HEALTH SYSTEM PERFORMANCE ASSESSMENT IN ARMENIA

HEALTH SYSTEM

PERFORMANCE IN ARMENIA:

Strategic Review Summary

YEREVAN 2008

The report was developed by the Health System Performance Assessment Working Group of the Republic of Armenia (RoA) under the supervision and coordination of the "Health System Modernization Project" Credit Program signed between the Government of RoA and World Bank.

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INTRODUCTION

Health System Performance Assessment

The World Health Organization has been continuously engaged in efforts to measure the efficiency of global health systems. A functional model[1] has been developed taking into account the varying structures of health care systems in different countries. This model is shown in

Figure 1. It presents four general functions of a health system: stewardship, financing, creation of resources and delivery of health services to the population.

Based on the four health system functions, WHO has developed the Health System Performance Assessment (HSPA) framework, as used in the *World Health Report 2000* for assessing the world's health systems. From a country perspective, this framework offers a conceptual basis for assessing health systems. Ideally, an appropriate unit within the national administration would constantly carry out health system performance assessment within a defined legal framework to inform policy decisions and health system management.

According to the WHO framework, health system performance assessments show how each health system function is being implemented, and how carrying out a specific function impacts the other related functions, or the level of attainment of the health system's main goals. To this end there are indictors to track and monitor the implementation of each function, the level of attainment of each goal and the relationships among those indicators.

This framework addresses two important questions: What are the defining characteristics and general conditions that describe the health system? And how can the desired goals be plausibly linked to changes in a health system's functioning?

It is necessary to note that HSPA differs from the system reform evaluation. Health system reform evaluation addresses outcomes from structural changes[2] related to implementation of a specific reform, while the HSPA addresses the level of attainment of core health system goals regardless of specific reforms. Repeated HSPAs can be used to assess key outcomes and impacts of any system reforms, and can be used to identify needs to implement or discontinue them.

Salient differences between HSPA and system reform evaluation are presented in Annex 1. The present document summarizes selected key indicators and findings from the Armenian HSPA exercise. Key areas of current Armenian Health reform were chosen as entry points: primary health care (PHC), hospital care and maternal and child health. Under each of these areas, the respective health system strategies are summarized. A comprehensive selection of indicators according to the four functions of the health system and related system goals has been incorporated into the full HSPA.

The operational model applied in this strategic summary of the HSPA is shown in

Figure 2. The strategies encompass decisions and legislative frameworks for financing, resource creation and service delivery and define the main characteristics of health system management. In other words, seen logically, these are system inputs and access to medical care is the output.

Of the framework's three main health system goals, the most salient is improvement of population health status, which is often difficult to trace to specific strategies because of complex variables that influence health, and time lags before many related outcomes can be measured.

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[1]Murray CJL, Evans DB. *Health system performance assessment. Debates, methods and empiricism*. WHO, 2003.

[2] Leaving the main functions and goals of the system unchanged, because their change does not mean a reform of the system but a replacement of one system with another.

However, there is sufficient evidence to predict such linkage, and to assume that strategies promoting improved access and utilization will lead to enhanced health status. Health system decision-makers are therefore most interested in seeing how strategies lead to changes in access and utilization as these results are observable within reasonable time frames, and can be clearly linked back to decisions. This model provides a useful organizational framework to summarize a HSPA, and has been used in this report.

Figure 1. General functional model of a health system
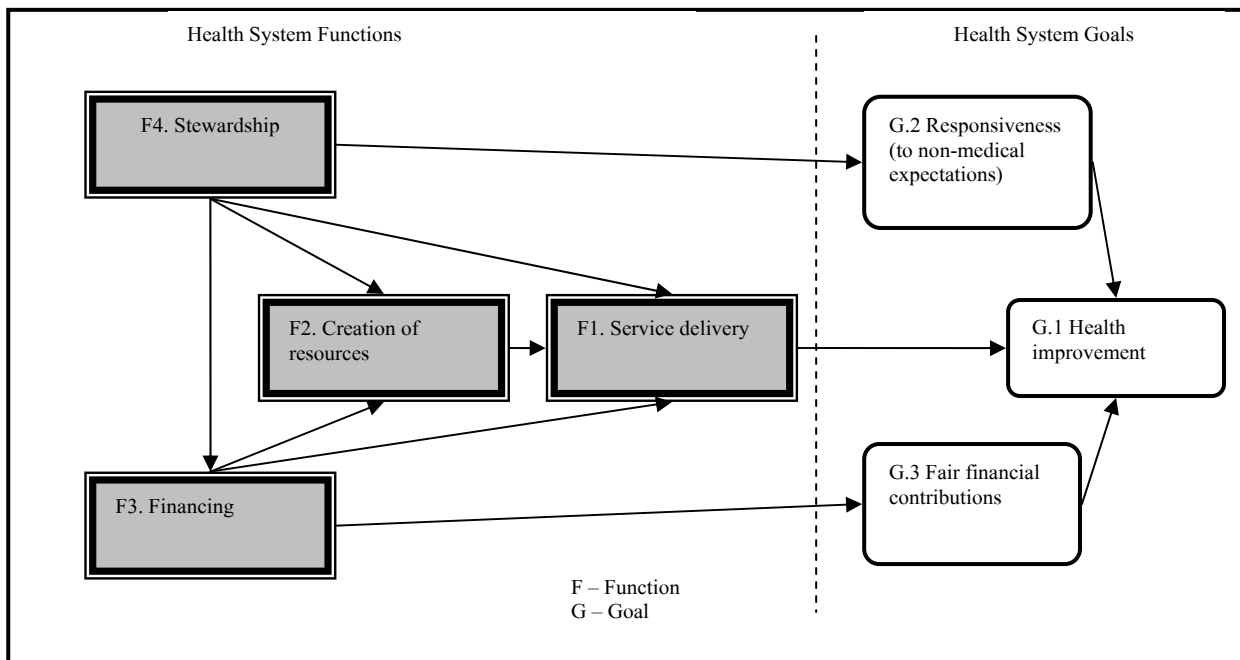
Figure 2. Strategic operational model of health system performance assessment
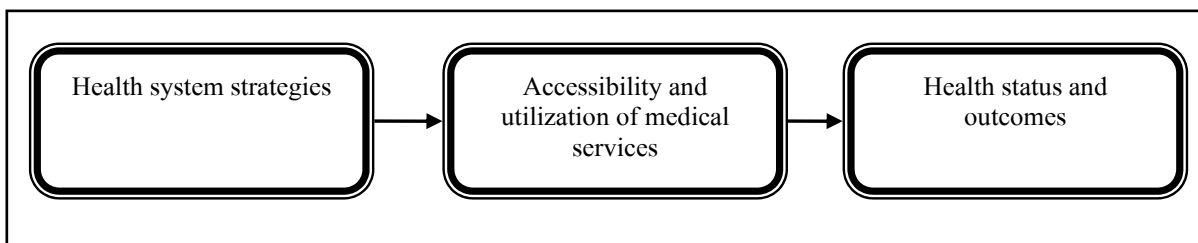
Objective of the Report

This report is a brief summary of results of the first HSPA exercise in Armenia. It gives key illustrative examples of how HSPA indicators can describe possible links between system strategies and performance of the Armenian health system. For example, population utilization of medical services will contribute to improvements in population health status. However, a rigorous attempt to identify and evaluate linkage between reform interventions, outputs and outcomes is beyond the scope of this summary. Readers interested in a more comprehensive analysis should refer to the full HSPA report. The list of indicators described in the full HSPA is included in Annex 7.

The health system strategies are the levers used to reform the health system. They influence overall levels of service delivery, resulting in changes in patterns of access by the population and

utilization of specific services. Health system strategies are the policies that structure the way the health system operates, and the regulations that govern behaviour of providers. This behaviour is the output of the strategies, which in turn will lead to improved health outcomes.

To apply this model to Armenia, the strategic review will focus on key areas of health reform. Indicators from the HSPA have been selected in an attempt to reflect the attainment of respective health system strategic objectives. Related changes in access to and use of health services will be identified to show how the system performs as a result of health reforms.

The first chapter describes health system performance assessment for the primary health care (PHC) sector. This is defined as a priority for the Armenian health system, and our focus here will be on non-communicable diseases. Chapter two examines aspects of hospital system performance where fundamental reforms have been implemented to optimize and rationalize services. Chapter three looks at maternal and child health care, and chapter four proposes directions of development of the HSPA unit in Armenia. Critical issues related to collection, systematization and analysis of health information are also discussed.

It must be noted that some indicators important for more comprehensive HSPA need to be collected, for instance prevalence of CVD, and diabetes by age and sex, daily workloads of physicians, etc.

Despite gaps in data availability and possible data quality issues, the HSPA should prove to be a valuable tool to support evidence-based policy and decision-making. In addition, the systematic analysis of health system data in an HSPA exercise will guide future efforts in improving data availability and quality as discussed in chapter four.

This summary highlights the importance of policy decisions and strategic investments by linking them to system performance and population health outcomes.

Methodology

The HSPA contains 137 main indicators from health and health system areas based on the HSPA framework described in

Figure 1, as well as auxiliary indicators, which create the broader analytical contexts of HSPA. The present report summarizes indicators and key information in relation to key areas of health policy.

CHAPTER 1: BUILDING PRIMARY HEALTH CARE

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│  ║ services and provider║     ║ detection, disease ║     ║ factors and disease ║    │
│  ║ training,          ║      ║ management and access║    ║ and longer life    ║    │
│  ║                    ║      ║                    ║      ║ expectancy         ║    │
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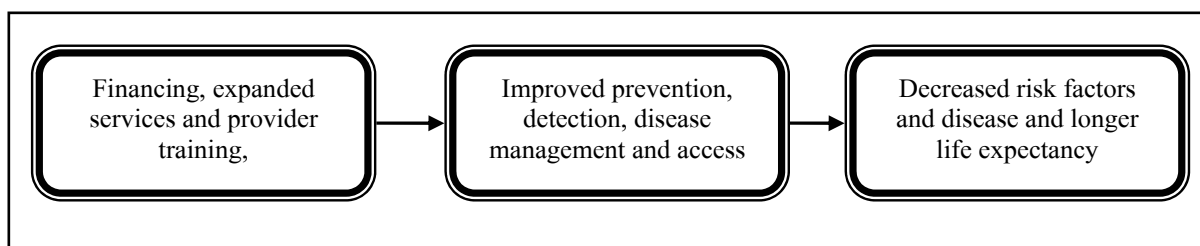
Building a strong PHC system in Armenia is a key government priority. Currently the system is in transition, with PHC provided largely in ambulatory polyclinic settings staffed by a range of specialists and general practitioners. This makes it difficult to separate PHC activity from other ambulatory care. The trend is to increase the number of family doctors, and focus on PHC while delegating specialized care to hospitals.

The PHC strategy[3] approved by the government in 1997 and revised in 2003 defines a number of system goals, including:
- disease prevention
- greater access to primary health care
- improved PHC quality and effectiveness
- provision of continuous health care
- PHC responsive to population needs
- reduced need for hospital care
- increased resource utilization efficiency
- greater community participation in achieving PHC goals.

Specific strategies developed to attain these goals include:
- strengthening preventive measures by reducing risk factors and through early diagnosis;
- introducing family medicine, providing comprehensive primary care;
- enhancing the material and technical bases for ambulatory-polyclinic service;
- enhancing the diversity of ambulatory polyclinic service;

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[3] Decree N1533-N of the Government of the Republic of Armenia "On approval of the Primary Health Care Strategy for the Armenian Population for 2003-2008 and of the 2003-2005 Pilot Programme to Develop New Methods for the Organization and Financing of PHC Service Delivery in Armenia" of 13 November 2003.

- improving the quality of skills and performance of medical personnel, especially rural health care workers;
- gradual integration of narrow specialty polyclinic services into the hospital system; and
- optimization of PHC facilities and human resources.

Strategies for financing, services, and providers

Financing
Armenia has an ambitious plan to increase public health spending. Since 2002 the absolute value of the health budget has grown rapidly – by about 5.9 billion drams annually. The PHC allocations are also growing apace. During the same period they increased by 2.6 billion drams annually and gradually reached the level of state budget allocations to the hospital sector (Figure 3).

Figure 3. The health budget, budgetary allocations to PHC and hospitals
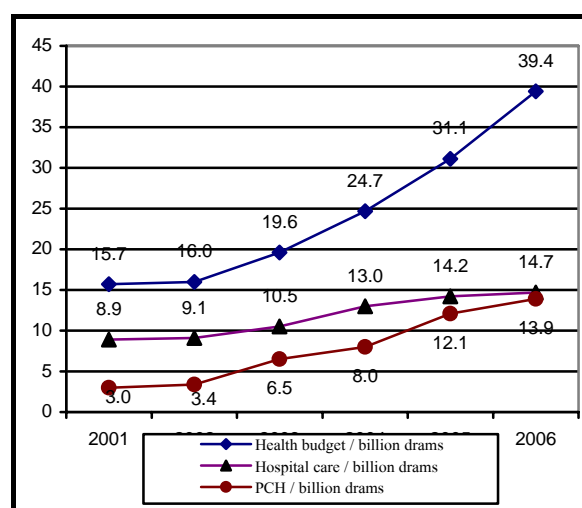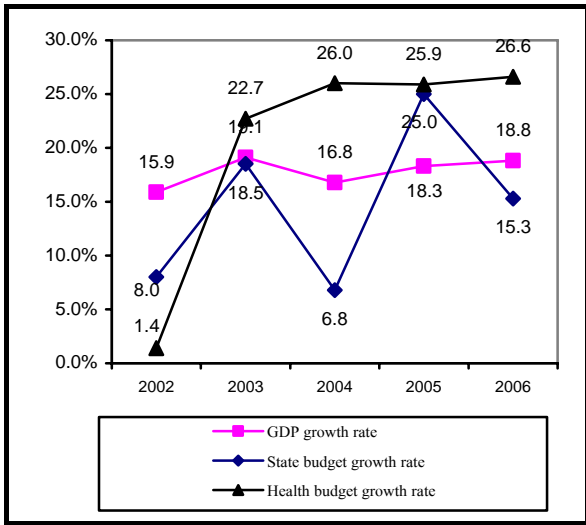

Source: Ministry of Health

Since 2002, the rates of health budget growth were significantly higher than the growth rates of the state budget and GDP (Figure 4). The average growth rate of the Health Budget in 2002–2006
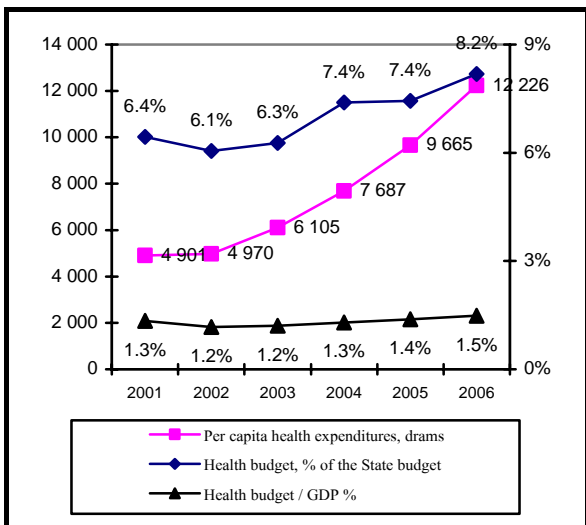
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was 25%, while the average growth rate of the State Budget was 16.5% and that of the GDP was 18.3%.

Figure 4. Growth rates of the GDP, state budget and health budget, 2002–2006

Source: Ministry of Health

Figure 5. Budgetary health expenditures, % of the state budget, % of the GDP, annual per capita budgetary health expenditures.

Source: National Statistical Service (NSS)

Figure 6. Expenditures of the Ministry of Health and household for core medical and diagnostic services in 2005 and 2006, in billions of drams
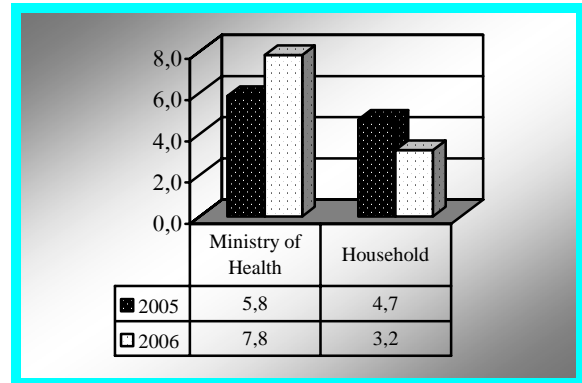
Source: National Health Account (NHA)

Compared to 2005, the expenditures of the Ministry of Health for PHC in 2006 increased by 34%, while for households they decreased by 33%.

In 2005 the household expenditures for PHC were 82% of the expenditures of the Ministry of Health, while in 2006 this figure declined to 41%.

Figure 7. Expenditures of the Ministry of Health for prescription drugs and household expenditures for non-prescription drugs in the outpatient setting in 2005 and 2006.
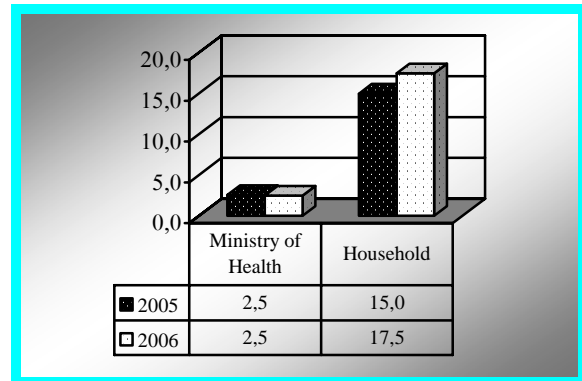
Source: NHA

In 2006, when ambulatory-polyclinic medical care was entirely state-funded, the population flow to the ambulatory-polyclinic sector increased. This increase was paralleled by a reduction in household spending for diagnostics and medical care. However, since the patient visits picked up, the population has started to spend more on drugs, because only some categories of population are eligible to receive free drugs.

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According to the NHA 2005 and 2006 data, the structure of expenditures in the PHC setting has not changed (Figure 8).

Figure 8: Structure of PHC expenditures 2005 and 2006.

	Salary	Drugs and pharm. goods	Misc. expenditures
■ 2005	46.4%	24.8%	28.8%
□ 2006	46.4%	24.8%	28.8%

Source: NHA

Adequate payment for medical personnel remains one of the most important and challenging problems for the system. According to the Ministry of Health, the average salaries of doctors and nurses increased from 2003 to 2006 (Figure 9).
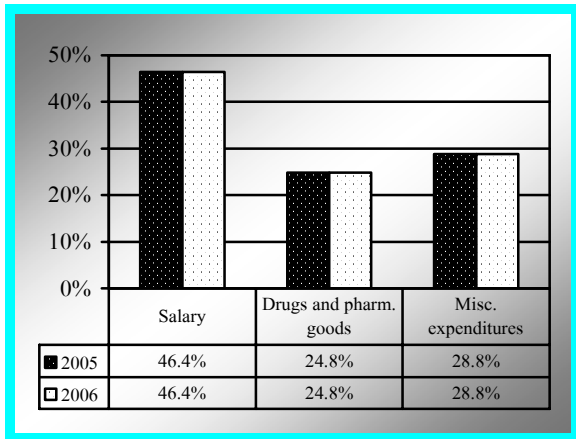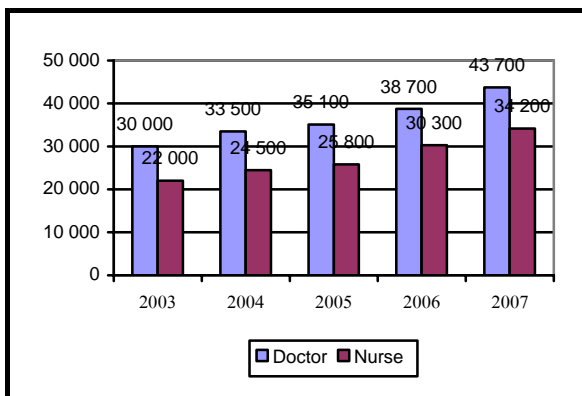
Figure 9. Average salaries of doctors and nurses in 2003-2006

Source: Ministry of Health

It is evident that differences between the salary expectations and actual salaries are factors stimulating a high informal economy, and affecting access to medical care.

Services and Providers
A significant part of grant and credit funds borrowed by Armenia from international organizations is being invested in the health system. Grants and credits have been implemented to rehabilitate PHC facilities and to address staffing levels and training. From 1998 to 2006, 36 rural ambulatory and health centres

were renovated while another 60 were newly built. A total of 226 medical centres and stations have been equipped.

Training of family doctors is one of the key areas of PHC reform. It is expected that, as a result of reforms, the system of family doctors and independent group practices of family doctors[4] will replace the current polyclinic system. The family doctors will assume the functions of district general practitioners and closely cooperate with narrow specialists of the hospital system.

As of October 2007, 769 physicians had retrained at National Institute of Health and State Medical University and qualified as family physicians, including 221 under the first World Bank (WB) health project (1999-2003) and 548 under the WB Health System Modernization Project 1.

Figure 10. Family physicians retrained under WB Credit Project (Family Physicians retraining HSMP 1)
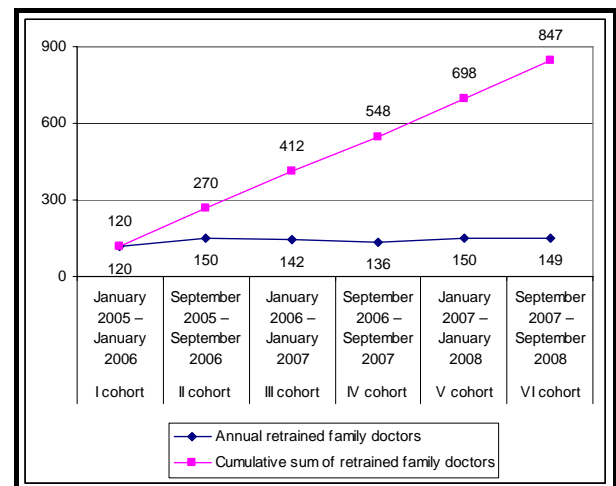
Source: NIH

At the same time currently 299 physicians are under family medicine retraining and will complete their retraining in January and September 2008.

According to official reporting forms of health care facilities, there were 388 family doctors working in the system of the Ministry of Health in 2006, with 165 active in PHC settings. This difference is explained by the fact that

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[4] Establishment of the independent family physician group and solo practices was approved by Government Decree 497-N of 19 April 2007.

therapeutists who are being retrained as family physicians, after returning to their respective medical institutions, continue to remain registered at their previous positions because some ambulatory-polyclinic facilities do not have appropriate licenses yet. This is more than double the total reported for 2003, while in 2001 Armenia had no practicing family doctors.

The PHC strategy for the Armenian Population for 2003–2008 states that the country needs 1500–2000 family doctors. The 2006 population was 3 219 200; this target is consistent with average workload of between 1600 and about 2100 patients.

Table 1. Distribution of doctors and nurses in PHC by specialties, 2006

Doctors	4 628
Narrow specialists	2 768
General Practitioners	1 860
District therapeutists	915
District pediatricians	780
Family doctors	165
Nurses	**5 958**
Midwives	**544**
Gynecologists are included in the total number of general practitioners	

Source: National Informational Analytical Centre (NIAC)

According to PHC licensing procedures, doctors and nurses should go through continuous medical education once every three or five years, depending on their specialties. Training is provided by the National Institute of Health of the Ministry of Health.

Figure 11. Cumulative percentage of trained doctors and nurses 2002-2006
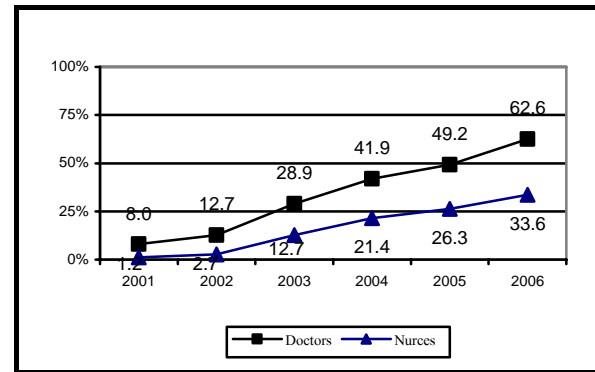
Source: NIH

Training is critical to promote best practices in care. Figure 11 shows that the cumulative percentage of doctors and nurses trained in 2001-2006 is increasing, but the training pace has been insufficient to upgrade training for all doctors and nurses.

Prevention, detection, management and access

The impact of strategies will be considered by looking at delivery and utilization of services related to non-communicable diseases. Prevention, detection and management of such diseases are critical functions for PHC in terms of both population disease burden and sustainability of the health care system generally.

Effective management of non-communicable diseases includes the treatment of diseases and the prevention of further deterioration and complications.[5] This will involve other sectors and specialists, with some care being managed in the hospital sector. Referrals and the majority of disease management functions will be the responsibility of the PHC sector. Hence, this section also looks at selected PHC interventions (e.g. mammography screening) currently delivered by hospitals in Armenia.

Since 2003 the number of annual per capita ambulatory polyclinic visits has increased (Figure 12). The 1990–2006 trends reveal a steady increase following a sharp decline between 1990 and 2000, when the weaknesses of the inherited Soviet model were further exacerbated by the

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[5] Fletcher R., *Clinical Epidemiology.* Moscow, Media Sphere, 1998.

conflict over Nagorno Karabakh and fuel and energy shortages.

Since 2006 the entire volume of ambulatory polyclinic services has been included in the main package of state-defined services. As the result the number of ambulatory polyclinic visits has grown by 20% in one year, from 6 773 000 in 2005 to 8 109 200 in 2006.

Figure 12. Ambulatory visits per capita per year (outpatients only) 1990–2006
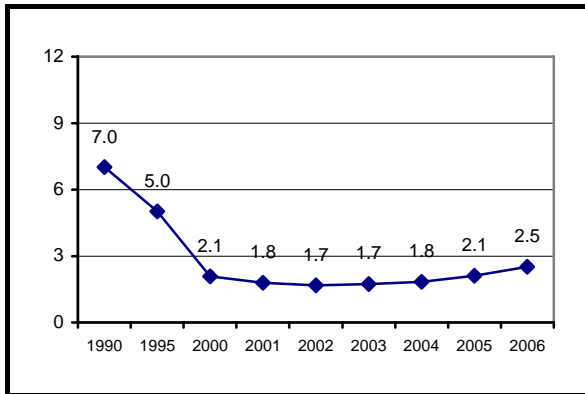
Source: NIAC

According to the regulations of the Ministry of Health, during mandatory preventive visits (Figure 13), district therapeutists should provide the following education and screening activities:

- healthy lifestyle education
- information on smoking and other risk behaviours
- PAP smears for early detection of cervical cancer
- teaching breast self-examination techniques
- breast examination for early detection of cancer and mammography as indicated
- measurement of arterial blood pressure for early detection of hypertension.

Figure 13. District therapeutist preventive visits
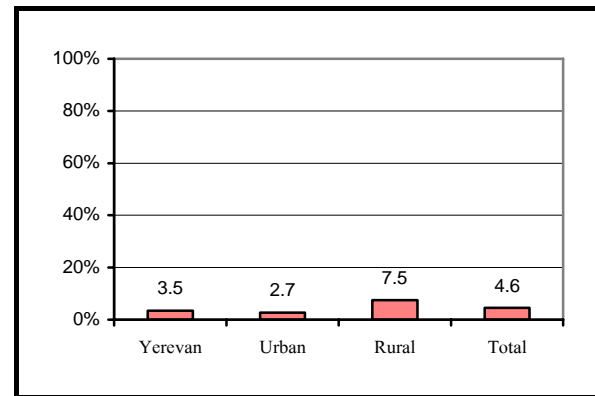
Source: HSPA Survey, 2007

WHO recommends that women between 30–60 years of age have at least one mammogram and one PAP cytological screening every three years, and Armenian national guidelines mirror this recommendation.

Figure 14. Women who had PAP cytological exams
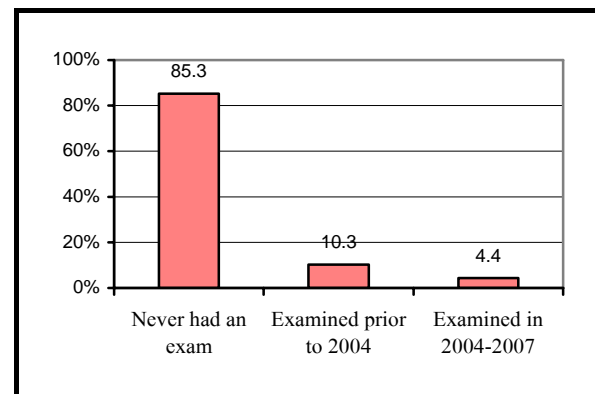
Source: HSPA Survey, 2007

Mammography for early diagnosis, treatment and prevention of breast cancer is done by doctor's referral.

Figure 15. Women who had mammography screening
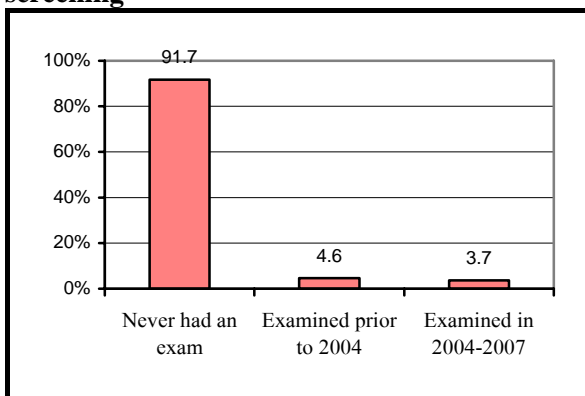
Source: HSPA Survey, 2007

Table 2. Women who had mammography and PAP Smears by age groups

Examination	Age group	Examined %
Mammography	30–39	4.3
	40–49	5.6
	50–59	5.9
PAP smear	30–39	6.9
	40–49	5.6
	50–59	4.2

Source: HSPA Survey, 2007

Figure 16. Estimated prevalence of non-communicable diseases and the treatment coverage

Source: HSPA Survey, 2007

Prevalence of diseases was determined by asking respondents if they had been diagnosed by a doctor with a particular disease, and if this disease has affected them during the preceding year.

Disease Management can be monitored by tracking indicators associated with high quality effective care. Table 3 and
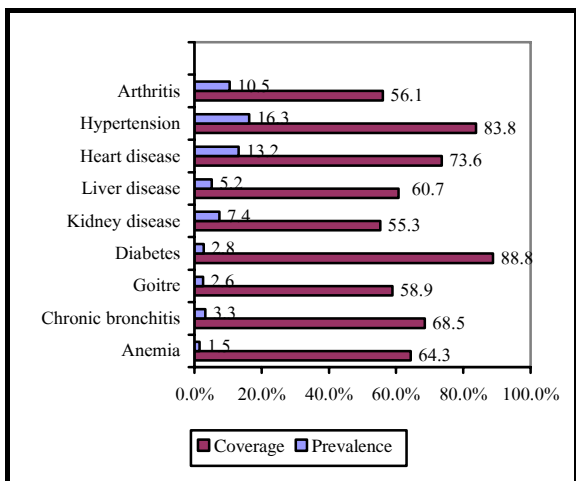
Table 4 provide examples for control of hypertension and diabetes management.

Table 3. Indicators of effective control over patients with hypertension

Indicator	%
Blood pressure measured within the past year	89.1
Pressure over 140/90 at last measurement	85.6
Proportion of these patients given advice or treatment	93.3
Pressure lowered below 140/90 as an outcome of advice or treatment	45.6
Had hypertension problems during the survey	37.4:
The calculations are made for the number of patients with hypertension diagnosed by a doctor and who were disturbed by the disease within the last 1 year.	

Source: HSPA Survey, 2007

Table 4. Indicators of effective control over patients with diabetes

Indicator	%
Glucose level measured within the past year	91.5
Glucose level at last measurement:	
normal – < 5.6	4.3
slightly high – > 5.6-6.1	22.9
high – > 6.1	72.9
Proportion of these patients given advice or treatment	100.0
Glucose lowered to 5.6 or lower as an outcome of advice or treatment	41.2
The glucose level at the survey time was:	
normal	13.3
slightly high	26.7
high	60.1
The calculations are made for the number of patients with diabetes diagnosed by a doctor and who were disturbed by the disease within the last 1 year.	

Source: HSPA Survey, 2007

The HSPA found it difficult to assess disease management, largely because of a lack of records and treatment protocols. PHC performance has been considered, but most of the measures rely on individuals accessing care, whereas disease prevalence relies on diagnoses. An important aspect of reforms has been to reduce barriers to access. Information from the HSPA sample survey (2007) provides such information on access and utilization.

Figure 17. Percent of the population with transport time of 20 minutes or more to reach a medical institution
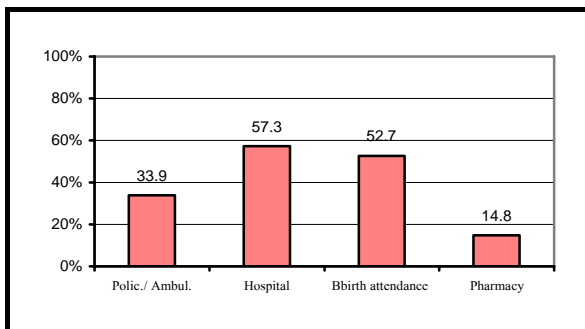
Source: HSPA Survey, 2007

The closure of hospitals in rural areas may also have geographical access implications.

According to survey results, the probability of needing medical care among those 20 years old or above is 30.8%. Of these, 74.9% sought professional medical. This means that 25.1% of the population is not seeking medical care when needed.

Generally, financial barriers remain the main reason for not seeking medical care (47.1%), while self-care (cultural factor) is the second reason (36.2%). Prescription drugs are not, or only partly, covered by public sources, for example.

Risk factors, disease and life expectancy

The health status of the population is the final outcome and goal of the strategic operational model. This will be described by discussing both risk factors and disease rates. The risk factors are the focus of population health counselling described in the previous section. They are also leading contributors to the final outcomes described at the end of this section.

Risk Factors

The prevalence of health risk factors is linked to non-communicable disease prevention. It is generally assumed that risk factor prevalence can be reduced through increased public awareness.

The prevalence of risk factors and population awareness were assessed by analysis of the HSPA sample survey,[6] which identified

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[6] It should be kept in mind that survey results generally apply to the 20-year old or older population

prevalence of the following risk factors, using threshold values from WHO assessments (Figure 18):

- high arterial pressure (systolic/diastolic > 140/90)
- smoking
- alcohol use (20 gram pure alcohol equivalent daily)
- overweight (BMI > 25.0)
- inactivity (>30 minutes equivalent of slow walking).

In Armenia the smoking and alcohol related indicators reflect primarily male behaviours. Only 1.6% of women smoke daily and 0.9% of women use alcoholic beverages in excess of 20 gram pure alcohol equivalent daily. However, it should be noted that tobacco prevalence surveys indicate a drop in habitual male smokers from 57.4% in 2005 to 54.7%. The prevalence of hypertension is also higher among men.

Figure 18. Risk factor prevalence
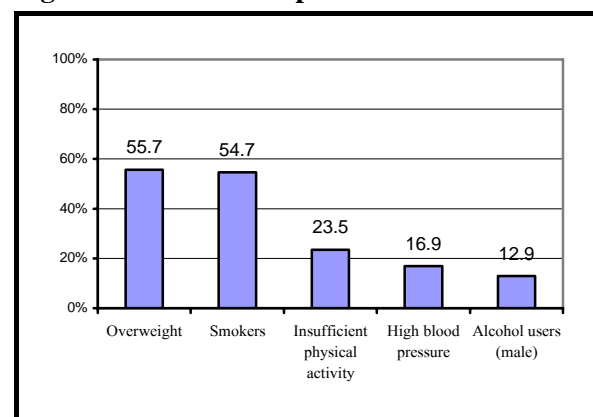
Source: HSPA Survey, 2007

The HSPA survey assessed risk factor prevalence as well as population awareness. Data on awareness had not been measured prior to the dedicated survey in 2007, so trends cannot be considered. Figure 19 provides percentages for respondent awareness about the adverse effect of risk factors. However, despite these levels of awareness, high levels of risk behaviours persist (Annex 7).

Figure 19: Risk factor awareness

Risk factor	%
Smoking	69.4
	66.0
Alcohol Abuse	64.7
	57.8
High Glucose Level	49.4
	49.2
Low Consumption of Fruits and Vegetables	49.2
	48.6
High Level of Cholesterol	32.3
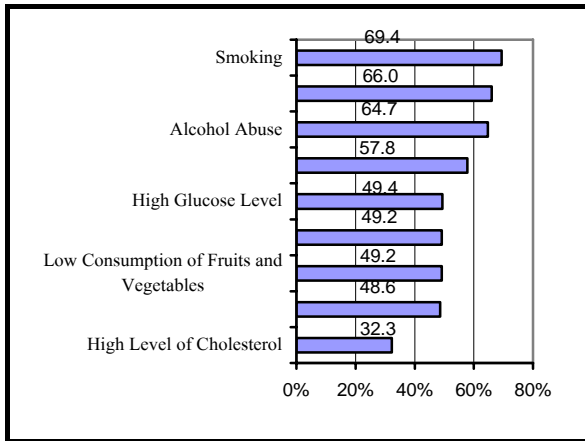
Source: HSPA Survey, 2007

Disease prevalence

Figure 20. Non-communicable disease prevalence and mortality, 2006
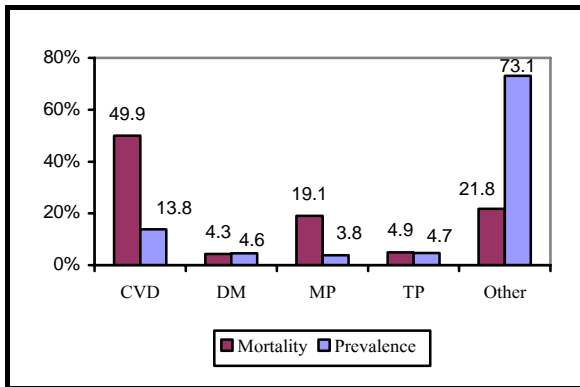
Source: NIAC

CVD – Cardiovascular diseases
DM – Diabetes mellitus
MP – Malignant neoplasms
TP – Traumas and intoxications

Figure 21. Malignant neoplasm prevalence and mortality per 100 000
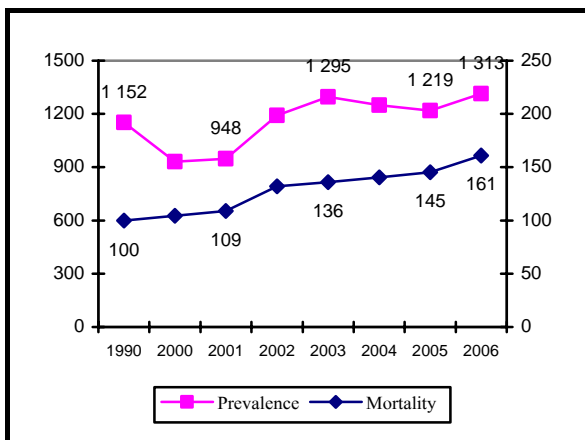
Source: NIAC

Since 1990 the prevalence of malignant neoplasms has increased by 14%, while the mortality increase was even greater, at 61%. The prevalence of diabetes mellitus has increased by 12%, while the mortality increase has been almost two times higher.

Figure 22. Diabetes mellitus prevalence and mortality per 100 000
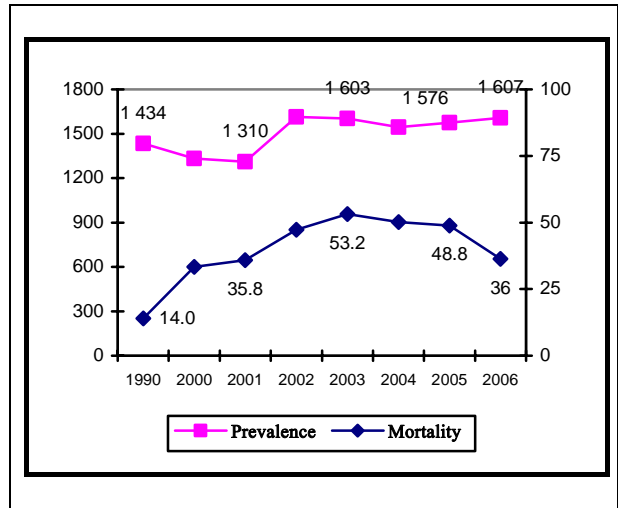
Source: NIAC

Figure 23. Cardiovascular disease prevalence of and mortality per 100 000
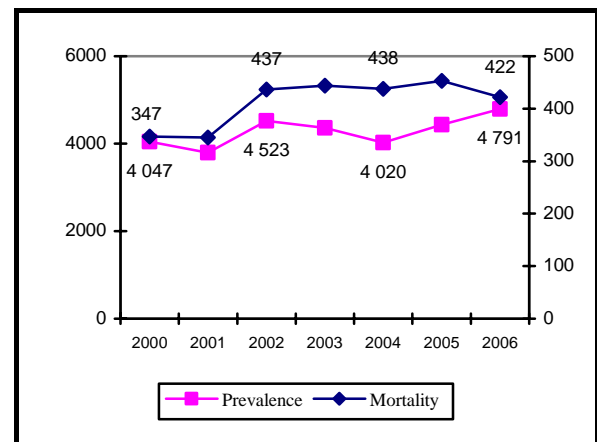
Source: NIAC

It is expected that managing the level of prevalence through risk-factor reduction will eventually reduce mortality. This may be related to a time lag effect but could also suggest low system performance with regard to accessibility and quality of care in this period.

A very important methodological conclusion follows from this: in the trends observed from 2001 to 2005, it is impossible to assess the impact of health care quality on the mortality rates because of very low levels of preventive visits. Prevalence estimates require contact with the health system, and active diagnostics. A high

number of undiagnosed diseases artificially reduce health care quality estimates (high mortality under low prevalence). While in the case of greater disease detection, estimates of health care quality would appear to improve as the ratio of mortality to prevalence decreases.

Overall life expectancy in Armenia is presented in Figure 24. It is difficult to adequately explain the data, because from 1990 to 2006 the value of this indicator increased. There was a period of economic collapse in the 1990s, when the health status of the population logically should have decreased. This may relate to the lag associated with many outcome indicators. The economic collapse impacted health system outputs, but the outcomes from this may be distributed over longer periods of time, and may be felt to some extent in the future.

Figure 24. Life expectancy at birth in Armenia
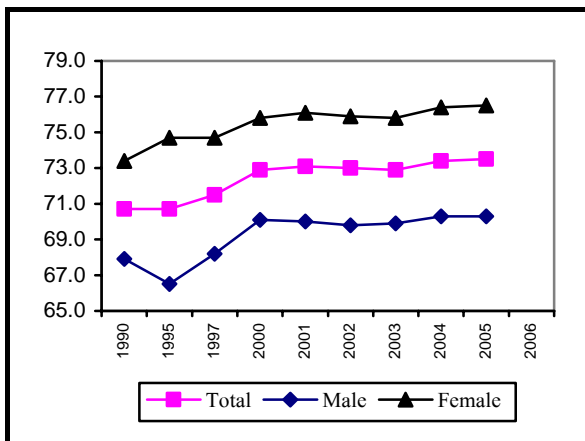
Source: NIAC

Conclusion

It is difficult to isolate the affects on PHC, as many services continue to be provided in settings that include specialized services. NHA data suggest that the volume and public funding of family medicine remained comparatively low in 2005. Generally, we see more utilization and improved access of the outpatient services, but financial barriers persist.

Retraining of doctors and nursing is occurring at about half of target levels. This has the potential to improve both health behaviour counselling and disease management. Risk behaviours remain high, and their reduction will have great impact. While disease management is showing gains, better information is required to monitor and track it, as it is critical to improving health

outcomes, reducing disease burden and promoting sustainability.

CHAPTER 2. RESTRUCTURING HOSPITAL MEDICAL CARE

Optimization, specialist and service realignment	→	Timely treatment, improved practice and greater productivity	→	Lower adverse outcomes and improved survival
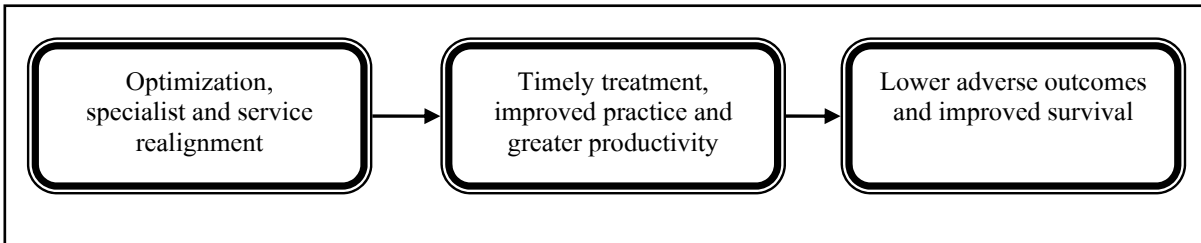
Strategies for the hospital sector are primarily focused on more closely aligning service capacity to needs. Outcome indicators are presented that can be directly linked to hospital performance.

Directives for hospital reforms are articulated in Government Decree No 80 of 5 February 2001 on optimization of the health system. Some of the main objectives are:

- adjusting hospital capacity to needs;
- creating an optimal number of hospitals through takeovers and mergers;
- clarifying the legal status of hospitals, using licensing as a compliance tool;
- implementing threshold values for beds per population;[7]
- transferring some specialized medical institutions from Yerevan to other regions; and
- creating inpatient and outpatient hospital departments, with specialists staffing ambulatories and referrals regulated through PHC doctors.

Strategies for optimization and service realignment

The number of hospitals in Armenia declined until 2002, but has recently started to increase with privatization. There were 21 private hospitals in Armenia in 2004 and 25 in 2006. The overall bed rate is shown if

Figure 25, indicating the decline in Ministry beds as a proportion of the total.

Figure 25. Number of hospitals 1990-2006
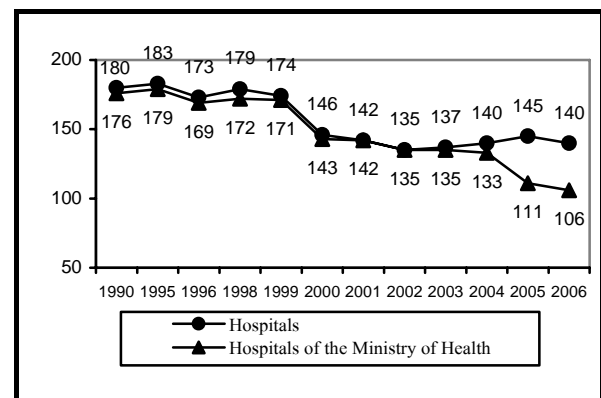
Source: NIAC

Figure 26. Number of hospital beds per 10 000 population, 1990-2006
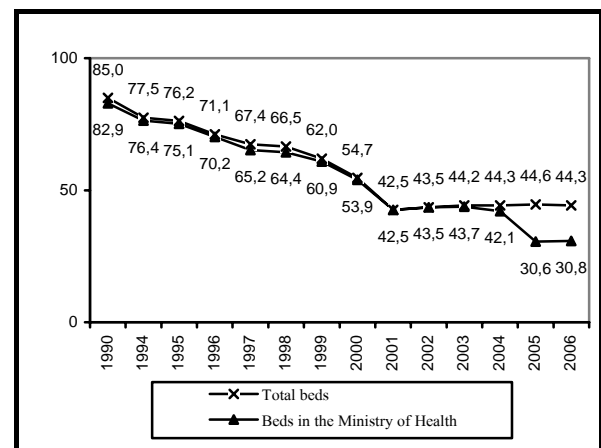
Source: NIAC

The decline in the bed occupancy rate may have led to the decrease of bed stock, with the sharpest decrease in 1999–2001 (15.6% decline), after the approval of the hospital system optimization program.

Though privatized hospitals in 2006 accounted for 26.5% of total hospital beds, they admitted 37.2% of the patients. The bed occupancy rate in the private sector, which grew steadily from 2004 to

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[7] For both single-site and multi-site hospitals (where optimal size is proposed at 200-500 beds). It is assumed that at 120 beds per 10 000 the annual bed occupancy rate will increase up to 220–255 days.

2006, is higher than that of the hospitals of the Ministry of Health, which has remained relatively constant.

The length of stay in the private hospitals is shorter than in the system of the Ministry of Health, and has been decreasing for the last three years. In the system of the Ministry of Health this indicator has barely decreased.[8] It should be noted that these analyses do not adjust for different service populations.

It is assumed that more effective use of ambulatory care contributes to a more cost-efficient system, and will lead to lower hospital admissions. Figure 27**Error! Reference source not found.** shows ambulatory polyclinic and hospital visits and their relative ratio. A decline in the ratio means that the population uses relatively less ambulatory polyclinic services in comparison to hospital services. Thus, the cost-effectiveness of the health system decreases.

Figure 27. Ambulatory polyclinic and hospital visits and their ratio, 1990-2006

Source: NIAC

The main trend in 1990-2001 was a decline in utilization of both ambulatory and hospital medical services. The ratio of these two indicators

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[8] Of course, this indicator cannot be smaller than the minimum value theoretically established for the existing health system. This value could be assessed provided that current treatment technologies of the health system are most efficiently utilized. However, such assessment requires a more flexible system for collection of information on hospital system.
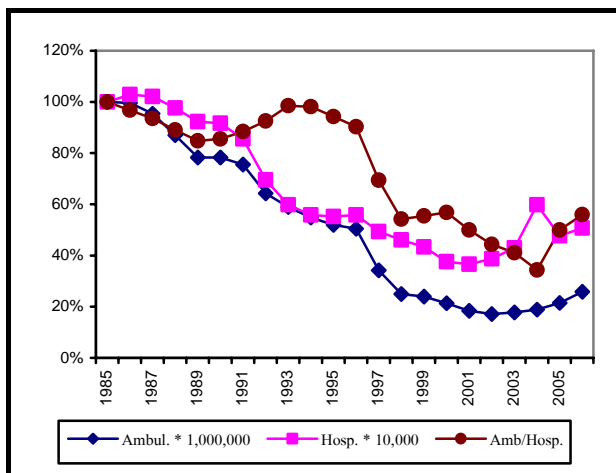
reveals two periods: 1990–1998 and 1998–2001. In the first phase of the first period (1990–1995), the relatively more expensive hospital visits dropped more rapidly (by 40%). As a result, the cost-effectiveness of the health system increased. In the second phase of the first period (1995–1998), ambulatory visits decreased more quickly (by 52%). As a result, the cost-effectiveness of the health system dropped sharply (by 43%).

In 1998-2001 this pattern is repeated on a smaller scale. We are now seeing a rise in the ratio, indicating productivity improvement. State funding for ambulatory services increased in 2005, while in 2006 ambulatory medical care was entirely state funded. These strategies have been immediately reflected in the "ambulatory visits/hospital visits" indicator.

The HSPA sample survey data provides additional information on these utilization patterns. In the event of a perceived need for medical care, 23.7% of respondents sought it in a hospital, while 69.0% went to a PHC institution (medical centre, ambulatory or polyclinic). Of those who sought hospital care, 89.8% went to public hospitals, 9.6% to private hospitals and 0.6% to charitable hospitals.

Hospital Human Resources
The number of doctors and nurses being educated in the tertiary and specialized secondary state medical institutions is given in Figure 28. The figure indicates that while the number of graduated doctors has been stable, there has been a continuous decline in the number of graduated nurses since 2001.

Figure 28. Public medical institution graduates, 2001–2006
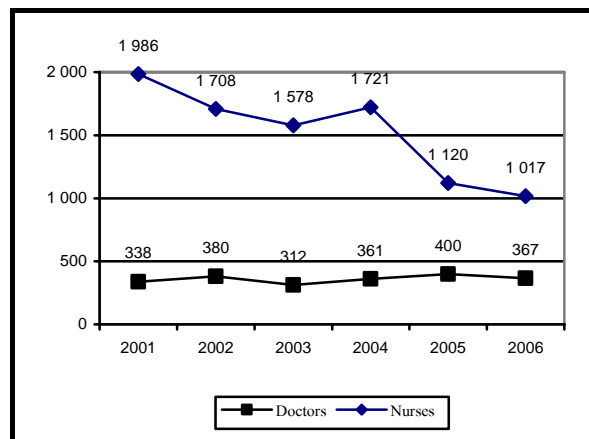
Source: NIAC

From 2001 to 2006, the average annual increase in the number of active doctors was 133. After a notable decline, the last three years have seen the absolute number of nurses increasing by an average of 277 annually (Figure 24).

Figure 29. Doctors and nurses in Armenia
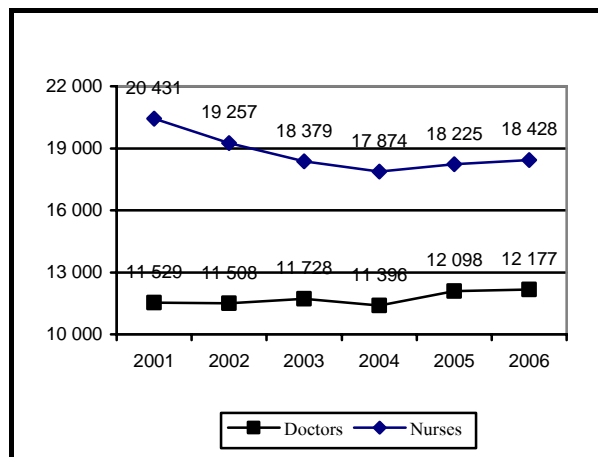
Source: NIAC

Figure 30. Doctors in hospitals and ambulatory polyclinics, 1997-2006
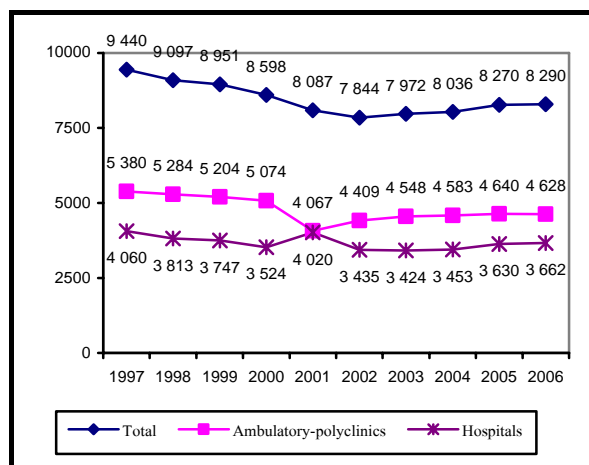
Source: NIAC

The distribution of specialists in hospitals has been changing, as depicted in Figure 31.

Figure 31. Changes in numbers of doctors in hospitals from 2001 to 2006
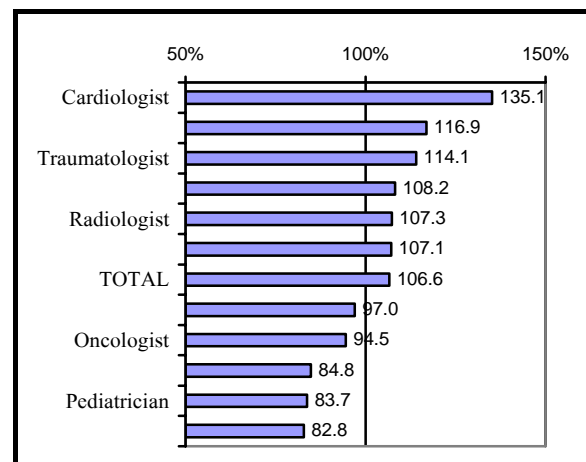
Source: NIAC

In absolute terms the most significant is the reduction of therapeutists and pediatricians – by 231 and 205, respectively – while the numbers of cardiologists and obstetrician-gynecologists have increased by 98 and 66, respectively.

The ratio of patients accessing for the most prevalent diseases and the number of specialists in these diseases provides an approximate picture of the specialists' caseloads.

Figure 32. Ratio of patients of selected non-communicable diseases to the number of specialists in the diseases, 2006

Source: NIAC.

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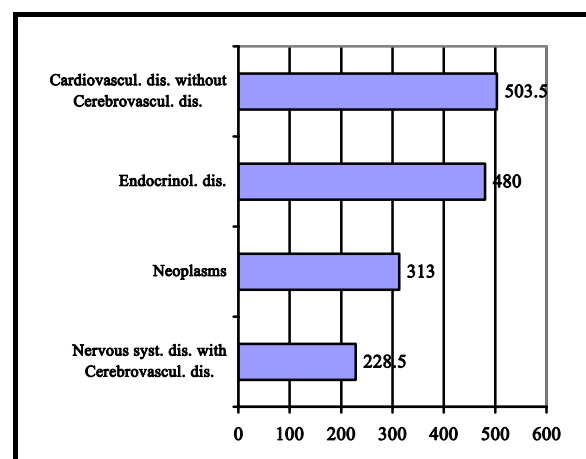
Accessibility and utilization of medical services

Figure 33. Expenditures for inpatient and outpatient care, Ministry of Health and households, in billion drams[9]
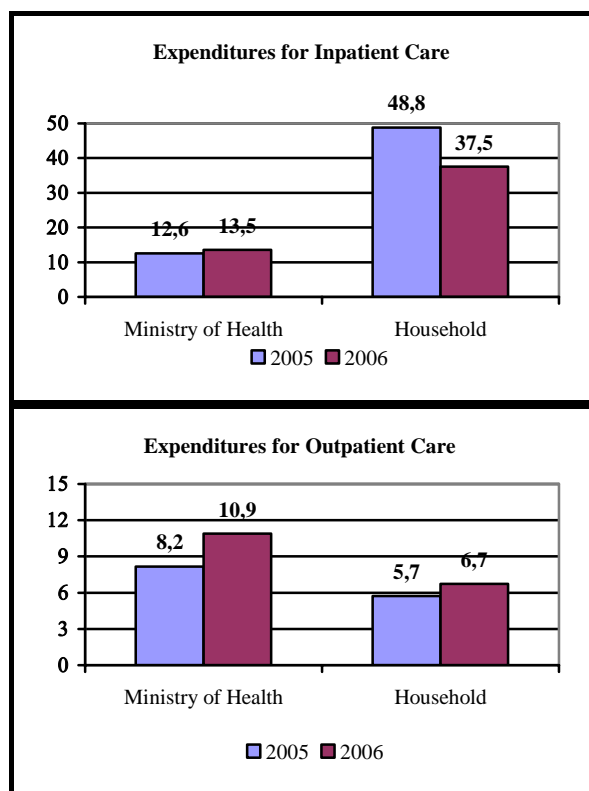
It may be that one of the factors contributing to the reduction of inpatient care expenditures by households was greater access to PHC. Nevertheless, cash payments in the hospital settings are almost three times higher than the expenditures of the Ministry of Health. If we take into account that according to the 2005 review,[10] the prices estimated by the State Health Agency (SHA) for core services do not exceed, on average, 50% of overall real spending, then accessibility of hospital care for vulnerable population groups would seem problematic.

Exemption mechanisms for vulnerable groups have been designed but remain to be fully implemented.[11]

Resources and Cost-Effectiveness

Figure 34. Patients admitted to hospital per 100 population, number of beds per 1000 population, average length of stay in hospital, System of the Ministry of Health, 1990–2006
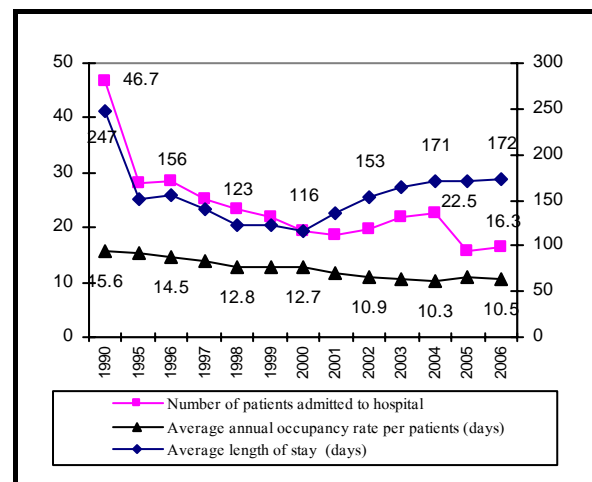
Source: NIAC

The number of patients admitted to the hospitals of the Ministry of Health in 2006 was just over a third of the number admitted in 1990, while all hospital admissions decreased by almost 50%. Similarly, the number of ambulatory visits has dropped by a factor of three. Along with the reduction of patient numbers, the bed occupancy rate has dropped, meaning that the cost-effectiveness of the hospital system has also declined.

Another indicator of hospital care accessibility is the timeliness of emergency surgeries (Figure 35). These indicators improved from 2002 to 2004, but in 2005 the trend reversed. Overall, however, these values remain significantly below 1990 indices.

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[9] These data include "primary health care/core medical and diagnostic services" subcategory seen in chapter 1.

[10] Review of cost price of services included in the envelope of core services. Yerevan, Republic of Armenia, Ministry of Health, 2006. *Business Consult Armenia*. Reet Belgium, Hera, 2006.

[11] Health Systems in Transition: Armenia. Copenhagen, European Observatory on Health Care Systems, 2006.

Figure 35. Percent of Surgical care, received later than 24 hours following diagnosis as a share of total hospital admissions, 2006
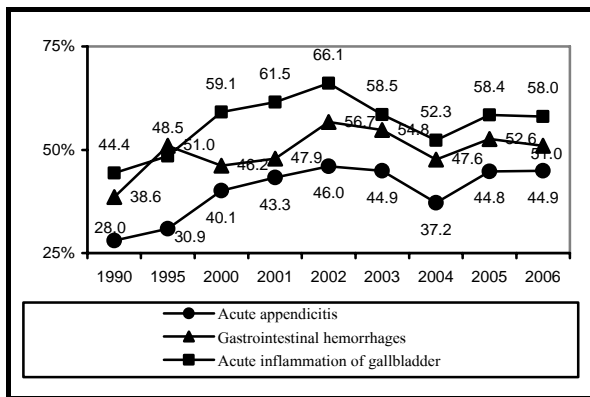
Source: NIAC

Outcomes and survival

Immediate outcomes of hospital care include in-hospital mortality and complications of care. From 1999 to 2001 hospital mortality grew from 1.1% to 1.9%, an increase of 72%. Then, it declined, and has stabilized for the last three years at around 1.6% (Figure 37).

Figure 36. Hospital mortality as % of patients hospitalized, 1990–2006
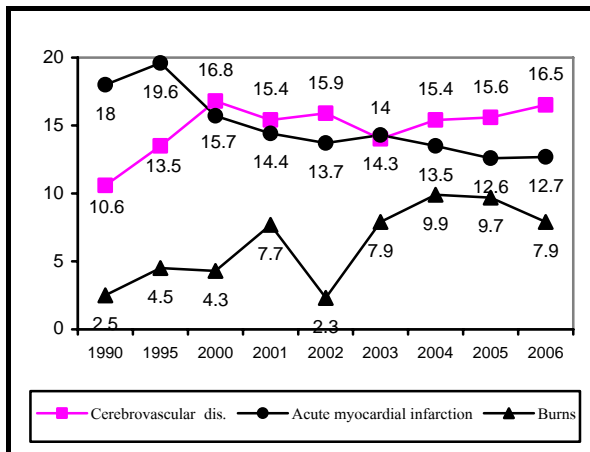
Source: NIAC

Figure 37: Hospital mortality as % of patients hospitalized, 1990-2006
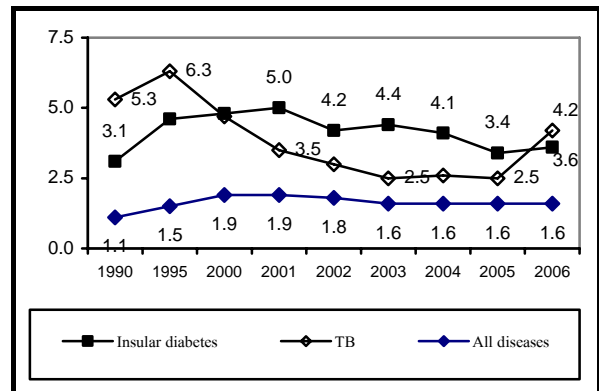
Source: NIAC

Hospital mortality from acute myocardial infarction in 2006 was 30% lower than in 1990, but mortality from cerebrovascular diseases was 56% higher over this period. Clinical studies show that appropriate timely treatment can reduce mortality from the cerebrovascular diseases by 40%.

Figure 38. Percentage of hospital mortality from acute myocardial infarction and cerebrovascular diseases, 1990–2006

Source: NIAC

20
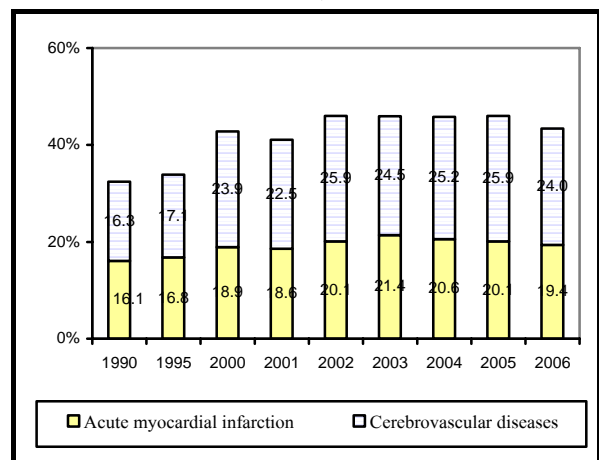
Figure 39. Hospital fatalities as % of total fatalities, 2006[12]
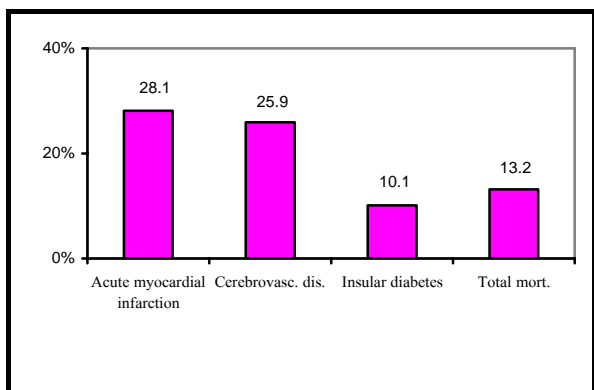
Source: NIAC

The percentage of hospital fatalities is higher than the mean in the case of acute myocardial infarction and cerebrovascular diseases, with every fourth fatality caused by these diseases happening in the hospital.

Some cancer survival rates are particularly influenced by clinical performance. The probability of surviving five years after breast cancer diagnosis has increased by five percent in the last five years.

Figure 40. Probability of surviving five years after breast cancer diagnosis, 2001–2006
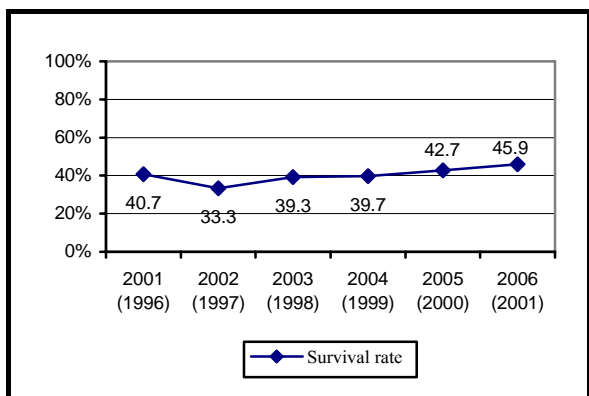
Source: National Oncology Centre

The high percentage of hospital fatalities due to acute myocardial infarction and cerebrovascular diseases is an indirect reflection of the

accessibility and quality of PHC services, and not strictly due to hospital factors. Similarly, breast cancer survival is greater with early detection and treatment that also relies on PHC interventions. However, a number of the quality indicators do identify adverse outcomes for patients that can be addressed through improved hospital sector performance.

Figure 41. Percentage of postoperative mortality for patients admitted more than 24 hours after diagnosis, 2006
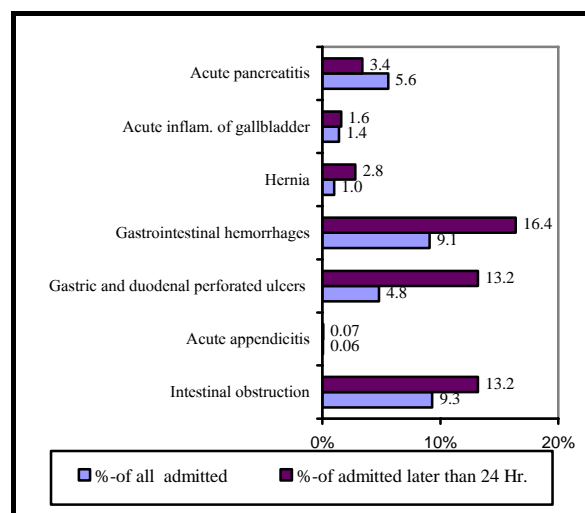
Source: National Oncology Centre

Figure 42. Percentage of postoperative complications due to hospital-acquired infections, 2002-2006

Source: NIAC

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[12] The calculation of this indicator is complicated, because the hospital mortality rates are not given according to the ICD-10.
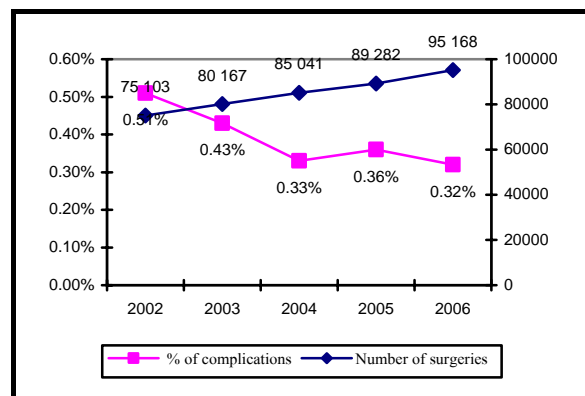
Figure 43. Percentage of complications from blood transfusion
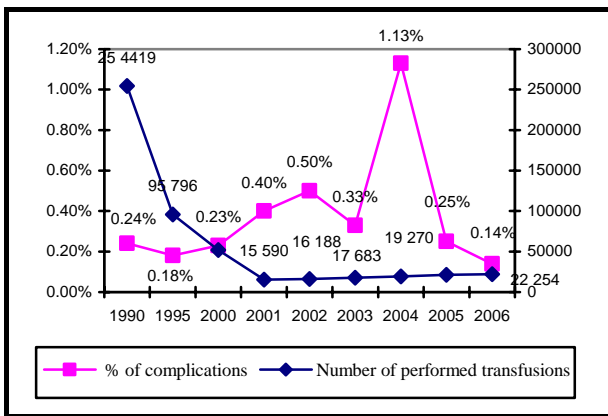
Source: NIAC

It is necessary to note that the number of blood transfusions in Armenia dropped sharply from 254 419 in 1990 to 15 590 in 2001, and then slightly rebounded to 22 254 in 2006; this may indicate that the accessibility of medical services requiring blood transfusion has declined. The peak of complications from blood transfusions in 2004 requires further study.

Conclusion

Numbers of hospital beds have decreased to more closely reflect population needs, while most reductions in bed numbers have taken place outside. An increasing role for private hospitals is emerging. Comparisons are difficult between public and private hospitals because of potential case variation.

Overall, lengths of stay and access to emergency care show some improvements, but financial barriers to access remain high in this sector. It is not clear how this affects the population or general health outcomes, but once care is received it is possible to show hospital outcomes.

Generally, complications of care and other adverse events have been stable or improving. While this is positive, there are still significant opportunities for improvement.

CHAPTER 3: FOCUSING ON MATERNAL AND CHILD HEALTH

| Strategic investment, practice changes and physician training | → | Modify maternal behaviors and improve access to care | → | Improved outcomes and health weights |
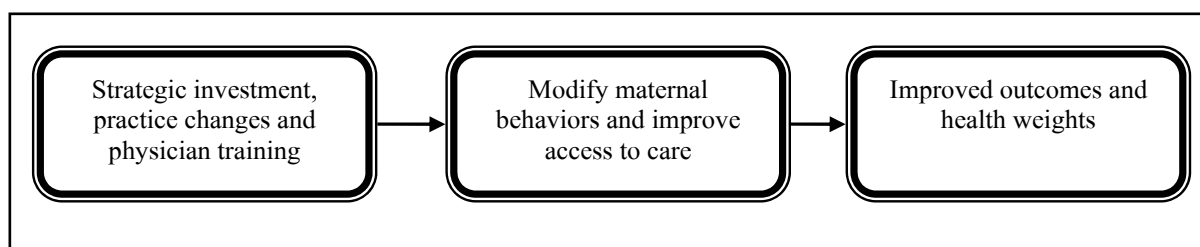
Maternal and child care pose particular challenges from a strategic perspective. The contributors to good outcomes include components throughout the health care system, as well as general social and economic conditions. The characterization of strategies here is fairly narrow, and is directly linked to access to services and related patterns of behaviour. The Ministry of Health has identified maternal and child health as a key prerequisite for maintenance of the population's health. In 2003 the government approved a maternal and child health care strategy for 2003-2015,[13] a comprehensive program also addressing needs of adolescents and disabled children.

The strategic goals of maternal and child health have five main components:[14]
1. child health care
2. adolescent health care
3. maternal health care
4. reproductive health care
5. improvement of child nutrition.

This chapter will briefly review all of the goals other than adolescent health care.

Strategic investment, practice change and training

After the approval of the maternal and child health care strategy in 2003, financing for the outpatient obstetric-gynecological services has increased by an average of 54% annually, while for the corresponding inpatient services, the increase has been 16% annually, although state funding for it had not yet recovered to the 1999 levels by 2005.

Figure 44. Inpatient and outpatient obstetric-gynecological medical funding 1999-2006[15] in billions of drams
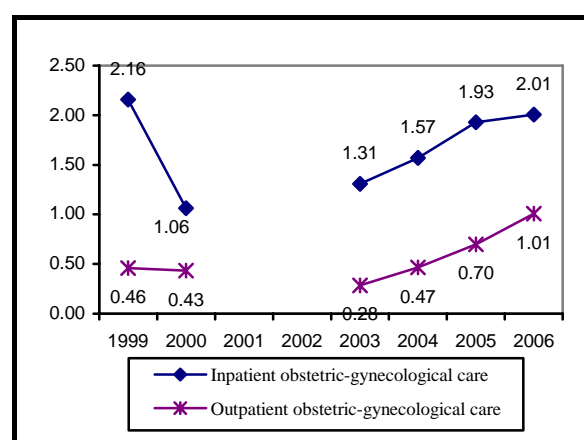
Source: Ministry of Health

Anecdotal evidence suggests high informal payments for obstetrics-gynecological services, which may indicate remaining discrepancies between public funding and actual cost of services. [16]

An increasing role for family doctors is planned and decreasing reliance on specialists, as described in chapter 1. The overall number of pediatricians in Armenia in 2006 was 1049, including 780 working in PHC. There were also 863 obstetrician-gynecologists.

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[13] Government Decree N 1000-N of 8 August 2003

[14] The list of strategic goals and monitoring indicators for 2003–2015 is presented in an annex.

[15] The structures of 2001 and 2002 health budgets had changed and categories were missing. NIAC health financing data are limited. Health budgets and general financial data on the state health programs are missing, and categories are changing, creating difficulties in collecting information on the state financing trends and specific programs.

[16] Health Systems in Transition, op. cit.

Figure 45. Pediatricians, obstetrician-gynecologists and therapeutists, 1990–2006
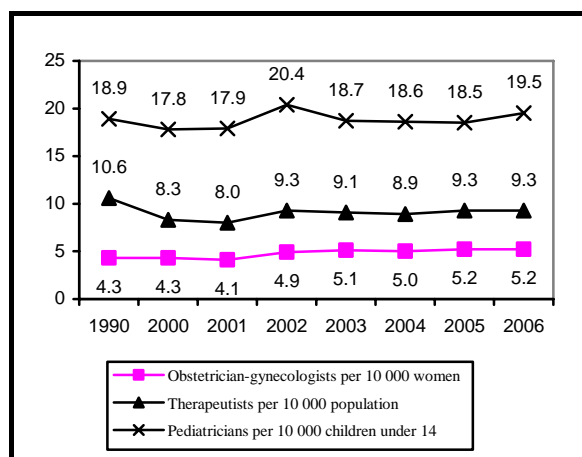
Pediatricians are the largest group of doctors serving this population, but their number is expected to decline.[17] PHC reforms will transfer a number of the functions currently performed by pediatricians to family doctors. Accordingly, in 1999 the Pediatric Department of Yerevan State Medical University closed, with the last graduates in 2004.

Accessibility and utilization of medical services

Limited evidence suggests high informal payments for obstetric-gynecological services, and child delivery in particular[18]

Out-of-pocket costs for abortions and sedative analgesics were reported to be 15 000–35 000 drams. Estimated abortion-related spending amounts to 420 million drams. Overall state funding for obstetric-gynecological services amounted to 1.01 billion drams (including caesarean sections) in 2005, far less that the 1.9 billion drams estimated total spending on

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[17] A number of privet institutions preparing doctors and nurses were established in Armenia in the last decade. There is a need to account for them from the HSPA as well as strategic human resource planning perspectives

[18] Health Systems in Transition, op.cit.

abortions and caesarean sections within the health system.

Family Planning

Table 5. Contraceptive use by married women, 2000 and 2005

METHOD	2000 (%)	2005 (%)
USE CONTRACEPTION	**60.5**	**53.1**
Modern methods	**22.3**	**19.5**
sterilization	2.7	0.6
pills	1.1	0.8
IUC	9.4	9.4
condoms	6.9	8.1
foam/gel	0.2	0.2
LAM	1.9	0.4
Traditional methods	**38.2**	**33.6**
rhythm method	4.8	3.8
coitus interruptus	31.9	27.7
folk methods	1.5	2.1
DO NOT USE CONTRACEPTION	**39.5**	**46.9**
TOTAL	**100**	**100**
IUC – Intrauterine Contraceptives LAM – Lactation Amenorrhea Method		

Figure 46. Health system contraceptive coverage, 1990–2006
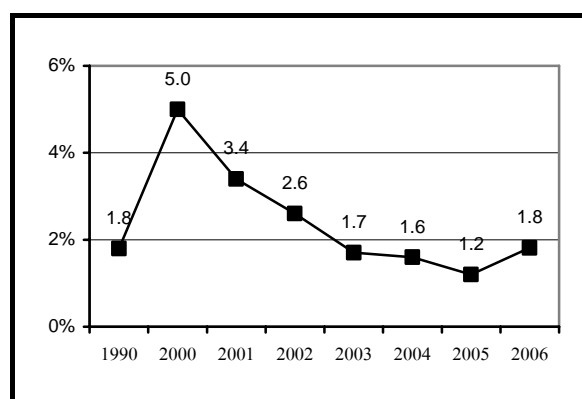
The table and figure data show that the health system has a limited role in family planning. This role could be increased if there were more home visits by PHC doctors (see

Figure 13), providing lifestyle and family planning advice. A major concern is that every third woman not using contraceptives does not do so because of primary or secondary infertility.

Table 6. Married women's reasons for not using contraceptives, 2000 and 2005

REASON	%
Reasons related to reproduction	**65.4**
rare coition or absence of husband	10.3
climacterium	17.9
primary/secondary barrenness	35.7
want to have more children	1.5
Against contraception	**16.8**
Lack of knowledge	**0.8**
Reasons related to a method	**13.9**
Other reasons	**1.9**
Do not know	**1.0**
Total	**100**

Source: DHS

Prenatal and Neonatal Care
Figure 47 shows two major declines in early prenatal care. The first was in 1995, when Armenia faced socioeconomic collapse, and the second one is in 2000 compared to 1995. During the last years coverage is almost unchanged.

Figure 47. Early coverage of prenatal care (prior to 12 weeks per 100 pregnancies), 1990-2006
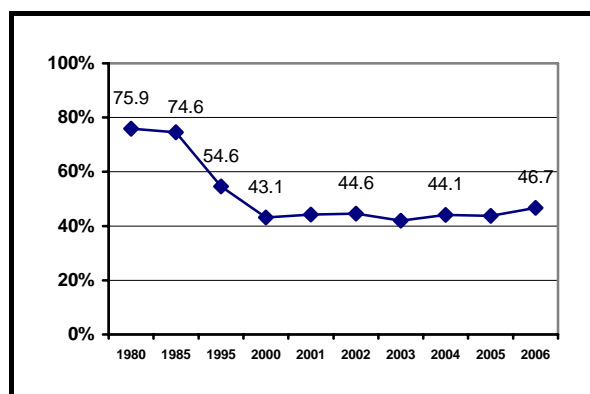
Source: NIAC

Figure 48. Percentage of deliveries with professional attendance, 2000 and 2005
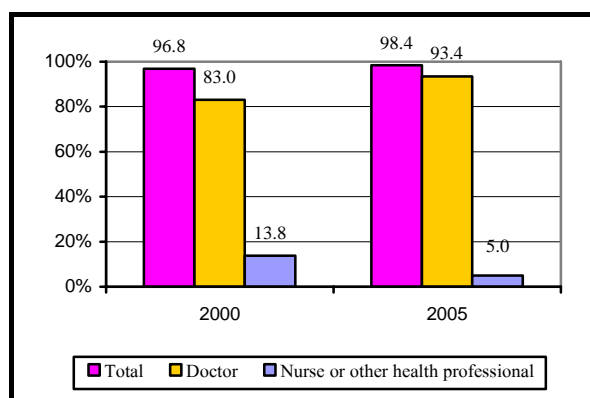
Source: DHS

Figure 49. Breastfeeding of infants 0-12 months old, 1990–2006
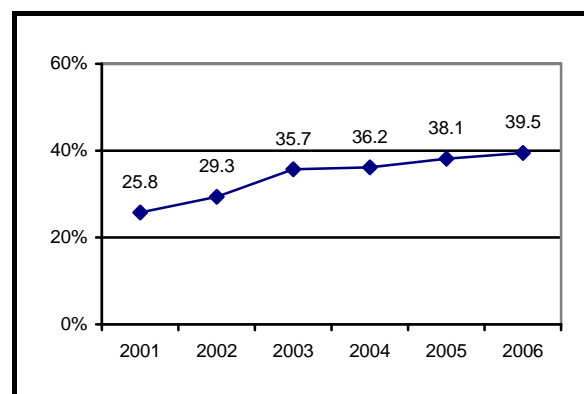
Source: NIAC

Immunization
In 2001 immunization coverage of children was higher than the Maternal and Child Strategy target for 2015 (95%). However, rates have been declining every year (Figure 50), with the immunization coverage of children under 1 year of age showing the greatest decline.[19]

Figure 50: Immunization of children under two years old, 2001–2006
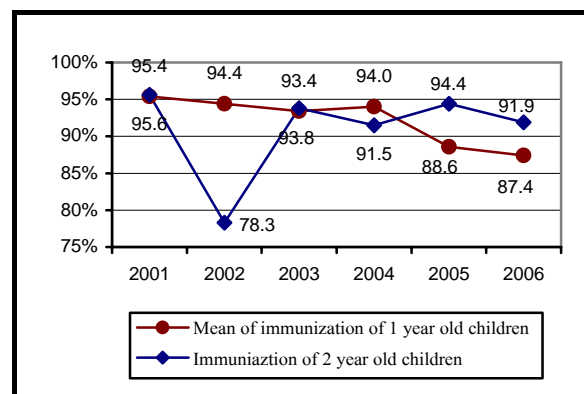
Source: NIAC

Improved outcomes and healthy weights

The outcomes of care described here fall into two categories. First descriptions of adverse outcomes

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[19] According to the sample survey of the HSPA 2007 this figure was 90.1 ± 3.84%. The assessment is quite precise, if we take into account a quite small number of families with children under one year old (209) in the sample.

attributable to institutional performance will be described. This is followed by indicators commonly used to gauge population health more generally. The latter indicators will be influenced by PHC performance as well as broader social and economic determinants.

Adverse outcomes

The indicators described in this section (with the possible exception of caesarean section) reflect the quality of services at obstetrical institutions, where the overwhelming majority of deliveries are taking place. Figure 51 presents standardized trends for specific indicators; the values of indicators per 1000 deliveries are provided in Annex 8.

Figure 51. Natal and postnatal complications in obstetric institutions, 1990-2005 (1 000 deliveries, 1990 as a baseline with a value of 1)
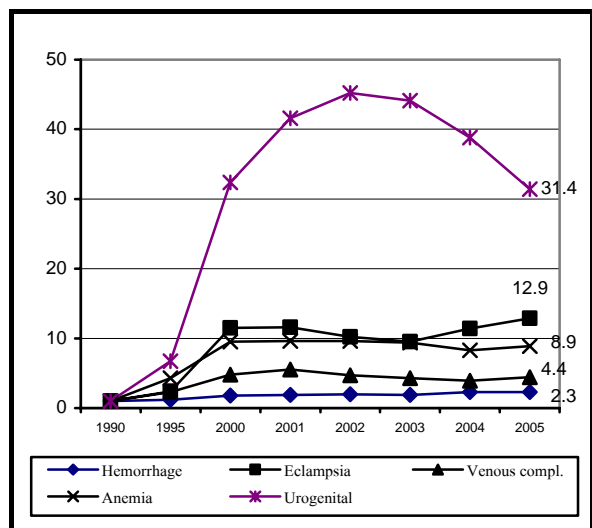
Source: NIAC

The figure reveals that in the 2000s care at obstetrical institutions qualitatively worsened as compared to 1990 (the changes are exponential, not percentages). Furthermore, it should be noted that there was a ten-fold growth in caesarean section deliveries between 1980-2005. (Figure 52) This increase has taken place at a time when the number of other surgical interventions (vacuum extraction, ectopic pregnancy, forceps delivery) remained almost unchanged.

Figure 52. Caesarean Sections, 1980–2006
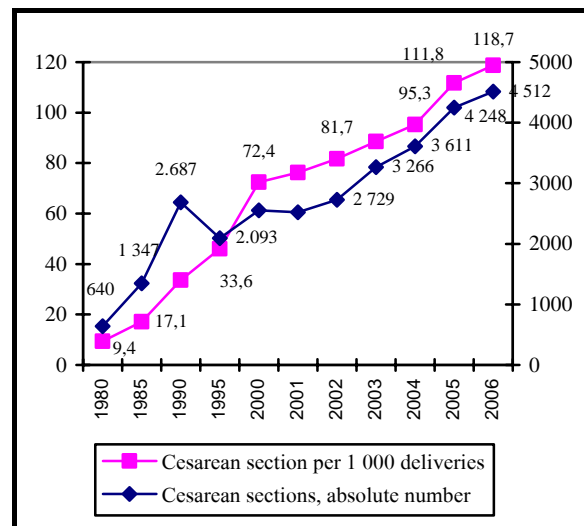
Source: NIAC

Understanding the reasons for such significant growth in the number of caesarean sections is important beyond issues of maternal and child health, in the context of limited financial resources of both the state and the population.

Birth rate and fertility

The overall birth rate from 1970 to 1990 was around 22 per 1000, but has since dropped to around 12 per 1000 (Figure 53).

As would be expected, the fertility rate has also declined,[20] from 2.62 in 1990 to 1.4 in 2006[21].

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[20] The mean number of children born to one woman during her entire life, if the birth rate for that year is maintained.

[21] It is assumed that society maintains its simple reproduction if the fertility rate is higher than 2.15. In Armenia this rate has been lower than 2.15 since 1996.

Figure 54. Pregnancy outcome trends, 2000 and 2005
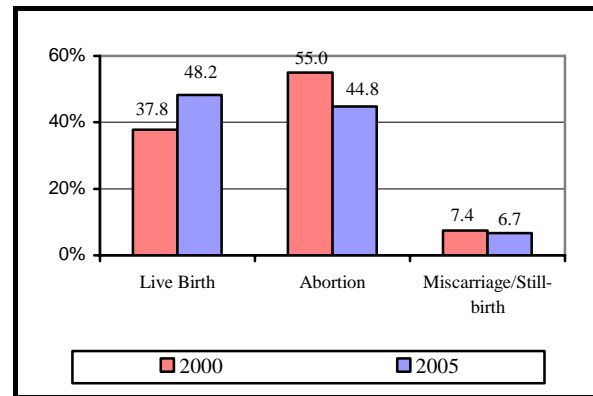
Source: DHS

Healthy Weights

The percentage of live births with low birth weight is given in Figure 55, and shows a recent increase. Low birth weight is an important predictor of child health status and subsequent poor nutrition and is associated with higher child mortality.

Figure 55: Children with low birth rate, as percentage of the total live births, 1980–2006
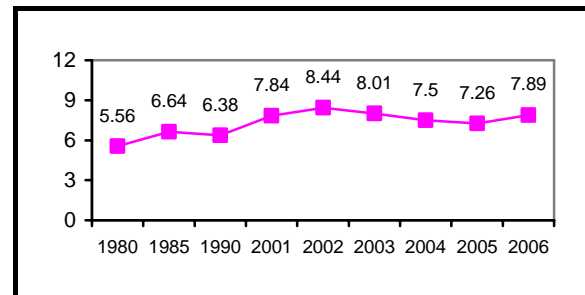
Source: NIAC

According to DHS data, nutritional status in 2005 had not changed since 2000, with about 2% of children under the age of five malnourished, 2.6% underweight, and 13% stunted.

Figure 53. Overall birth and fertility rates (per 1000), 2006
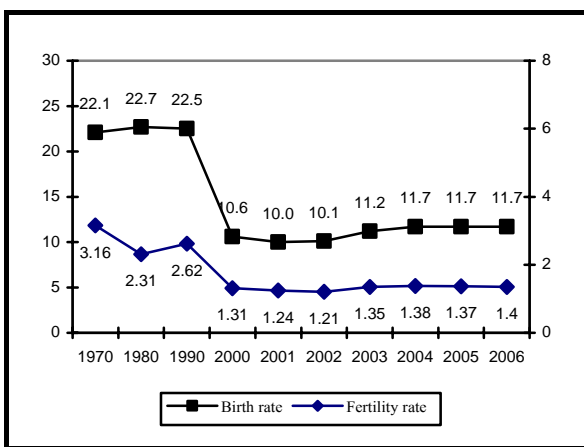
Source: NSS

The abortion rate in Armenia is almost equal to the birth rate. The reduced percentage of abortions shown in Figure 49 is explained by the increased use of other termination options.[22]

According to the data in Table 6, the most prevalent reason that women do not use contraception is infertility, the absence of sexual intercourse or husband (according to the DHS 2005, the husbands of 14% of married women are absent). Thus, improving the demographic situation should be an area of emphasis.

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[22] According to the DHS 2005, a factor reducing the ratio of abortions is the use of Citetek for pregnancies under 63 days. In this case there is no need for medical intervention, and cases may not be reported as an abortion.

Figure 56. Percentage of stunted, malnourished and underweight children ages 0-5, 2005
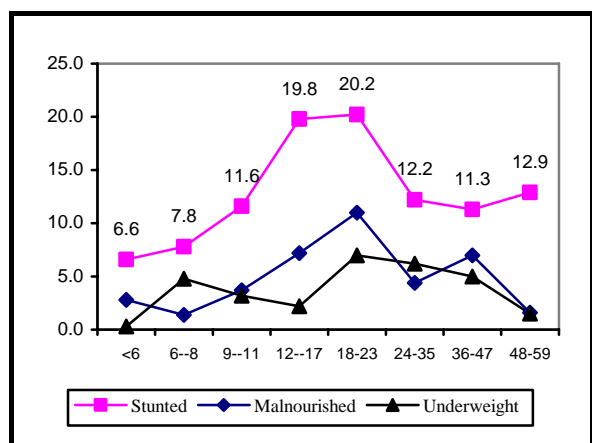
Source: DHS

Maternal and Child Mortality

In 2003, the three-year mean of maternal mortality was within the target value of the maternal and child health care strategy (lower than 20/100 000 deliveries), but in recent years it has increased and exceeded the target.

Figure 57. Maternal mortality per 100 000 deliveries, three-year means.
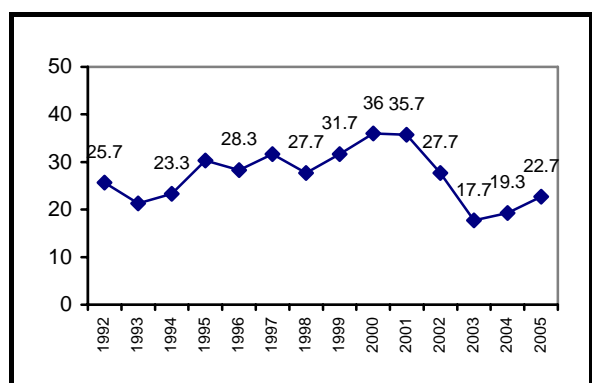
Source: NSS

The mortality rates of children between 0–5 years of age are examined for the following age groups: child mortality (0–5 years); infant mortality (0–1 year); neonatal mortality (0–28 days), divided into early neonatal (0–7 days) and late neonatal (8–28 days) and post neonatal (29 days to 1 year). Perinatal mortality, that is, foetal deaths at pre-delivery and early neonatal stages, is also examined.

Figure 58. Stillbirth, perinatal and neonatal mortality, 1980–2006 (per 1 000 births/ live and still births)
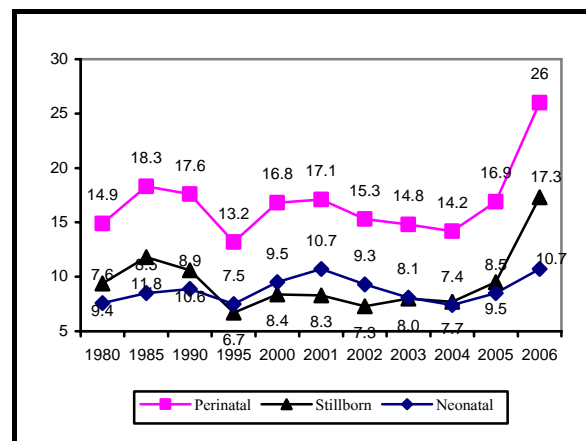
Source: NSS

For the 20 year period ending in 2004, these indices had declined.[23] The increase in 2005 is partly attributed to transition to a new WHO classification system.

Mortality trends for ages under one year and under five years have also increased since 2004 (Figure 59). The shape of the graphs suggests that movement of the first category determines that of the second.

Figure 59. Mortality of children under 5 years and under 1 year old, 1990–2006 (per 1 000 live births)
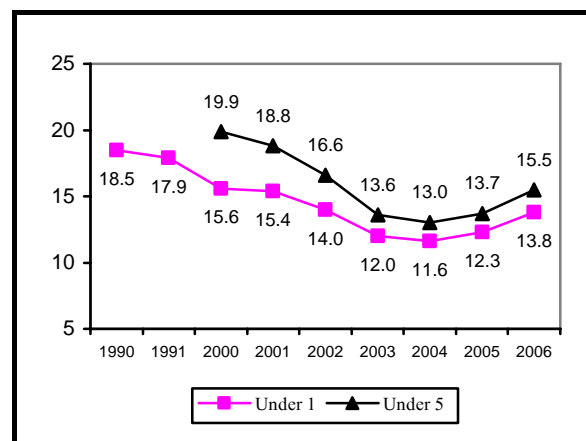
Source: NSS

_____
[23] In our opinion, the sharp drop of indices in 1995 is related to the quality of statistics at that time.

The only declining mortality trend is the post-neonatal mortality rate.

Figure 60. Neonatal and post-neonatal mortality, 1980-2006(per 1 000 live births)
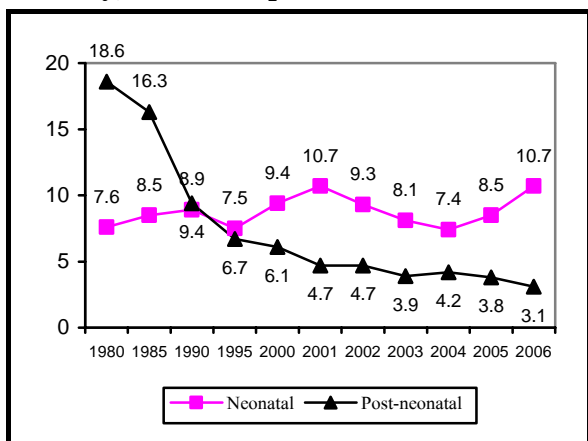
Source: NSS

Two thirds of deaths in the first year are attributed to complications of the perinatal period. This may indicate performance problems with antenatal care, or reflect more broadly on PHC.

Current trends in maternal and child health raise questions regarding the target of quality care initiatives, which could be general therapists, obstetric-gynecologists or pediatricians. Progress towards an increased role for family doctors risks continuing the negative trends.

Conclusion

Specific maternal and child health strategies have been implemented, but success depends on current PHC and hospital reforms. The strategies described in this section must be considered in light of those described in chapters 1 and 2.

Performance in relation to the strategic direction has been low. Fertility rates are low, terminations are high, and there are financial barriers to hospital-based obstetrical care. Despite this, there has been an increase in births attended by physicians and outcomes for children are generally stable or improving.

The greatest concern for adverse outcomes of maternal care, which reflect on the performance of obstetrical institutions. These trends must be monitored closely, and maternal care and hospital reform strategies must be well linked.

CHAPTER 4: IMPROVING HSPA ANALYTICAL CAPACITY

The HSPA relied on a range of administrative data sources to create an overall view of the Armenian health system. An important addition was the sample survey that contributed much of the population information.

To some extent this is masked in the strategic summary. This report selected information to show how an HSPA can be used to monitor the reform agenda and related strategies, but the examples were chosen because this data exists, rather than because these are the best ways to monitor success. Clearly it will be vital that new initiatives and advanced practices be tracked and evaluated. Improved information and analytical capacity is needed to support effective policy development and health system planning and management.

Care providers will also benefit greatly from improvements in information capacity. Enhanced technology can be a benefit for PHC clinical practice and performance assessment. Similarly, good information is essential for monitoring outcomes of care and for reduction of adverse outcomes in hospitals. Linking across clinical settings further promotes opportunities for safe and effective patient management.

Development of HSPA capacity will support continued production of information needed by decision-makers. An important function will be the identification of gaps and suggestion of solutions. This will require identification of needed infrastructure, and advice on legal and policy frameworks.

Armenia already has some structural, methodological and human resource foundations to support HSPA development. A significant amount of the information used in the 2007 HSPA has been provided by the National Health Information Analytical Centre of the National Institute of Health of the Ministry of Health.

It is important that there be sufficient budgetary support for implementing the HSPA fully and with quality.[24]

A proposed model for information management at the NIAC

During the 1990s, the disintegration and reestablishment of public administration in Armenia disrupted information management, including the one needed for health system performance assessment.

Different segments of health information are collected and maintained by different entities, or even in different divisions within the same organization. These entities are insufficiently informed as to what related information is being collected and in what format it is being maintained. Usually, the methods for managing information are inconsistent, making their integration, and the application of mathematical-analytical methods and computer analysis impossible. Information collected in this manner feeds unmanageable paper archives.

The three priorities for providing adequate information-analytical technologies are:
1. unified collection of health information
2. a repository of health system information[25]
3. a revised concept of information collection and archiving at the NIAC.

Unified collection of health information means that:
- all information collected from medical institutions should be organized in a system of logically interrelated databases;

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[24] The 2007 HSPA was conducted within the scope of the Health System Reform Project financed by WB credit funds.

[25] The custodian of all databases of health system information. This body could also carry out formation and maintenance of some or all databases.

- the information should not be redundant;
- only primary information (on physical, financial or human resources, patients, diseases, visits etc.) should be entered;
- information should be collected from all medical institutions regardless of their departmental affiliation or ownership form; and
- the database should contain relevant information to support analysis of compliance and practice.

It should be noted that the information of the National Health Accounts and information on public health expenditures collected at the SHA could also be integrated into this database. It is necessary (along with treatment protocols) for an adequate assessment of the system's cost-effectiveness, financial management, efficiency and quality.

It is necessary to examine the possibility of combining (or supplementing) health databases with other administrative databases, including birth and death records, which are important for the validity of information and for assessing mortality factors.

Coordination and integration of activities of the Ministry of Health and the Information-Analytical Centre of the Ministry of Labour and Social Issues is required, since many MLSI social programmes are in fact health programmes.

Transition to modern methodologies

NIAC information management methods are outdated. The information collected on the population health and medical institutions is not primary, but rather generalized information, which extremely limits its utility for analytical purposes. As a result, it is theoretically impossible to obtain the answers to a number of questions necessary for the HSPA. Furthermore, the database management system (MEDSTAT) used for systematization of collected information is obsolete. It is not compatible with modern database management systems or analytical software.[26] The information collected here is

fragmented. The staff of the Statistical Department has inadequate tools to address analytic questions. Thus, the processing of one simple analytical question can take days.[27]

Currently, inadequate emphasis is given to information management, thus impeding decision-making and efficient management. Thus, the third core information-analytical task of radically revising the concept of information collection and archiving at the NIAC. It is necessary to move from collection of summarized annual or monthly information from medical institutions to the collection of primary information in the form of relational databases.

If collection of health information were organized according to modern database management principles, then required information for the most recent year could be valid and accessible for analysis during the early stages of the following year. Currently, this takes more than six months. Moreover, such a system would allow urgent information-analytical processing of requests from the Ministry of Health and other decision-makers. However, effective information management is also dependent on improved technologies for collecting and organizing information.

It is important to note that information-analytical issues are much wider than simply supporting the HSPA. Updating information collection and methods will not only strengthen the HSPA analytical capacities, but will also help to solve many other issues of the health system.

A data system will require appropriate infrastructure to unite the relevant bodies in one computer network, and ensure the integration of information from other public institutions. The approximate size of the network could be considered as equal to the number of medical institutions recognized as separate financial and economic units.[28]

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[26] The system was developed in 1992 for a DOS operating system. It summarizes information collected from the hospitals only, does not have statistical functions and lacks graphic interfaces. Currently the protocols for database creation are developed by NIAC specialists.

[27] During HSPA analytical activities around 100 interrelated information-analytical questions may come up on a daily basis and it is impossible to jointly formulate them in advance.

[28] Their approximate number, without private dental clinics, is 140 hospitals, 64 autonomous polyclinics and 232 ambulatories, including 227 rural.

Evidence also suggests that improved information technology will also strengthen quality of care and support research and scientific activities that will lead to identification of best practices and help achieve system performance targets.

Conclusion

HSPA depends on the availability of primary information. Where administrative data cannot be collected, surveys should become a routine tool for obtaining information of particular interest to evaluation and policy development. A critical factor in making HSPA valuable in the policy cycle is the ability of the Ministry of Health to strategically define their information needs and use the HSPA information in preparing policy proposals.

ANNEXES

ANNEX 1. HSPA and reform evaluation comparison

Table 7. Comparison of health system performance assessment and the health system reform evaluation

Health system performance assessment	Reform monitoring and evaluation
Time frame	
Continuous process	Time-limited process
Focus	
Key health system goals and functions	Specific reform objectives and activities
Purpose	
To assess attainment of core health system goals and to monitor the changes to the system	Monitoring implementation of reforms and evaluation of outcomes
System management	Management of reforms, accumulation of experience and knowledge
Point of reference	
Comparability of system's conditions over time	Comparison of system's conditions before and after reforms
Cross-country comparability	Comparison of planned and actual reform processes and results
Area of implication	
System policy making	Management of reforms
Defining system reforms and their priorities	Evaluation of goal attainment
	Acquiring experience
Application scale	
Universal - captures all main goals and functions of health system	Selective – determined by the content of reforms
Accountability	
Government to the population	Government to the population
	Government to the donor agencies
	Donor agencies to their management boards
Methodological differences	
A normative health system function	
Data should be fully accessible by the public	Reforms could be partially open to public
Often reported internationally (WHO, UNICEF, WB)	
Standardized methodology	Task-specific methodology
Quantitative data	Quantitative and qualitative data
Institutional and local capacities	Can be outsourced

ANNEX 2. Sources of HSPA data

- Republic of Armenia Ministry of Health

- National Health Information-Analytic Centre of the National Institute of Health

- National Statistical Service

- State Health Agency

- National Oncological Centre

- Central office of the National Tuberculosis Control Program

- National Centre for AIDS Control

- National Blood Transfusion Centre

- Health Project Implementation Unit

- HSPA Sample Survey

- Armenia programmatic public expenditure review (PPER); Technical assistance on primary health sector analysis in Armenia, Final report. Yerevan, World Bank, 2006.

ANNEX 3. General description of health system

Table 8. Medical institutions of Armenia

	Ambulatories & polyclinics	Estimated capacity	Hospitals	Population
Republic of Armenia	460	39 582	140	3 219 200
System of the Ministry of Health	386	31 868	106	
Yerevan	97	16 451	45	1104.9
Aragatsotn	26	1 001	6	140.0
Ararat	60	2 920	9	275.1
Armavir	60	2 224	6	280.2
Gegharqunik	35	2 483	9	239.6
Lori	46	3 508	15	282.7
Kotayk	43	4 302	10	276.2
Shirak	36	2 228	22	281.3
Syunik	25	1 959	8	152.9
Vayots Dzor	9	996	4	55.8
Tavush	23	1 510	6	134.2

Source: NIAC

Table 9: Human resources of hospital sector

	1990	1995	2000	2001	2002	2003	2004	2005	2006
Total	13 912	12 237	11 923	11 381	11 432	11 621	11 345	12 052	12 130
Therapeutists	2 119	1 674	1 633	1 523	1 417	1 351	1 311	1 320	1 292
Pediatricians	1 859	1 647	1 345	1 254	1 195	1 149	1 103	1 105	1 049
Obstetrician-Gynecologists	767	791	732	804	815	851	834	863	870
Surgeons	481	419	474	478	500	544	507	499	512
Cardiologists	328	310	271	279	310	336	344	356	377
Neurologists	384	355	312	305	296	301	282	299	296
Endocrinologists	131	133	157	160	171	163	174	181	187
Traumatologists	185	154	162	149	148	159	158	164	170
Neonatalogists	150	163	177	198	188	176	169	157	164
Oncologists	57	57	68	73	81	70	54	57	69
Radiologists	76	48	55	55	121	62	60	54	59

Source: NIAC

ANNEX 4. Risk factor assessment indices

Body mass index

BMI = weight [kg] /(height [cm])^2

Scale:

Underweight: $18.5 > BMI$
Normal weight: $18.5 \leq BMI \leq 25.0$
Overweight: $25.0 < BMI \leq 30$
Obesity: $30.0 < BMI$

Alcohol use

The alcohol use index was calculated on the basis of the 2007 HSPA sample survey data.

$$AU = F_B \times E_B + F_W \pm E_W + F_V \times E_V$$

where
    AU – alcohol use index
    F_b – frequency of beer use
    E_b – alcohol content of beer
    F_w - frequency of wine use
    E_w - alcohol content of wine
    F_v - frequency of vodka use
    E_v – alcohol content of vodka

    The index represents use of pure alcohol in gram per day.

    The indicator of alcohol use is more than 20g pure alcohol per day.

Insufficient Physical Activity

The physical activity index was developed on the basis of the 2007 HSPA sample survey data, using following formula:

$$PAI = 6 \times (D_h \times (H_h + M_h / 60)) + 3 \times (D_m \times (H_m + M_m / 60)) + (D_l \times (H_l + M_l / 60))$$

where
    PAI – Physical activity index
    D_h – heavy physical work days per week
    H_h , M_h – average heavy physical work hours and minutes per day
    D_m – medium physical work days per week
    H_m, M_m – average medium physical work hours and minutes per day
    D_l – physical work days per week
    H_l, M_l - light heavy physical work hours and minutes per day .

It was assumed that one hour of medium physical work is equal to three hours of light physical work.

It was assumed that one hour of heavy physical work is equal to six hours of light physical work, after following standards:

A person doing office work burns 100 kkal per hour.

A jogging person burns 360 kkal per hour.

A person burns 540 kkal per hour of fast bicycle ridding.

Thus,

    One calculated index point represents one hour of light physical work per week.

    The indicator of insufficient physical activity is less than 30 minutes light physical activity per week.

ANNEX 5. Description of the HSPA 2007 Sample Survey

The overall survey domain is the population of Armenia at or above 20 years of age at the survey time.

A multilevel stratified self-weighting cluster sampling was used. Stratification was done.

The sample is representative for the entire country as well as for Yerevan-urban-rural desegregation.

The number of households was 1620, including 33.9% in Yerevan, 32.7% in urban and 33.4% in rural areas.

The number of respondents was 2827, including 34.0% from Yerevan, 31.8% from urban and 34.2% from rural areas.

The maximum sample error for the estimated percentage of dichotomous characteristic on $\alpha = 0.95$ significance level is:

>   for the entire sample of households, not more than $\pm 2.43\%$;
>
>   for the entire sample of respondents, not more than $\pm 1.84\%$;
>
>   for the sample of respondents for Yerevan, not more than $\pm 3.16\%$;
>
>   for the sample of respondents for urban areas, not more than $\pm 3.26\%$;
>
>   for the sample of respondents for rural areas, not more than $\pm 3.15\%$.

One or two members of each household were interviewed. Kish's modified tables were used for sampling respondents to ensure equal probability of sampling for each member of the household.

During the survey the weight, height, blood pressure and pulse of respondents were measured. The blood pressure was measured twice, once for each arm.

The questionnaire contained 16 sections:

0.   Composition of households
1.   General information about respondent, chronic diseases
2.   Arterial pressure and cholesterol
3.   Respiratory diseases and asthma
4.   Smoking
5.   Alcohol use
6.   Food consumption
7.   Physical activity and lifestyle
8.   HIV/AIDS and other sexually transmitted diseases
9.   Tuberculosis
10. Preventive and dental care
11. Accessibility of medical care
12. Welfare of households
13. Optimization of hospital system
14. Anthropometric measurements
15. Food consumption within the last 24 hours

ANNEX 6. National Health Information Analytic Centre

National Health Information Statistical Centre is the structural unit of the National Institute of Health, established according to the Government Decree No 1747a of 13 October 2005 and Ministry of Health Order No 1095a of 21 November 2005.

The main functions of the Centre are:

- development and implementation of the National Programme on Enhancing the Health Information System;
- development of regional information system models and infrastructure;
- harmonization of the health information statistical system with international standards;
- collection and analysis of state medical statistics and medical-sanitary information from health facilities; control of the collecting and recording of medical documentation;
- collection, analysis and dissemination concerning important health indicators;
- assessment and forecasting of the population health status;
- participation in the postgraduate education of specialists;
- evaluation and monitoring of the population health status and services; special research in health care;
- participation in health system reform, development of policies and strategies; participation in organization of preventive measures and development of modern public health models;
- publishing of reports, special issues, bulletins, methods and other materials;
- consultation and methodological assistance to health facilities;
- organization of conferences, seminars and other meetings on health information system enhancing, health and public health issues;
- cooperation with other organizations, institutions and structures, international and non-governmental organizations and foundations;
- assistance in scientific research and development;
- methodical and practical assistance to the Health Information Statistical Centre of the Nagorno-Karabakh Republic; and other activities within the Centre's functions and legislation of the Republic of Armenia.

Centre departments:

- Department of the Medico-Sanitary Statistics
- Department of Monitoring Systems
- Department of Special Investigations and Applied Research
- Department of Information Technologies
- Department of Regional Services
- Department of System Analysis and Forecasting
- Department of Information and Publications
- Department of Specialist Training
- Department of Health System Performance Assessment

ANNEX 7. The List of HSPA Indicators

#	INDICATOR	Source	1990	2001	2002	2003	2004	2005	2006
	GENERAL INDICATORS								
1.	Republic of Armenia population, thousand	NSS	3 514.9	3 213.0	3 212.9	3 210.3	3 212.2	3 215.8	3 219.2
2.	Republic of Armenia GDP, billion drams	MFE	N/A	1 175.5	1 362.5	1 623.3	1 896.4	2 244.0	2 665.0
3.	State Budget, billion drams	MFE	N/A	244.4	263.9	312.7	334.0	417.5	481.2
	FINANCING								
4.	National Health Budget	MFE	N/A	15.7	16.0	19.6	24.7	31.1	39.4
5.	Budgetary allocations to the hospital system	MFE	N/A	8.9	9.1	10.5	13.0	14.2	14.7
6.	Budgetary allocations to PHC	MFE	N/A	3.0	3.4	6.5	8.0	12.1	13.9
7.	Health care expenditure per capita, drams	MFE and NSS	N/A	4 901	4 970	6 105	7 687	9 665	12 226
8.	Public expenditure in health care as a percentage of GDP	MFE	N/A	1.34%	1.17%	1.21%	1.30%	1.39%	1.48%
9.	Percent of public expenditure in health care within total public expenditure	MFE	N/A	6.44%	6.05%	6.27%	7.39%	7.44%	8.18%
10.	Expenditure on PHC as % of total health expenditure	MFE	N/A	19.1%	21.2%	33.2%	32.3%	38.9%	35.2%
11.	Expenditure on hospital medical care as % of total health expenditure	MFE	N/A	56.5%	57.1%	53.4%	52.5%	45.8%	37.3%
	RESOURCE GENERATIION								
12.	Active physicians	NIH NIAC	N/A	11 529	11 508	11 728	11 396	12 098	12 177
13.	Active nurses	NIH NIAC	N/A	20 431	19 257	18 379	17 874	18 225	18 428
14.	Ratio of active nurses to physicians	NIH NIAC	N/A	1.77	1.67	1.57	1.57	1.51	1.51
15.	Ratio of active specialists to active general practitioners	NIH NIAC	N/A	4.63	4.94	5.09	5.1	4.91	5.01
16.	Average monthly salaries, doctors	Ministry of Health	N/A	N/A	N/A	30 000	33 500	35 100	38 700
17.	Average monthly salaries, nurses	Ministry of Health	N/A	N/A	N/A	22 000	24 500	25 800	30 300
18.	Staff vacancy rates, doctors	Ministry of Health	N/A	N/A	N/A	361	420	496	512
19.	Staff vacancy rates, nurses	Ministry of Health	N/A	N/A	N/A	N/A	N/A	N/A	N/A
20.	Ratio of graduates of state medical programmes versus state nursing programmes.	NIH NIAC	N/A	5.83	4.48	5.04	4.74	2.76	2.75

	Source							
21. % of physicians having undertaken a continuous education course within last five years.	NIH NIAC	N/A	8.0	4.7	16.5	12.1	9.7	13.7
22. % of nurses having undertaken a continuous education course within last five years.	NIH NIAC	N/A	1.2	1.4	9.9	8.3	5.3	7.6
SERVICE DELIVERY								
Access								
23. % of the population not seeking care when needed	HSPA 2007	-	-	-	-	-	-	24.7
24. Affordability (% out of those not seeking care).	HSPA 2007	-	-	-	-	-	-	41.7
25. Self care (% out of those not seeking care)	HSPA 2007	-	-	-	-	-	-	36.2
26. % of population without access to prescription drugs	HSPA 2007	-	-	-	-	-	-	7.5
27. % of the population who need more than 20 minutes by car to reach a nearest ambulatory polyclinic	HSPA 2007	-	-	-	-	-	-	33.9
28. % of the population who need more than 20 minutes by car to reach a nearest general hospital	HSPA 2007	-	-	-	-	-	-	57.3
29. % of the population who need more than 20 minutes by car to reach a nearest maternal hospital	HSPA 2007	-	-	-	-	-	-	52.7
30. % of the population who need more than 20 minutes by car to reach a nearest drug store	HSPA 2007	-	-	-	-	-	-	14.8
31. Average time between placement of a call and arrival of the emergency team in minutes	HSPA 2007	-	-	-	-	-	-	16.9
32. Average number of ambulatory visits per working day among providers of primary (therapists, pediatricians, FDs)	NIH NIAC	7	1.8	1.7	1.7	1.8	2.1	2.5
33. % of the total population enrolled with providers of primary health care (therapists, pediatricians, FDs)	SHA	100.0	100.0	100.0	100.0	100.0	100.0	100.0
34. Average number of population served by one provider of primary health care (therapists, pediatricians, FDs)	NIH NIAC	N/A	2 500	2 006	2 045	2 030	1 885	1 886
Cost Efficiency								
35. Expenditure on utilities and maintenance as % of total expenditure	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36. Pharmaceutical expenditure as % of total health public health expenditures	NHA	N/A	N/A	N/A	N/A	N/A	16.8	N/A
37. Remuneration to medical personnel as % of total public expenditures on health	NHA	N/A	N/A	N/A	N/A	N/A	33.0	N/A

	Source							
38. Direct expenditures on patient care (drugs, medical supplies) as % of public expenditure on hospitals	NHA	N/A	N/A	N/A	N/A	N/A	20.6	N/A
39. % of population who seek care in PHC units as a first point of care	HSPA 2007	-	-	-	-	-	-	83.5
40. Average length of stay for hospital admissions	HSPA 2007	15.6	11.7	10.9	10.5	10.3	10.8	10.5
41. Bed occupancy rate (days)	HSPA 2007	247	136	153	164	171	171	172
42. Hospitalization rate per 1000 population	HSPA 2007	N/A	4.9	6.1	6.9	7.3	7.9	8.4
Coverage								
43. Rate of primary health care providers (therapists, pediatricians, FDs) preventive visits, %	HSPA 2007	-	-	-	-	-	-	4.6
44. Mammography screening rate (% of women aged 30-60 who had mammography in the last 3 years)	HSPA 2007	-	-	-	-	-	-	5.4
45. Cervical cancer screening rate (% of women aged 30-60 who had PAP smears in the last 3 years)	HSPA 2007	-	-	-	-	-	-	5.4
46. % of population aware of injury to health from smoking	HSPA 2007	-	-	-	-	-	-	69.4
47. % of population aware of injury to health from alcohol consumption	HSPA 2007	-	-	-	-	-	-	64.7
48. % of population aware of injury to health from physical inactivity	HSPA 2007	-	-	-	-	-	-	48.6
49. % of population aware of injury to health from high blood pressure	HSPA 2007	-	-	-	-	-	-	66.0
50. % of population aware of injury to health from high cholesterol level	HSPA 2007	-	-	-	-	-	-	32.3
51. % of population aware of injury to health from overweight, obesity	HSPA 2007	-	-	-	-	-	-	57.8
52. % of population having knowledge and attitudes about HIV/AIDS and other sexually transmitted infections	HSPA 2007	-	-	-	-	-	-	85.0
53. % of people who know that it is possible to avoid HIV/AIDS	HSPA 2007	-	-	-	-	-	-	71.4
54. % of population having knowledge and opinions about tuberculosis	HSPA 2007	-	-	-	-	-	-	90.6
55. % of people who believe that TB is curable	HSPA 2008	-	-	-	-	-	-	59.0

56. % of women age 15-49 who currently receive (Lippes loop) modern methods of contraception	NIH NIAC	16.9	11.3	12.5	11.6	9.6	8.3	8.7
57. % of women age 15-49 receiving contraceptive hormonal preparation	NIH NIAC	0.9	22.3	13.2	5.3	6.5	4.1	9.4
58. % of women age 15-49 receiving modern methods of contraception	DHS 2005	-	-	-	-	-	19.5	-
59. % of deliveries attended by skilled birth attendant	NIH NIAC	-	98.5	98.8	99.3	99.5	99.6	99.8
60. % breastfeeding of children aged 0-12 month	NIH NIAC	-	25.8	29.3	35.7	36.2	38.1	39.5
61. % of children 0-2 years covered by immunization programmes	NIH NIAC	-	95.4	94.4	93.4	94.0	88.6	87.4
62. % of children 2 years of age covered by immunization programmes	NIH NIAC	-	95.6	78.3	93.8	91.5	94.4	91.9
63. % of children treated for diarrhoea	DHS 2005	-	-	-	-	-	16.7	-
64. % of pregnant women who consulted qualified health care professional	NIH NIAC	54.6	44.2	44.6	42.0	44.1	43.7	46.7
65. Diabetes mellitus regular medical check-up, children (0-14), absolute number	NIH NIAC	150	137	155	152	161	174	209
66. Anaemia, regular medical check-up, children (0-14), absolute number	NIH NIAC	2 808	2 649	2 359	2 406	2 605	2 638	2 982
67. Pneumonia, regular medical check-up, children (0-14), absolute number	NIH NIAC	4 171	1 302	1 039	1 372	990	1 105	1 234
68. CVD, regular medical check-up, children (0-14), absolute number	NIH NIAC	2 607	1 423	1 250	1 248	1 086	963	1 091
69. Purulent quinsy, regular medical check-up, children (0-14), absolute number	NIH NIAC	24 558	5 945	5 397	4 971	4 068	4 047	4 640
70. Asthma, regular medical check-up, children (0-14), absolute number	NIH NIAC	559	309	299	289	310	390	401
71. % of population covered by dental care	HSPA 2007	-	-	-	-	-	-	62.7
Quality									
72. % control of the glucose level for patients with diabetes treatment	HSPA 2007	-	-	-	-	-	-	41.2

No.	Indicator	Source							
73.	% control of blood glucose for patients with hypertension	HSPA 2007	-	-	-	-	-	-	45.6
74.	Hospital mortality as % of hospitalized patients	NIH NIAC	1.1	1.9	1.8	1.6	1.6	1.6	1.6
75.	% of hospital mortality from cerebrovascular diseases	NIH NIAC	10.6	15.4	15.9	14	15.4	15.6	16.5
76.	% of hospital mortality from acute myocardial infarction	NIH NIAC	18.0	14.4	13.7	14.3	13.5	12.6	12.7
77.	% of hospital mortality from burns	NIH NIAC	2.5	7.7	2.3	7.9	9.9	9.7	7.9
78.	% of post-surgical complications due to in-hospital infections out of total operations	NIH NIAC	-	-	0.51	0.43	0.33	0.36	0.32
79.	% of blood transfusion complications out of total blood transfusions	NIH NIAC	0.24	0.40	0.50	0.33	1.13	0.25	0.14
80.	Breast cancer five-year survival rate, %	Ministry of Health NOC	-	40.7	33.3	39.3	39.7	42.7	45.9
81.	Natal and postnatal complications from preeclampsia and eclampsia , per 1000 births	NIH NIAC	1.1	12.8	11.2	10.5	12.5	14.2	10.5
82.	Natal and postnatal complications from urogenital diseases, per 1000 births	NIH NIAC	3.1	128.9	140.1	136.7	120.3	97.3	84.5
83.	Natal and postnatal complications from venous disorders, per 1000 births	NIH NIAC	8.3	45.9	38.6	35.5	32.4	36.2	32.0
84.	Natal and postnatal complications from anaemia, per 1000 births	NIH NIAC	13.8	132.7	132.4	129.6	113.9	123.1	122.0
85.	Natal and postnatal complications from aperiodicities, per 1000 births	NIH NIAC	77.1	63.1	62.9	68.7	62.5	77.4	63.5
86.	Natal and postnatal complications from hemorrhage at placenta previa and premature detachment of placenta, per 1000 births	NIH NIAC	7.6	14.1	15.0	14.7	17.8	17.5	18.0
87.	Number of deliveries by caesarean section per 1000 biths	NIH NIAC	33.6	76.3	81.7	88.5	95.3	111.8	118.6

HEALTH STATUS

No.	Indicator	Source							
88.	Life expectancy at birth, general population (years)	NSS	70.7	73.1	73.0	72.9	73.4	73.5	73.3
89.	Life expectancy at birth, men (years)	NSS	67.9	70.0	69.8	69.9	70.3	70.3	70.0
90.	Life expectancy at birth, women (years)	NSS	73.4	76.1	75.9	75.8	76.4	76.5	76.4
91.	Infant mortality rate per 1000 live births	NSS	18.5	15.4	14	12	11.6	12.3	13.8
92.	Neo-natal mortality rates per 1000 live births	NSS	8.9	10.7	9.3	8.1	7.4	8.5	10.7
93.	Post neonatal mortality per 1000 live births	NSS	9.4	4.7	4.7	3.9	4.2	3.8	3.1
94.	Under-5 mortality rate per 1000 live births	NSS	N/A	18.8	16.6	13.6	13	13.7	15.5
95.	Maternal mortality rate, NSS per 100 000 live births	NSS	40.1	21.8	9.3	22.4	26.7	18.7	26.6
96.	Maternal mortality rate, NIAC per 100000 live births	NIH NIAC	N/A	21.3	18.0	19.2	37.2	26.7	34.5
97.	Low birth weight (% of live birth weighting less than 2500g)	NIH NIAC	6.38	7.84	8.44	8.01	7.5	7.26	7.89

98. % of malnourished (underweight or stunted) children aged 0-5	DHS 2005	-	-	-	-	-	2.0	-
99. Mortality rate from cardiovascular diseases*	NIH NIAC	305.9	407.8	436.8	443.8	437.9	453.1	421.8
100.Mortality rate from ischemic heart diseases *	NIH NIAC	201.1	260.0	264.2	266.9	265.4	278.0	264.7
101.Mortality rate from IM*	NIH NIAC	54.1	69.9	81.9	80.8	68.1	72.8	76.8
102.Mortality rate from cerebrovascular diseases*	NIH NIAC	83.6	100.9	136.1	130.3	121.7	122.1	103.1
103.Mortality rate from lung cancer, men *	Ministry of Health NOC	-	47.1	50.3	51.3	53.8	54.6	61.6
104.Mortality rate from breast cancer (BC), women *	Ministry of Health NOC	-	22.8	28.3	29.4	38.6	29.4	30.8
105.Mortality rate from cervix and corpus uteri cancer *	Ministry of Health NOC	-	13.9	13.1	12.1	14.7	12.3	17.2
106.Mortality rate from cervix uteri cancer*	Ministry of Health NOC	-	9.3	7.7	8.4	8.4	7.6	9.9
107.Mortality rate from corpus uteri cancer *	Ministry of Health NOC	-	4.6	5.4	3.7	6.2	4.7	7.2
108.Mortality rate from diabetes type 1, 2 *	NIH NIAC	14.0	35.8	47.3	53.2	50.2	48.8	36.3
109.Prevalence of cardiovascular diseases *	NIH NIAC	8 709.1	3 243.6	3 568.0	3 392.3	3 170.1	3 528.7	3 876.8
110.Prevalence of arterial hypertension *	NIH NIAC	3 533.3	893.8	979.0	981.1	1 207.8	1 493.7	1 655.1
111.Prevalence of ischemic heart diseases*	NIH NIAC	3 005.7	1 722.8	1 987.5	1 871.8	1 414.5	1 484.4	1 590.1
112.Prevalence of IM*	NIH NIAC	1 118.0	1 632.0	1 952.0	2 065.0	2 183.0	2 178.0	2 103.0
113.Prevalence of cerebrovascular diseases*	NIH NIAC	682.5	464.7	566.4	533.9	402.8	453.6	490.0
114.Prevalence of breast cancer, women*	Ministry of Health NOC	36.3	42.8	49.6	49.0	52.6	55.7	59.6
115.Prevalence of cervix and corpus uteri cancer *	Ministry of Health NOC	14.3	17.9	20.8	21.4	22.6	22.2	24.7
116.Prevalence of diabetes type 1, 2 *	NIH NIAC	1 434.1	1 309.6	1 614.1	1 603.4	1 543.5	1 575.8	1 607.3
117.Prevalence of diabetes type 1 *	NIH NIAC	-	209.5	277.7	245.7	227.7	222.9	245.3

	Source							
118. Prevalence of diabetes type 2*	NIH NIAC	-	897.8	987.5	994.6	981.1	1 026.5	1 047.6
119. Prevalence of COPD *	NIH NIAC	-	12.7	28.2	30.7	29.5	34.8	38.1
120. Prevalence of asthma*	NIH NIAC	-	154.5	173.0	176.0	168.2	180.9	180.1
121. TB mortality rate *	NIH NIAC	2.6	3.8	5.2	4.8	4.6	4.9	5.4
122. Incidence of TB	Ministry of Health NCTC	-	35.4	43.4	44.7	48.5	62.4	50.2
123. Rate of new smear positive pulmonary TB cases among total new smear positive pulmonary TB cases (incidence) registered under DOTS in the same period (estimated since 2004), %	Ministry of Health NCTC						42.5	38.2	45.5
124. Prevalence of HIV (rate of HIV cases among general population)*	NCAIDS	-	5.3	6.6	7.5	9.0	11.3	13.3
125. % of people rating their health as fair or poor	HSPA 2007	-	-	-	-	-	-	76.5
126. Prevalence of daily tobacco users, %	HSPA 2007	-	-	-	-	-	-	22.5
127. Prevalence of daily tobacco users among men, %	HSPA 2007	-	-	-	-	-	-	54.6
128. Prevalence of tobacco users among women, %	HSPA 2007	-	-	-	-	-	-	1.6
129. Prevalence of alcohol users, %	HSPA 2007	-	-	-	-	-	-	5.7
130. Prevalence of alcohol users among men, %	HSPA 2007	-	-	-	-	-	-	12.9
131. Prevalence of alcohol users among women, %	HSPA 2007	-	-	-	-	-	-	0.9
132. Prevalence of drug users (hashish, cannabis, ecstasy), %	GPS among adults 2006	-	-	-	-	-	5.4	-
133. Prevalence of tranquilizer and sedative drug use, %	GPS among adults 2007	-	-	-	-	-	9.7	-
134. Prevalence of high blood pressure (>140-90), %	HSPA 2007	-	-	-	-	-	-	16.9
135. Prevalence of overweight (pre-obese and obese), %	HSPA 2007	-	-	-	-	-	-	55.7
136. Prevalence of physical inactivity, %	HSPA 2007	-	-	-	-	-	-	23.5
137. People who needed dental care during the past year (20 years old and older)	HSPA 2007	-	-	-	-	-	-	41.9

• N/A - not available

∗ The Mortality rate and Prevalence are calculated per 100 000 population

REPUBLIC OF ARMENIA

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