriate capacity. The Federal Bureau of Statistics and the Ministry of Health should take a lead role in the creation of this agency with proactive linkages with data source agencies in the health sector and elsewhere (e.g., population). The potential within existing institutions such as the Health Management and Information System, the National Health Information Resource Centre, the National Health Policy Unit and the Statistics Division to serve this role should be explored. The objective of this agency should be to collect data from source agencies, collate data and report data on uniform standards. In order to achieve this purpose, the agency should: a) identify national health information needs; b) develop uniform standards for ensuring quality in data reporting; c) develop an inventory of data sources relevant to the health system and the healthcare system; d) provide health information system design recommendations that emphasize platforms which service multiple purposes; e) coordinate donor-driven data activities to ensure that national health information priorities are met and that national systems are strengthened; f) ensure ethical conduct in the entire data system; g) ensure data accessibility to a wide audience of both data analysts and policy-makers as well as the civil society and the public at large; and h) build linkages with appropriate data sources within the health sector to ensure regular flow of data.

*The **second set of recommendations** is focused on data sources and collection mechanisms in various streams:*

**Disease surveillance:** with respect to *infectious diseases*, the existing piecemeal epidemic infectious disease surveillance activities within individual programmes should be strengthened and integrated into a comprehensive public health surveillance system consisting of peripheral data collection arms linked to a central system. This should be backed by a legal system that mandates the notification of priority diseases and regulates laboratory practice. With respect to Non-Communicable Diseases, the population-based surveillance of 'risk factors' through sequential population-based surveys, powered to detect changes in the level of risk factors overtime, should be expanded to have national representation. With respect to registry-based surveillance, support should be provided to mature cancer registries. In addition, the first stroke registry also needs to be set up within Pakistan.

**Mortality statistics:** the cause of death system should be improved initially through the introduction of verbal autopsy instruments into the Pakistan Demographic Survey. Over

the long term, improving the quality of death records should be encouraged through appropriate policy interventions and legislation, which requires the inclusion of causes of death in death certificates using the International Classification of Death (ICD) for coding.

**Health Management and Information System:** it is important to support the existing Health Management and Information System (HMIS), which essentially captures data from primary and some secondary healthcare sources, broaden its base and enhance data connectivity through appropriate use of technology. Efforts to strengthen HMIS should be in the context of the post-devolution changes in Pakistan's provincial-district health system, where responsibility for healthcare up to the District Headquarter (DHQ) level has been devolved to districts with dedicated responsibility at the Executive District Officer (EDO) level. Recently, a District Health Management and Information System has been pilot-tested; this effort must be institutionalized as part of HMIS.

Management Information Systems (MIS) in public sector hospitals are known to suffer from several limitations. These systems either do not exist or are not optimally integrated with the central HMIS. Recently, some public sector hospitals such as the Pakistan Institute of Medical Sciences (PIMS) have begun the process of developing locally-suited MIS – an initiative being supported by the Ministry of Information Technology and the Electronic Government Directorate. The feasibility of expanding this approach to other hospitals should be explored. Management information systems in public hospitals should ideally be standardized and data flows to HMIS established.

Establishment of MIS in private sector healthcare facilities in Pakistan is linked to the broader issue of regulation of private sector healthcare. In the first place, therefore, there is a need to structure a regulatory framework; this has been discussed at length in the parent document *'The Gateway Paper: Health Systems in Pakistan – a Way Forward.'* Ideally, private sector health facilities should be regulated by the district government system. With reference to private sector MIS, minimum standards of data reporting and practical mechanisms for their institutionalization should be developed. The ultimate objective is to link private sector facilities to the central HMIS in order to gather information relevant to policy and planning. There are many examples of private sector hospitals that have developed fully-integrated MIS with the appropriate use of e-hospital solutions. However, these are viable options for the private sector and when public sector finances are taken as a dominant factor, the value of these approaches in terms of widescale application and the benefits gained in terms of improving health outcomes vis-à-vis costs incurred should be carefully assessed.

**Population-based surveys:** two considerations are important in this connection. Firstly, a number of surveys which provide data relevant to health policy and planning are conducted on a stand-alone basis or periodically by agencies which are outside of the health sector such as the Federal Bureau of Statistics and the National Institute of Population Studies. Some important surveys include the Pakistan Integrated Household Survey(s), the Pakistan Social and Living Standards Measurement Survey, the Pakistan Demographic and Health Survey(s) and the Multiple Indicator Cluster Survey(s). These

surveys play an important role in providing information on health statistics necessary for policy and planning; therefore, active linkages should be built with these agencies for data collection and interpretation. In particular, the Federal Bureau of Statistics has the institutional capacity to conduct a 'health census,' which can be leveraged to gather nationally-representative baseline information on health facilities and health-related human resource for the first time in Pakistan.

Secondly, with respect to health interview-based and examination surveys, a system of population-based health surveys should be established with an institutional base which has the capacity to ensure periodic surveys. The Pakistan Medical and Research Council has led the First National Health Survey of Pakistan and is currently in the process of planning the Second National Health Survey. It is important to consolidate health survey capacity within the council so that population-based health surveys are conducted regularly. Because knowledge and attitudes change more quickly, interview surveys should be done on a more regular basis, ideally once every five years and since measures of physical examination change slowly over time, an examination survey should be conducted once every 10 years.

**Health systems indicators:** in Pakistan, there are gaps in data sources, which make it difficult to comprehensively track health system indicators. In addition, indicators to track health systems functioning have also not been developed in a locally-suited context. It is, therefore, important to develop specific indicators in the areas of fair-financing, responsiveness, stewardship, governance, transparency and accountability; and indicators on access, quality, efficiency and responsiveness. In particular, a system for National Health Accounts needs to be established; this can be further built upon the Auditor General's national accounting model, which is institutionalized within the country; appropriate linkages should also be established with the Project to Improve Financial Reporting and Auditing (PIFRA), work on which is currently underway. A system for National Health Accounts must leverage technology to enhance efficiency and promote greater transparency in health systems. For example, electronic public expenditure tracking procedures and electronic equipment and supply inventories can track leakages from the system; drug procurement reforms centered on electronic bidding can enhance transparency and a nation-wide database for matching staff and wage payments can maintain up-to-date personal records and therefore can assist in eliminating abuses such as paying ghost workers. Information on sickness and care expenditure from household surveys can be used to supplement the National Health Accounts data.

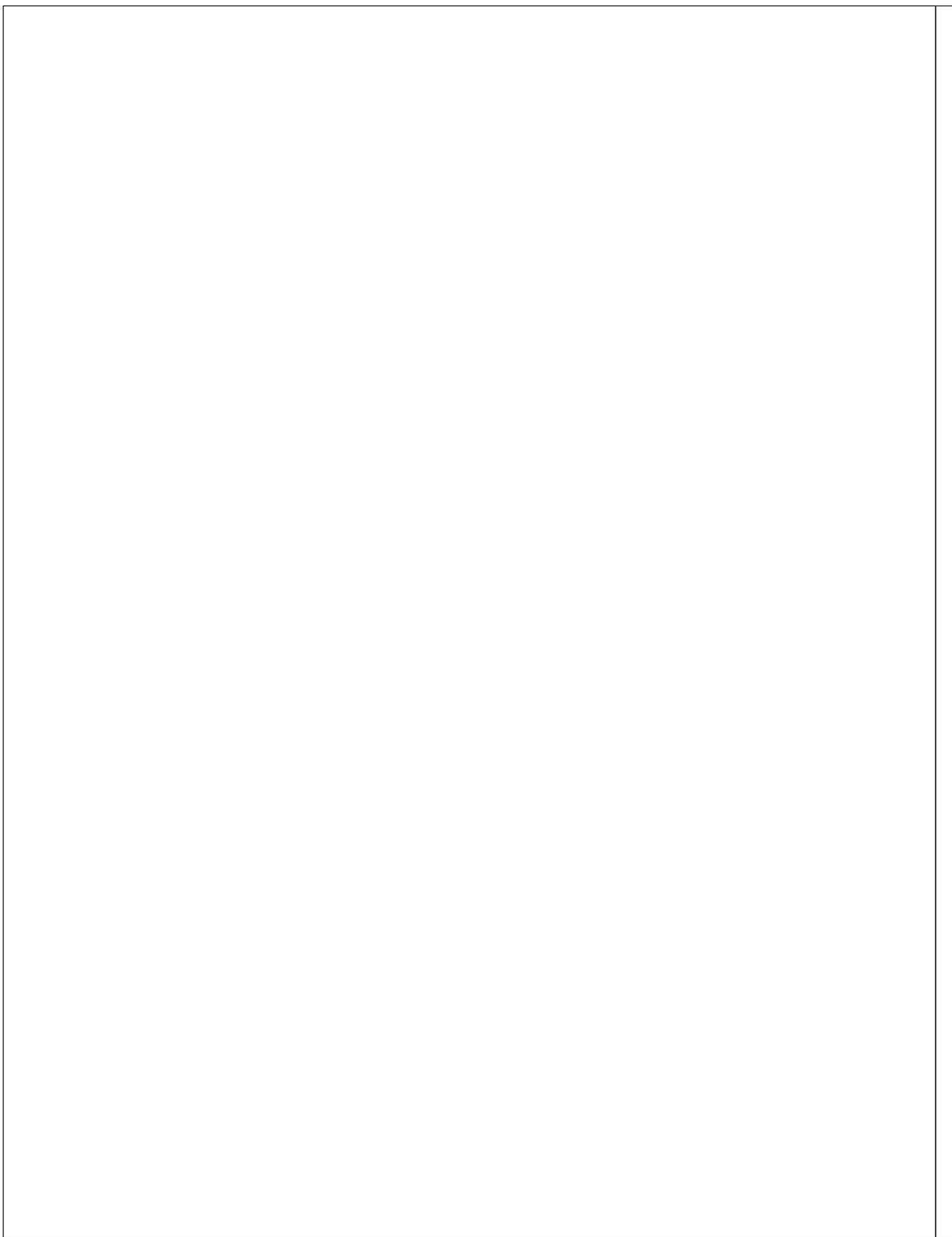
**Inter-sectoral indicators:** future data collection efforts should enable the segregation of data by income levels, by districts and by other socio-economic determinants in order to facilitate the targeting of interventions to appropriate groups.

In conclusion, indicators are an important component of the measurements that feed into the evidence-information-policy loop and evidence is a critical component of decision-making. However, for indicators to have any meaning, capacity and infrastructure for research has to be built in tandem so as to ensure credible databases, valid analytical

methods and instruments and reliability in interpreting and analyzing data. Within this context, the recommendations articulated herein focus on Data Policy development; the creation of a Health Information Apex Agency and the need for strengthening existing and/or creating as appropriate and institutionalizing data sources to gather information on a sustainable basis. A strategic approach to these three areas is critical to the viability of the health reforms currently envisaged/underway in the country. It is also critical that these efforts should be promoted through indigenous development resource inputs and that donor reliance for this most important area is minimized.

This document should be regarded as the first in a series of documents, which need to be produced on a two yearly basis to capture the health status of the people of Pakistan. Within this context, the Federal Bureau of Statistics and the Ministry of Health should take responsibility for two yearly compilations of data and ensure the use of data and evidence for policy-making and planning.

Most importantly, a critical aspect of data and evidence in the context of a national health information system relates to the demands and considerations. Appropriate utilization of data for decision-making and a commitment to do so, is equally if not more important than the entire complex discussion on building information systems. Ultimately, the success of health reform and change hinges on that very factor.



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## About this Publication

### I – What does this publication capture?

This publication captures the basic health statistics of Pakistan and presents them as a set of indicators, which cover some of the main aspects of health and its determinants; these include basic demographic data, health status in terms of morbidity and mortality, health-seeking behaviours, human resources, health services utilization, health financing and some of the social determinants of health.

The indicators reflected in this publication have been divided into different categories. The first category includes Demographic Indicators, the second includes Burden of Disease, and the third category includes an indicator on Cause-Specific Deaths. The major bulk of the indicators are in the Outcome Indicator category; these have been further sub-classified into Maternal and Child Health, Communicable Diseases, Non-Communicable Diseases, Injuries, Mental Illnesses and Disabilities. From each domain, only key indicators relevant to the macro-policy level have been included herewith. These do not obviate the need to track other indicators as may be relevant to specific programmes. The fifth category includes Output/Process Indicators and the sixth includes Input Indicators. The classification of indicators into Outcome, Output and Process indicators enables the measurement of progress in addition to measuring health and related factors. Other categories include Inter-sectoral Indicators and Indicators by Districts.

In addition, indicators have also been tagged to reflect their status with respect to inclusion in the Millennium Development Goals and the targets stipulated as part of the Medium Term Development Framework of the Government of Pakistan.

Due to paucity of data, it was not possible to include indicators that measure specific dimensions of the health system such as fair financing, responsiveness, health systems functioning, stewardship functioning and measures for improving evidence-generation.

### II – Over what timeframes are the indicators projected?

Many indicators are tracked over time; the period covered runs at the earliest from 1947, which is when the country was created, to 2006 at the latest, depending on data availability. However, many indicators are presented at one point in time due to unavailability of data for other timeframes.

### III – What are the data sources?

**A. Disease domain** data have been summarized from the following sources:

1. **Health Management and Information System**, which collects morbidity and health services utilization data from primary and some secondary level public sector health facilities in Pakistan on an ongoing basis and reports them centrally. Traditionally, HMIS provides 'estimated incidence' for various diseases; however, these data should more appropriately be reflected as proportional morbidity, the feasibility of including which into this document was assessed. However, since HMIS does not capture data from private sector health facilities and most tertiary public sector hospitals, data from this source were not included due to issues of representation. However, the HMIS provided some of the health services utilization data for this publication.
2. **Management information systems of the national public health programmes** such as in the case of the Expanded Programme for Immunization and the Malaria, Tuberculosis and HIV/AIDS programmes. These provided data on programme-specific indicators.
3. **Acute infectious diseases epidemic reporting surveillance systems**, as in the case of Polio surveillance, provided data relevant to its programme.
4. **Population-based Non-Communicable Disease surveillance system** of the National Action Plan for the Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan, which provided population-based data on the common risks of NCDs and Injuries.
5. **Data from periodic surveys** of the Federal Bureau of Statistics and other agencies such as the Pakistan Medical Research Council (PMRC) and the National Institute of Population Studies (NIPS) were also used. These surveys include the Pakistan Demographic Surveys, Pakistan Fertility Survey, Pakistan Reproductive Health and Family Planning Survey, Pakistan Integrated Household Surveys, the National Nutrition Surveys, Pakistan Social and Living Standards Measurement Survey, National Health Survey of Pakistan, Pakistan Demographic and Health Surveys and the Multiple Indicator Cluster Surveys.
6. **Modelling projections** of the Planning Commission were used as in the case of the Maternal Mortality Ratio.
7. **Meta analyses** of epidemiological studies were used for reporting prevalence as in the case of Diabetes and Mental Illnesses.

**B. Health services utilization** data have been summarised from HMIS, management information systems of programmes and from stand-alone periodic surveys.

**C. Health financing** data have been captured from published reports of the Planning Commission, Ministry of Health and other ministries; from internal documents, budget proceedings and other documents in the public domain.

Publicly available data collected and published by international organizations have also been included, where appropriate.

#### **IV – How have data been presented?**

Most of the data in this publication are presented in five standard graphical forms. Line charts have been used to show trends over time, scatter plots in cases where data were tracked over time but where trend-estimations were not possible and bar charts and staggered bar charts to show frequency distributions. In the case of time trends, a consultative process weighed a variety of surveys to create time trends; the choice of surveys presented are based on the best technical advice from groups. Notwithstanding, differences between surveys and methodological factors may cause distortion in trends. Where data were segregated by districts, maps have been used.

#### **V – Do these data provide comparisons?**

Ideally, health indicators within Pakistan should be able to provide comparisons between provinces and districts – geographically, between the rural and the urban areas of the country, across genders and socioeconomic groups and between the type of facilities where applicable, particularly in the case of mortality and morbidity data. However, paucity of data in many areas limits the ability for such comparisons. International comparisons could have been possible only for some indicators where strict data standards were applied. However, since it was not consistently possible to do so due to data limitations, no international comparisons are offered here.

#### **VI – What are the cautions while interpreting these data?**

There are several data-related limitations in Pakistan; notwithstanding these limitations, an effort has been made to present the best available data in the clearest possible manner in a policy relevant format.

Data presented herewith is verifiable back to the original documents and has not been manipulated; data were compiled in a uniform way in order to improve the comparability of statistics. Nevertheless, many factors such as variation in definitions as well as specificities in data recording and processing may influence the validity, accuracy and comparability of statistics; therefore, comparisons – across time as well as among places – should be interpreted with caution. Possible data inaccuracies also create their own issues. In addition, differences between definitions or terms used in sequential surveys may have caused distortion in trends as for example in the case of PIHS and PSLMS data. Therefore, trends should also be interpreted with caution. Moreover, data from facility-based surveys should be interpreted bearing in mind that these provide information only on those who seek care.

Furthermore, it must be appreciated that the manner in which indicators capture the status of health and indicate change in health status depends on a number of characteristics; these include validity♣, reliability♥, specificity♦, and sensitivity♠, and that individual measurements in these data reported from secondary sources could not bring uniformity to these considerations.

The narrative sections of this document provide a snapshot of the status of health relevant to each indicator and touch upon the mechanisms of monitoring the relevant indicator. These sections have not been designed to discuss the health and health-related implications of the data presented. It is for this reason that the indicators presented herewith and the tabulations and graphical representation of these data should be interpreted in the light of the narration in the parent document of this publication, *'The Gateway Paper, Health Systems in Pakistan: a Way Forward,'* which is accessible through the URL <http://heartfile.org/gwhsa.htm>

## VII - Which indicators are missing here?

Clearly, these are not all the indicators that need to be tracked within the health sector; many other disease domain, non-health indicators and indicators that measure health systems performance and intermediate outcomes need to be tracked over time. However, unavailability of relevant data in these areas and/or absence of defined indicators have obviated their inclusion in this publication. Over time, efforts should be made to gather a consensus over indicators in the following areas:

1. Indicators that measure specific functions of the health systems such as fair financing, responsiveness, stewardship, governance, transparency and accountability.
2. Social, behavioural, psychological and psychosocial factors.
3. Indicators in the responsiveness domain with reference to quality of care, acceptability, capacity to deal with emergencies with a focus on epidemiological changes, equity and public health functions in conventional health systems, traditional medicine as well as the private sector.
4. In the area of financing, revenue collection, pooling and purchasing and the public-private mix for revenue collection.
5. Non-personal health services and geographical spread of provision of services.
6. Indicators at intermediate outcome level with a focus on access, quality and efficiency.
7. Non-health indicators outside of the health system such as education, environment, employment, income and living and working conditions in view

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- ♣ Effectively measures what it attempts to measure
  - ♥ Repeated measurements giving the same results
  - ♦ Measures only what it intends to measure
  - ♠ Having the capacity to measure all it is meant to measure.

of their impact on health. Although some data have been compiled in the Inter-sectoral section, they need to be further built upon. Future data collection efforts should enable the segregation of data by income levels and by other socioeconomic determinants in order to facilitate the targeting of interventions to appropriate groups.

From this list, however, indicators should be carefully selected so that they are fully justifiable with reference to the relevance and reliability of the information sought and the feasibility of gathering it on an ongoing basis.

#### **VIII – What is the target readership?**

This publication is aimed at policy-makers in the government and healthcare administrators at the primary, secondary and tertiary care levels as well as healthcare providers, public health professionals and health information managers.

#### **IX – What do these indicators show?**

These indicators give information about the health status of Pakistan's population; however, due to paucity of data, information about the status of Pakistan's health systems, remains incomplete. The weaknesses of these data and their need for further development notwithstanding, some useful interpretations can be drawn; these are discussed in the relevant sections.

#### **X – What gaps have been identified in data systems and how do these need to be bridged?**

There are two main constraints in the use of evidence for policy development. The first is paucity of usable indicators; this report attempts to establish a template that can address this issue. The second impediment is a culture of decision-making based on anecdotal evidence and political expediency as opposed to population needs and equity in service delivery. This area, while critical in enabling evidence-based health policy development and implementation, is beyond the scope of the "Health Indicators of Pakistan" document and will be dealt with as a separate initiative. It must be recognized, however, that this factor acts as an impediment to the utilization of evidence.

Access to usable information for action in health is compounded by the complexity of data sources and evidence-generating mechanisms within the health sector, the myriad of sources from which data need to be collected, absence of linkages and paucity of efforts to consolidate evidence from different sources. With this as a context, it is envisaged that the development of a sustainable and consolidated *mechanism* and *capacity* for collating evidence would be critical to strengthening the evidence-policy-decision-making nexus in Pakistan. Reflecting evidence as indicators is envisaged to translate evidence into a format palatable to policy-makers.

As part of the exercise of collating data for this document, a number of gaps in data and their collecting mechanisms have been observed. These have led to the evolution of a number of recommendations for action in order to strengthen Pakistan's health information system; these recommendations fall into three categories:

1. Data policy development.
2. Creation of an apex institutional arrangement.
3. Strengthening existing and/or creating as appropriate, and institutionalizing data sources to gather information on:
  - a. the magnitude and impact of health problems;
  - b. information on health systems functioning with reference to health financing, service provision, governance, transparency and accountability;
  - c. information on cost-effectiveness of available strategies; and
  - d. information on inequities in health status, health determinants and access to and use of health services.

### **1. Data policy development**

A comprehensive policy should be developed to generate, gather and utilize evidence in the health sector and priorities should be determined within each domain. The policy should focus on developing capacity for collecting and handling data and warehousing of data and should garner ownership of local institutions and local staff (statisticians, epidemiologists, demographers, data specialists). Appropriate incentives and rewards should be built for fostering research and developing an enabling institutional research environment. The policy should broaden the base of budgetary and extra-budgetary research funding sources for researchers in the public as well as the private sectors in addition to supporting and strengthening institutions with research as a core mandate. It should also be able to mobilize the influence of networks and key stakeholders to communicate evidence and innovation in knowledge-sharing in order to target decision-makers, thereby enabling them to recognize the benefits of evidence-based decision-making. The policy should also leverage the use of technology as a priority to bridge communication gaps. In addition, the policy should mandate an institutional mechanism for ethical oversight of research within the country. Furthermore, it should articulate a consensus over the Minimum Set of Indicators for Pakistan's health information system, drawing further on this initiative.

### **2. Creation of an apex institutional arrangement – the Health Information Apex Agency**

A sustainable and comprehensive Health Information Apex Agency needs to be created and mandated. One model for this is the National Health Information Observatory, which has been useful in some countries. However, most developed countries with sophisticated health information systems have apex leadership bodies

to coordinate national efforts. Such a body should be established with broad-based consensus and ownership, should be placed within a legal and policy framework and its governance and administrative arrangements should be clearly mandated and institutionalized. The potential within existing institutions, such as the Health Information Resource Center, Statistics Division and/or the Health Management and Information System to play such a role should be explored. The agency should be adequately resourced and supported to establish the necessary infrastructure and acquire human resource with appropriate capacity. The Federal Bureau of Statistics and the Ministry of Health should take a lead role in the creation of this agency with proactive linkages with data source agencies in the health sector and elsewhere (e.g., population). The primary purpose of the Health Information Apex Agency should be to provide leadership in the national health information system and collect, collate and report data. In order to achieve this purpose, the agency should:

- identify national health information needs through a broad consultation with all stakeholders and systematic review;
- develop uniform standards for ensuring quality in data reporting. Although the mandate of this institutional mechanism would only be collating and reporting data, every effort should be made to ensure that universal standards are adopted by data collection agencies; the institutional mechanism should be mandated in this role;
- develop an inventory of data sources relevant to the health system and the healthcare system for the country, taking into account *institutional sources* of data and data from *periodic surveys* and *research*. These include free-standing disease surveillance systems (the management information systems of public health programmes and acute infectious diseases epidemic reporting surveillance systems), the Health Management and Information System, population-based stand-alone/periodic surveys and modeling projections. Within the broader context of data from research, this should also include epidemiological and basic research projects and health policy and systems and operational research activities. Within the domains of health services, data sources that provide information on the utilization of services and health financing should also be included. Other data sources as appropriate should also be accounted for;
- provide health information system design recommendations that emphasize platforms that service multiple purposes and are efficient. Enable the consolidation of *ad hoc*, overlapping or stand-alone data systems (surveys, surveillance systems, registries) into well-planned systems that meet the health information needs of the nation more economically;

- coordinate donor-driven data activities to ensure that national health information priorities are met and that national systems are strengthened;
- allow the timely collection, consolidation and evaluation of health statistics and their timely interpretation and dissemination for appropriate public health actions at relevant levels of action within the federal, provincial and district systems;
- build linkages with appropriate data sources within the health sector to ensure regular flow of data; the institutional linkages involved in these should be clearly defined and articulated and the roles, responsibilities and prerogatives of the stakeholders should be clearly specified;
- ensure data accessibility to a wide audience of both data analysts and policy-makers; develop a communications strategy to support dissemination in order to assist with the translation of evidence into policy; and
- ensure ethical conduct in research and the entire data system. The leadership agency should be responsible for development and implementation of a policy for ethical conduct concerning health information, drawing lessons from well-developed international standards and adopting them locally in order to address issues of protection of human subjects, data integrity, confidentiality and other ethical issues related to planning, data collection, storage, analysis and dissemination.

The data sources and other design specifications for a comprehensive health information system are articulated in the next section. A leadership agency may find this description useful for planning in the future.

### **3. Data sources – status and directions**

Indicators ultimately rely on data systems. This section describes current data systems in the country, outlines their gaps and weaknesses and makes recommendations on how these may be bridged. This section also identifies areas of emphasis for the future on the one hand, and makes recommendations with respect to how the system should be developed in the future in order to ensure efficiency and obviate redundancies and poorly coordinated efforts, on the other. Four broad areas of data/information sources have been outlined; these are 1) Data relating to the magnitude and impact of health problems; 2) Information on health systems functioning; 3) Information on cost effectiveness; and 4) Information on inequities in health.

### 3.1 Data relating to the magnitude and impact of health problems

**3.1.a Infectious disease surveillance:** the existing piecemeal epidemic infectious disease surveillance activities within individual programmes should be strengthened and integrated into a comprehensive public health surveillance system consisting of peripheral data collection arms linked to a central system. This should be backed by a legal system that mandates the notification of priority diseases and regulates laboratory practice; within this context, a functional laboratory system for infectious disease surveillance should be supported to the extent that a credible cost-effective analysis suggests. The AFP/Polio surveillance system in particular taps all possible sources for information through active surveillance methods and is recognized as being effective. Other pockets of good practice also exist in various aspects of surveillance. However, by and large, systems have minimal coordination between vertical programmes and they usually do not tap into all sectors, thereby reflecting incompleteness, particularly with reference to the private sector. In addition, these systems have limited capacity to confirm clinically diagnosed cases of reportable diseases because a functional public health laboratory network does not exist. This is compounded by absence of legal requirements to report notifiable diseases.

A number of efforts in the recent past have aimed to strategically analyze these weaknesses and have issued recommendations to bridge existing gaps. For example, a World Bank-led multi-stakeholder assessment of Pakistan's public health surveillance system conducted in 2004 has made a number of valid recommendations for the development of a legal system that mandates the notification of priority diseases, regulation of laboratory practice and expansion of the Polio/AFP reporting system into a mainstream infectious disease public health surveillance system.<sup>3</sup> Similarly, through the collaborative efforts of the Pakistan Medical Research Council and the National Institute of Health (NIH), an Infectious Disease Surveillance Plan was developed in 2004.<sup>4</sup> These efforts need to be further built upon. However, capacity enhancement would be the key to this effort. The recently-launched Field Epidemiology and Laboratory Training Programme is an important step in the establishment of surveillance capacity in the country. This programme may provide epidemiological leadership for the multiple surveillance systems that are currently operating independently in the country.

**3.1.b Non-Communicable disease surveillance:** the complexities in the diagnosis of chronic diseases at a population level necessitates surveillance of risk factors rather than diseases; this is a valid approach given that the timelines involved in the risk-exposure relationship also provide a window of opportunity to institute preventive interventions. In addition, more than reliance on 'acute' parameters primarily from

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3. The World Bank. Public health surveillance system – a call for action. Islamabad, Pakistan: Ministry of Health, World Bank, Centers for Disease Control, World Health Organization: 2005.

4. Ministry of Health. Infectious Disease Surveillance Plan. Islamabad, Pakistan: National Institute of Health: 2005.

facility sources, there is a greater reliance on population-based surveillance of 'risk factors' through sequential population based surveys, powered to detect changes in the level of risk factor over time. In line with this, the National Action Plan for the Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan has developed population-based data collection infrastructure for surveillance of NCD risk factors, which will serve as a proxy for the NCD burden.<sup>5,6</sup> However, due to resource constraints, this is limited to one District (Rawalpindi) from which findings are extrapolated. In line with the World Bank report recommendations, there is a need to expand the scope of NCD surveillance to a national level. Furthermore, Non-Communicable Diseases and injuries information must also be supported by other data systems.

**3.1.c Registry-based surveillance:** surveillance of diseases such as Cancer and Stroke needs to be done through registries – a continuous process of registration, coding, computerization and analysis of data in a geographically defined population. However, caution needs to be exercised as stimulating too many registries is neither feasible nor essential. It is better, by far, to have just a few that are good and conform to international standards than many that are not and better to extrapolate to comparable populations from a good registry than to draw inferences from a poor one on site; and in this respect, support should be provided to mature cancer registries. In addition, a stroke registry also needs to be set up within Pakistan.

**3.1.d Mortality statistics:** Pakistan's vital registration systems provide no information on death statistics relevant to the health sector. The Federal Bureau of Statistics of the Government of Pakistan maintains a sample surveillance system – the Pakistan Demographic Surveys (PDS) – which record vital events on an annual basis; additionally, it also provides information on causes of death. However, there are several limitations of these data; cause of death attribution in PDS is not based on the International Classification of Diseases (ICD) and is not ascertained by verbal autopsy, and data are collected by household interviews as a result of which they are subject to recall bias. Despite these limitations, PDS provides a useful source of information about mortality and this information becomes even more significant in the absence of a proper vital registration system. Improving the cause of death system, initially through the use of verbal autopsy instruments, will tremendously enhance the value of this surveillance system. Over the long term, improving the quality of death records should be encouraged through appropriate policy interventions and legislation, which requires the introduction of cause of death in death certificates using the International Classification of Death (ICD) for coding.

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5. Nishtar S, Bile KM, Ahmed A, Amjad S, Iqbal A. Integrated population-based surveillance of non-communicable diseases – the Pakistan Model. *Am J Prev Med* 2005;(5 Suppl1):102-5.  
6. Heartfile. Surveillance: National Action Plan for Prevention and Control of Non-Communicable Diseases and Health Promotion in Pakistan; Heartfile.  
<http://heartfile.org/napsurv.htm> (accessed 11, 04)

**3.1.e Facility-based health management and information system:** facility-based data collection can enable the collection of data on mortality and morbidity as well as health systems performance. In addition, they can also enable an understanding of process and infrastructure-related issues and facilitate quality assurance.

In Pakistan, the Health Management and Information System (HMIS) serves as the State's mechanism of collecting data from Basic Health Units and Rural Health Centres and reporting these data on a monthly basis. However, the system has many limitations, the foremost amongst these being resource constraints. In addition, HMIS neither captures data from several secondary and none of the tertiary care sites in the public sector nor from the private health sector, which is the major deliverer of personalized curative care within the country. There is currently no systematic way of gathering data from private sector facilities in the country. Facility surveys of private facilities have proven very useful and feasible in other developing countries and can be institutionalized to fill this important gap.

It is important to support the existing HMIS, which essentially captures data from primary and some secondary healthcare sources, broaden its base and enhance data connectivity through appropriate use of technology. Efforts to strengthen HMIS should be in the context of the post-devolution changes in Pakistan's provincial-district health system, where responsibility for healthcare up to the DHQ level has been devolved to districts with dedicated responsibility at the Executive District Officer (EDO) level. Recently, a District Health Management and Information System has been pilot-tested: this effort must be institutionalized as part of HMIS.

Management Information Systems (MIS) in public sector hospitals have a number of limitations. These systems either do not exist or are not optimally integrated with the central HMIS. Recently, some public sector hospitals such as the Pakistan Institute of Medical Sciences (PIMS) have begun the process of developing locally-suited MIS – an initiative being supported by the Ministry of Information Technology and the Electronic Government Directorate. The feasibility of expanding this approach to other hospitals should be explored. Management information systems in public hospitals should ideally be standardized and data flows to HMIS established.

Establishment of MIS in private sector healthcare facilities in Pakistan is linked to the broader issue of regulation of private sector healthcare. In the first place, therefore, there is a need to structure a regulatory framework; this has been discussed at length in the parent document *The Gateway Paper: Health Systems in Pakistan – a Way Forward*. Ideally, private sector health facilities should be regulated by the district governance system. With reference to private sector MIS, minimum standards of data reporting and practical mechanisms for their institutionalization should be developed. The ultimate objective is to link private sector facilities to the central HMIS in order to gather information relevant to policy and planning. There are many examples of private sector hospitals that have developed fully-integrated MIS with the appropriate use of e-hospital solutions. Useful lessons can be learnt from these experiences.

**3.1.f Population-based health and demographic surveys:** a system of population-based health and demographics surveys should be established with an institutional base that will ensure periodic surveys and have the appropriate capacity to do so. Pakistan has benefited from a number of population-based surveys including the National Health Survey of Pakistan, the Pakistan Integrated Household Survey(s), the Pakistan Social and Living Standards Measurement Survey, the Pakistan Demographic Survey(s) and the Multiple Indicator Cluster Surveys (MICS). However, there are many gaps in the capacity to conduct these surveys and analyse information generated from them. Many countries have central health survey agencies to conduct such efforts; the design of such surveys is multipurpose and they are conducted on a periodic basis to measure trends over time. While continuous surveys are preferable from an efficiency and quality perspective, it may be early for Pakistan to institute such an effort. The first step should be the consolidation of the health survey capacity in the country into an agency that is authorized and funded to conduct national population-based health surveys – both interview-based and examination surveys. Because knowledge and attitudes change more quickly, interview surveys should be done on a more regular basis, ideally once every five years and since measures of physical examination change slowly over time, an examination survey should be conducted once every 10 years.

The Ministry of Health is currently planning the second National Health Survey of Pakistan. This can be an opportunity to start building a national system for health surveys. It will also be useful to mandate an agency with the ongoing responsibility of planning, conducting, analyzing, and disseminating the results of these surveys. The Pakistan Medical Research Council has the physical infrastructure, and with appropriate inputs and building of capacity, can play the role of a specialized health survey agency. In addition, the Federal Bureau of Statistics has the institutional capacity to conduct a 'health census,' which can be leveraged to gather nationally-representative baseline information on health facilities and health-related human resource for the first time in Pakistan.

**3.1.g Data from other sources:** the Health Information Apex Agency should establish close linkages with data sources in the health sector and others such as the National Institute of Population Studies, the National Database Registration Authority, etc.

### **3.2 Information on health systems functioning**

In Pakistan, there are gaps in data sources, which make it difficult to comprehensively track health system indicators. In addition, indicators to track health systems functioning have also not been developed in a locally-suited context. It is, therefore, important to develop specific indicators in the areas of fair-financing, responsiveness, stewardship, governance, transparency and accountability; and indicators on access, quality, efficiency and responsiveness. In particular, a system for National Health Accounts needs to be established; this can be further built upon the Auditor General's national accounting model, which is institutionalized within the country; appropriate linkages should also be established with the Programme for Financial Reporting and

Auditing (PIFRA), work on which is currently underway. A system for National Health Accounts must leverage technology to enhance efficiency and promote greater transparency in health systems. For example, electronic public expenditure tracking procedures and electronic equipment and supply inventories can track leakages from the system; drug procurement reforms centered on electronic bidding can enhance transparency and a nation-wide database for matching staff and wage payments can maintain up-to-date personal records and therefore can assist in eliminating abuses such as paying ghost workers. Information on sickness and care expenditure from household surveys can be used to supplement the National Health Accounts data.

Numerous reports on development have mentioned lack of transparency and accountability as obstacles to development. The health information system of the country should also collect information and conduct special studies to understand the management issues related to the health system. Indicators and measurement tools that have been found useful to track transparency/accountability and promote good governance have been developed in this area by many countries. These can guide future efforts in the country.

### **3.3 Information on cost-effectiveness**

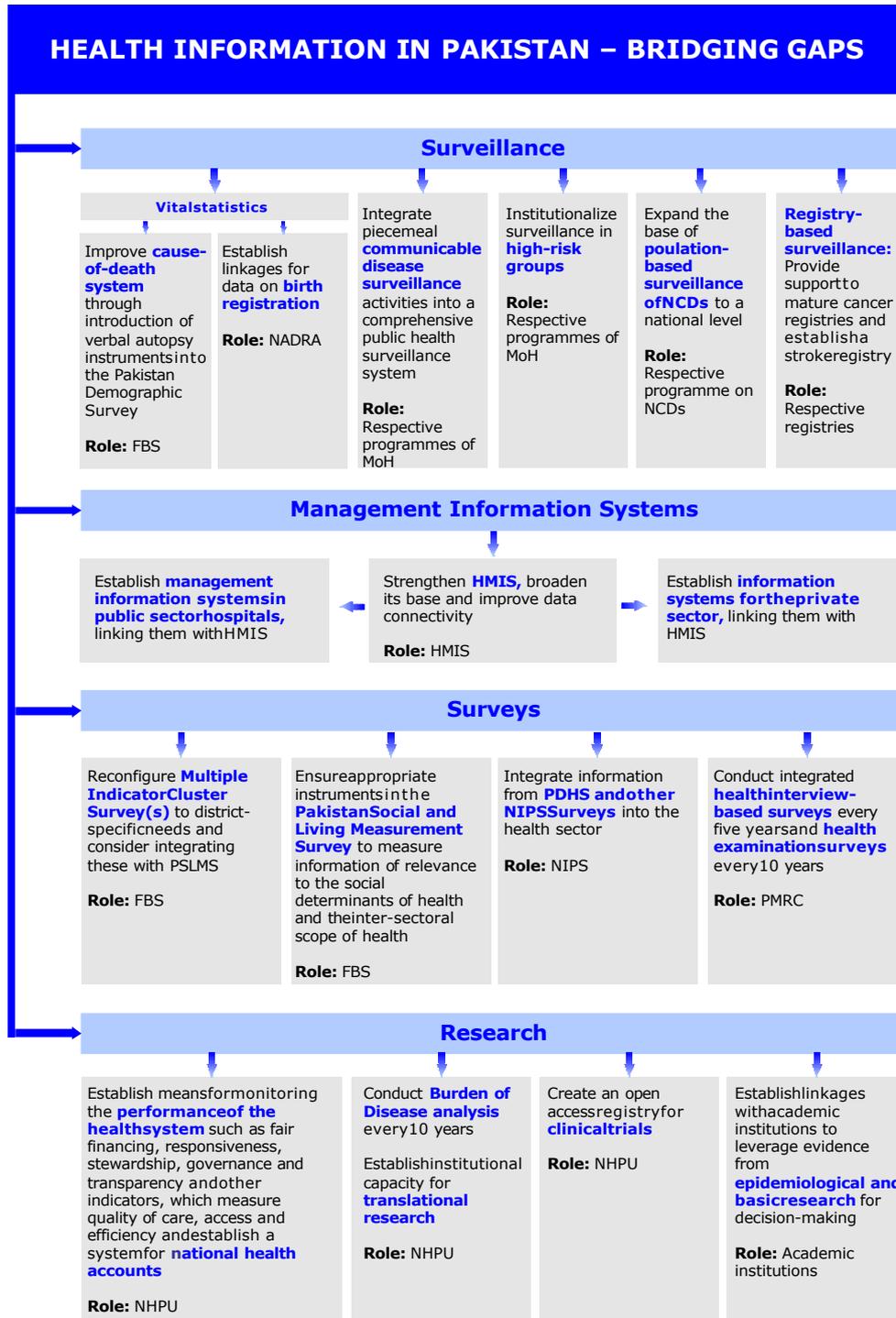
Health policy and systems researching general and feasibility assessments, pilot testing, process evaluation and programme monitoring should specifically be institutionalized in order to gather information on cost-effectiveness of available technologies and strategies for improving health. Institutional capacity must be built for generating operational evidence and utilizing it for decision-making.

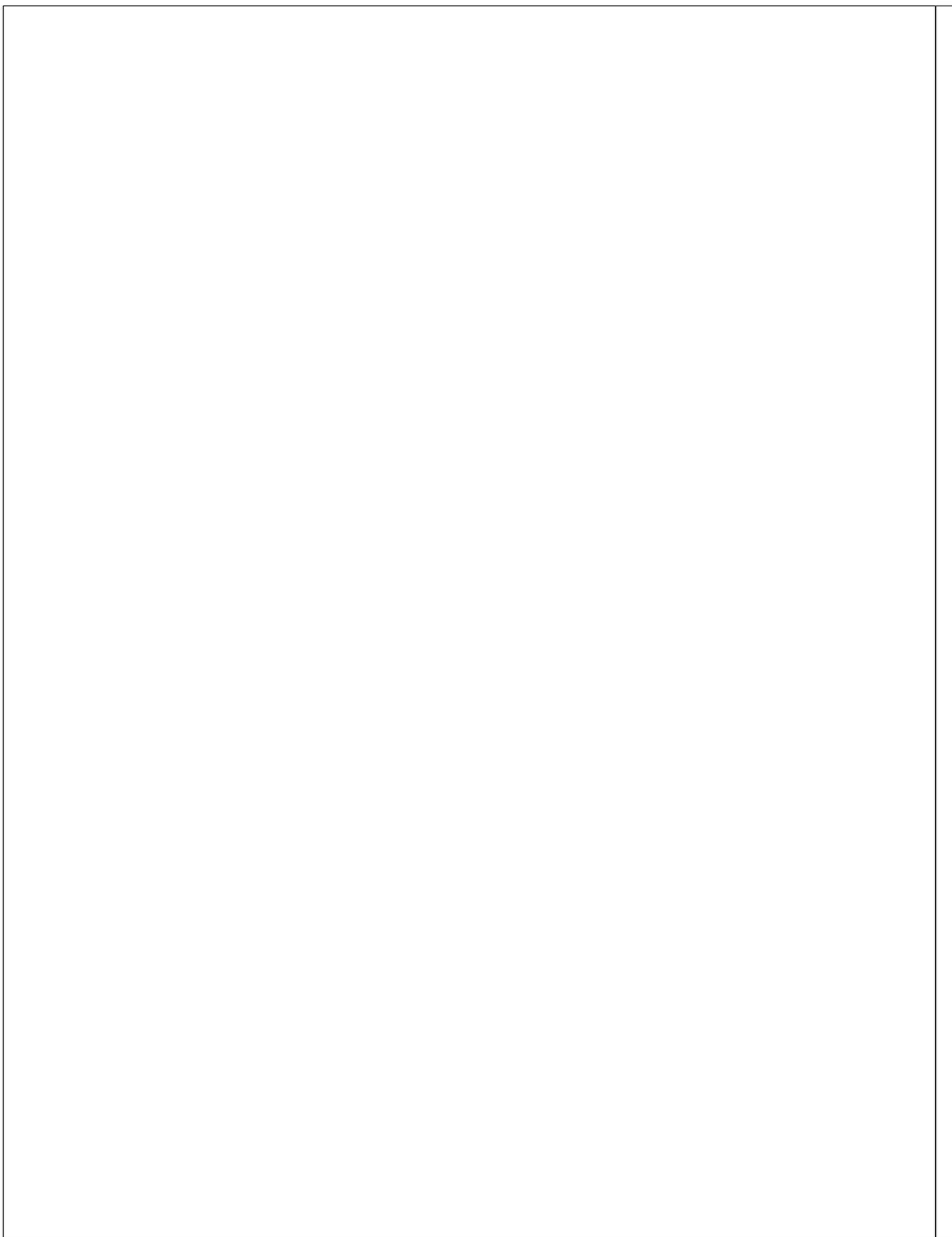
### **3.4 Information on inequities in health**

Health is affected by social position and the underlying inequality in a society; there is an established correlation between social inequality and health inequality. Information on inequities in health is a cross-cutting issue and should be addressed by all aspects of the system. The Health Information Apex Agency should work to ensure that issues of equity are addressed appropriately at all levels in the system. The health information system generally and the various data generating mechanisms specifically, should configure their instruments so as to disaggregate data by income levels and other variables indicative of low economic development. It is envisaged that these would be relevant and hopefully instructive to policy development and its implementation, given the current overarching focus on poverty reduction within the country.

In conclusion, indicators are an important component of measurements that feed into the evidence-information-policy loop and evidence is a critical component of decision-making. However, for indicators to have any meaning, capacity and infrastructure for research has to be built in tandem so as to ensure credible databases, valid analytical methods and instruments and reliability in interpreting and analyzing data. Within this context, the recommendations articulated herein

focus on data policy development; the creation of a Health Information Apex Agency and the need for strengthening existing and/or creating as appropriate and institutionalizing data sources to gather information on a sustainable basis. A strategic approach to these three areas is critical to the viability of health reform currently envisaged/underway in the country.





## Indicator key



**Outcome Indicator**



**Output Indicator**



**Process Indicator**



**Input Indicator**

**MDG**

**Millennium Development Goal**

**MTDF**

**Medium Term Development Framework Target**