Islamic Republic of Pakistan

National Institutes of Health

Federal EPI Cell

Comprehensive Multi-Year National Immunization Strategic Plan 2011-2015[1]

[1] With costing and financing analysis updated in August 2009

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Glossary

AD	Auto-disable
AEFI	Adverse events following immunization
AFP	Acute flaccid paralysis
CBAW	Child-bearing age women
CIDA	Canadian International Development Agency
DQA	Data quality audit
DSO	District Surveillance Officer
DTP	Diphtheria, Tetanus, Pertussis vaccine
EDO	Executive District Officer
EMR	Eastern Mediterranean Region
EPI	Expanded Programme on Immunization
FSP	Financial sustainability plan
GAVI	Global Alliance for Vaccines and Immunization
GIVS	Global Immunization Vision and Strategy
GOP	Government of Pakistan
HepB	Hepatitis B vaccine
Hib	Haemophilus influenzae type B
HIV	Human Immunodeficiency Virus
HMIS	Health management information system
ICC	Interagency coordination committee
IMCI	Integrated management of childhood illnesses
ISS	Injection safety support
LHW	Lady health workers
MCV	Measles containing vaccine
MNTE	Maternal and neonatal tetanus elimination
MO	Medical Officer
MYP	Multi-year plan
NGO	Non-governmental organization
NID	National immunization day
NIH	National Institute of Health
NRA	National regulatory authority
NVS	New and under-utilized Vaccine Support window of GAVI
NWFP	North-West Frontier Province
OPV	Oral polio vaccine
PC-1	Planning Commission Form 1
PEI	Polio eradication initiative
RED	Reach every district
SIA	Supplementary immunization activity
SNID	Sub-national immunization day
TB	Tuberculosis
TT	Tetanus toxoid
UC	Union council
UNICEF	United Nations Childrens Funds
UNPD	United Nations Population Division
VitA	Vitamin A
VPD	Vaccine-preventable diseases
WHO	World Health Organization

Executive Summary

If Pakistan's Expanded Programme on Immunization (EPI) is to reach the goals of the Global Immunization Vision and Strategy (GIVS) in terms of coverage, access to new vaccines, mortality and disease reduction, the provision of routine immunization services in the country needs to be further strengthened.

The Comprehensive Multiyear Plan(cMYP) 2011-2015 is a major update of the previous plan for 2005-2010 and aims at providing essential, safe and effective immunization to all eligible children and women near to where they live, in a manner that is effective,efficient, equitable and safe. Within the plan, certain specific objectives have been established. These include targets for progressively increasing routine immunization coverage, the control of individual diseases including the final eradication of polio, the elimination of measles (through SIAs and the nationwide provision of a second dose of measles at 2nd year of life), the elimination of neonatal tetanus as a public health problem, and to increase benefits of new vaccines to an increasing number of children. The cMYP envsios that the immunization programme will develop its capacity to introduce new cost-effective vaccines i.e Pneumococcal and Rota-virus vaccines after the successful launching of Pentavalent vaccine. The EPI will work towards strengthening advocacy and communication related to immunization, providing good data for decision-making on coverage and VPD incidence, providing safe injections and safely managing sharps waste and further improving vaccine supplies, quality and logistics management.

Objectives and milestones of the cMYP:

Objective 1	90% routine immunization coverage of all EPI antigens with at least 80% coverage in every district by 2010.
Objective 2	Indigenous wild Polio virus transmission interrupted by the 2012.
Objective 3	90% reduction in measles morbidity and mortality by 2010 compared to the 2000 level.
Objective 4	Elimination of Neonatal tetanus by 2012.
Objective 5	Inclusion of Pneumococcal (PCV10) vaccine by 2010 and Rotavirus vaccine by 2013 in routine childhood immunization schedule.
Objective 6	Appropriate sharps waste management in every district by 2010.
Objective 7	Establishing Integrated VPD surveillance system including measles case-based surveillance system by 2009.
Objective 8	Attainment of WHO-UNICEF effective vaccine management certificate for Federal EPI store by 2010 and for provincial stores by 2012.

Planning for the further development of EPI in Pakistan falls into four key strategic areas:

1. Availability of credible service by raising capacity of the program
2. High quality surveillance producing reliable data for decision-making
3. Effective vaccine and stock management
4. Raising awareness and creating demand for the service among the community through advocacy and communications.

These areas and their constituent recommended strategies can be summarized as follows. Detailed activities with timelines are presented in tables 4A to 4D of the plan:

Strategic Area 1: Credible and Efficient Immunization Services

- Restructuring the program organogram with appropriate expansion of human resource at federal and provincial EPI cells in accordance with program need
- Enhancing human resource capacity at every level with appropriate training and equipments
- Infrastructural development of the program in terms of cold & dry storage capacity, transport, delivery and distribution capacity at every level and standard waste management
- Recruitment of new vaccinators to fulfil the need as outlined in the National EPI Policy
- Involvement of LHWs in immunization service delivery with appropriate training
- Increasing the number of static EPI centres to have at least one fixed center in every UC.
- Increasing access of the service to the community through regular outreach immunization session in every community at least once in a month following annual/half yearly EPI micro-plan
- Raising immunization coverage of all antigens
- Reduce DTP1-DTP3 (Penta1 – Penta3), DTP1 (Penta1) – Measles1, Measles1 – Measles2 and TT1 – TT2 drop-out rates by tracing defaulters.
- Conduct periodic SIAs to supplement routine immunization service
- Inclusion of new cost-effective vaccines in routine childhood immunization schedule
- Strengthen supervision and monitoring at all levels
- Improve financial, operations and human resource management.
- Improve case management of children with measles and other VPDs
- Improve safe injection practices with appropriate safe injection equipments and training
- Standard disposal of sharps waste
- Establish Vitamin A supplementation in routine EPI
- Adequate allocation of resources in the national budget for infrastructure development, expansion of service, human resource, provision of traditional vaccines and inclusion of new vaccines, injection equipments and logistics and operations

Strategic Area 2: Surveillance and data for decision making

- Increase capacity of the federal and provincial EPI cells by creating surveillance section with recruitment of appropriate human resource
- In accordance with the National EPI policy creating position of 'district epedemiologist' at every district and recruitment of appropriate human resource against these positions.
- Strengthen integrated VPD surveillance system with establishing measles case based surveillance
- Improve measles outbreak response
- Maintain AFP surveillance indicators at internationally accepted standards
- Achieve and maintain measles surveillance indicators for elimination status
- Involve private sector in VPD surveillance.
- Maintain sentinel surveillance for bacterial meningitis and rotavirus diarrhoea to estimate disease burden of potential new VPDs and assess impact of vaccine introduction.
- Effectively establish AEFI surveillance and response.

- Strengthen collection, analysis, interpretation, use and exchange of routine EPI data.
- Perform regular comprehensive EPI coverage surveys in all districts.
- Perform adequate operations research.

Strategic Area 3: Effective vaccine and stock management

- Attainment of WHO-UNICEF certification standard on vaccine and stock management at Federal and all provincial stores.
- Computerised stock management for vaccine and logistics at federal and all provincial stores.
- Efficient vaccine and logistics forecasting, procurement and supply to avoid stock out
- Improve self-reliance in quality assurance and regulatory oversight related to vaccines and immunizations.
- Reduce vaccine wastage.
- Improve transportation of vaccines and supplies in every district.

Strategic Area 4: Advocacy and communications

- Effective and dynamic social mobilization and communication effort using media and involving community to create awareness and demand for immunization in the community
- Creating partnership with CSOs and NGOs to built community awareness and demand
- Appropriate resource allocation for the purpose
- Develop innovative approaches to reach the un-reached and tracing the defaulters.
- Strengthen communication activities on injection safety in the EPI programme.
- Develop EPI special branding and programming on mass media.
- Sustenance of media campaign for immunization throughout the year.

The issues involved in implementing the comprehensive national immunization strategic plan are detailed in the next sections of this document.

EPI Background and Situation Analysis

The new Global Immunization Vision and Strategy (GIVS) strives for a world in 2015 where immunization is highly valued; every child, adolescent and adult will have equal access to immunization as provided for in the national schedule; more people are protected against more diseases; immunization and related interventions are sustained under conditions of diverse social values, changing demographics and economies and evolving diseases; vaccines exert the maximum impact on global health and security; and solidarity among the global community guarantees equitable access to needed vaccines for all people.

The GIVS provides broad strategic directions for national policy and programme development; commits all to unprecedented attention to reaching the "hard-to-reach"; promotes data-driven problem solving to improve programme effectiveness; takes immunization beyond infants into other age groups and beyond the current programmatic use of other settings, while maintaining the priority of early childhood vaccination; anticipates the introduction and wide-spread use of new and underused vaccines and technologies, all of which will require long-term financial planning; encourages a package of interventions to reduce child mortality.

By 2015 all contributors to immunization and product development should aim at the following GIVS overarching goals:

Coverage: Every person eligible for immunization included in national programmes will be offered immunization with quality vaccines according to the established national schedule.
Access to new vaccines: Immunization with newly introduced vaccines will be offered to the entire population within five years of the introduction of theses new vaccines in national programmes.
Mortality and disease reduction: Global childhood mortality and morbidity due to vaccine preventable diseases will be reduced by at least two-thirds compared to 2000 levels.
Sustainability and systems strengthening: All national immunization plans will be formulated and implemented in ways that link them explicitly with sector-wide human, financial and logistics plans and ensure that activities will not have to be scaled back due to shortage of human resources, funding or supplies.

The cMYP 2011-15 has been prepared in continuation of the earlier cMYP (2005 – 10) after a series of discussions and deliberations of senior federal and provincial EPI staff and partners held in the provinces and Islamabad during 2008 and 2009. Outline and structure follow the GIVS 2006-2015 and aligned with the new national multiyear plan (PC-1 2009 – 14). Some of the observations and conclusions of the former MYP, which are still valid today, have been carried over into the present cMYP. The cMYP is to be regarded as "work in progress" which needs to be revised on an annual basis in light of new developments in the field and/or possible changes in financial contributions from both the Government of Pakistan (GOP) and development partners. Moreover,a detailed costing and financing analysis using the cMYP tool has been undertaken. The Analysis of costing and financing of this cMYP is placed at Annex-1.

The EPI in Pakistan

For over 15 years, the EPI has delivered six vaccines only. Until the development of strategies aimed at polio eradication, maternal and neonatal tetanus (MNT) and measles elimination and incorporating supplementation with Vitamin A, technical innovation of the EPI had been low. Innovation and progress towards an effective,efficient and credible immunization programme has been brought about through the introduction of Hepatitis B vaccine in 2002 along with use of AD syringe for all immunization injections and safety box, introduction of tetravalent vaccine (DPT-HepB) in 2006, Hib vaccine and launching of Pentavalent vaccine in 2008 – 09. Establishment of a Bacterial meningitis and Rotavirus diarrhoea surveillance network set out to assess the relative contribution of Haemophilus influenzae B (Hib), Streptococcus pneumoniae and Neisseria meningitidis as causal agents of this disease entity and Rota virus for childhood diarrhoea. EPI Pakistan has plan to introduce Pneumococcal (PCV10) vaccine in 2011 and Rotavirus vaccines by 2013 in its routine childhood immunization schedule.

The following tables provide an overview of the present situation of routine EPI and accelerated disease control initiatives in Pakistan, based on 2006-2008 data.

Table 1: Situational analysis by accelerated disease control initiatives

Component	**Annual Performance: Basic indicator (Data sources JRF 2006, 07 & 08 and National Surveillance cell)**		
	Routine Coverage	**Surveillance**	**SIA**
Polio	**OPV3 coverage**	**Non polio AFP rate in children under 15 yrs. of age**	**No. of rounds of NID/SNID (Coverage range)**
2006	85%	5.8 / 100,000	5 NIDs + 1 SNIDs (96 – 100% by recall)
2007	88%	5.6 / 100,000	4 NIDs + 5 SNIDs (99 – 100% by recall)
2008	81%	6.5 / 100,000	5 NIDs + 5 SNIDs (96 – 100% by finger marking)
MNT	**TT2+ coverage**	**Cases reported to federal level**	**SIAs**

2006-	50%	548 NT cases reported	No
2007	46%	586 NT cases reported	No
2008	51%	809 NT cases reported	No
Measles	**Measles coverage**	**No. of cases reported**	**SIA**
2006	84%	7,641 suspected cases reported. 87 lab confirmed out of 257 specimen.	No
2007	87%	2,801 suspected cases reported. 50 lab confirmed out of 212 specimen	4 phases of national catch-up campaign in 3 provinces and AJK, FANA and FATA targeting approx 30M children (97 – 105%)
2008	85%	1,129 suspected cases reported. 38 lab confirmed out of 279 specimen	1 phase of national catch-up campaign in Punjab targeting approx 34M children (103%)

Table 2: Situational analysis of routine EPI by system components

System components	Indicators	National (Data sources see reference section)		
		2006	2007	2008
Routine Coverage	National DTP3 coverage	79%	83%	73%
	Range of DTP3 coverage across provinces			
	% of districts with > 80% coverage	59%	56%	26%
	National DPT1-DPT3 drop out rate Range across provinces	9.6%	12.2%	16.43%
	Percentage of districts with drop out rate DTP1-DTP3>10%	50%	41%	68.88%
New vaccines	National HepB3 coverage	78%	83%	73%
Routine Surveillance	% of surveillance reports received at national level from districts compared to number of reports expected	79%	78%	80%
	Surveillance data quality sufficient	No	No	No
Cold chain/Logistics	Percentage of health facilities which are functioning EPI centres	~ 75%	~ 75%	~ 80%
Immunization safety	Percentage of districts supplied with adequate number of AD syringes for all routine immunizations	100%	100%	100%
	Percentage of districts supplied with safety boxes	100%	100%	100%
	Percentage of districts with proper sharps waste management systems	100%	100%	100%
Vaccine supply	Stock-out at national level during last year?	No	No	Yes, DTP for 1-2 months
Communication	Availability of a plan	Yes (PEI)	Yes (PEI)	Yes (all EPI) 2004/2005
	Percentage of all districts which have developed EPI communication plans (14/35 priority districts)			12% (14/121)
	Percentage of caretakers of children < 1yr understanding the importance of routine immunization.	42-48%	~ 50%	~ 50%
Financial issues	Percentage of total routine vaccine spending_financed using Government funds (EPI programme costs excluding HepB vaccine and AD syringes)		59%	~ 60%
	Release and utilisation of GAVI funds at district and provincial levels		slow	Slow
Management planning	Regular collection of district indicators at national level.	Yes	Yes	Yes
	Percentage of all districts with micro-plans			27% (32/121)
NRA	Number of functions conducted	0	0	1
Research	Vaccine related studies conducted: Coverage survey at provincial level Injection safety survey Hib prevalence study	 2002 2002	 2003	

	Cold chain/vaccine management assessment Study on barriers in immunization services Coverage survey in selected districts in Sindh			2004 2004 2004
National ICC	Number of meetings held last year	4	1	1
Human Resources	Percentage of UCs with at least 1 vaccinator			<< 100%
	Number of vaccinators / 10.000 population	0.55	0.55	0.555
	% of vaccinators time available for routine EPI	50%	50%	50%
Transport / Mobility	Percentage of districts with a sufficient number of supervisory/EPI field activity vehicles/motorbikes/bicycles in working condition	Low	Low	Low

Basic Immunization Schedules

a. The routine immunization schedule for infants

Age	Vaccines	
At Birth	BCG	OPV0
6 weeks	Pentavalent 1	OPV1
10 weeks	Pentavalent 2	OPV2
14 weeks	Pentavalent 3	OPV3
9 months	Measles 1	
at 2nd year of life	Measles 2	

b. The Immunization schedule for Pregnant and women of child bearing age (15-49 years)

Dose	When to give	Expected duration of protection
TT 1	at first contact or as early as possible during pregnancy	None
TT 2	at least 4 weeks after TT 1	1-3 years
TT 3	at least 6 months after TT 2	5 years
TT 4	at least 1 year after TT 3	10 years
TT 5	at least 1 year after TT 4	Throughout the child bearing age

Immunization Coverage and EPI Performance

The reported DTP3 immunization coverage in 2008 was 73%, clearly below than the 88% routine coverage reported for 2007 and far below from the 87% coverage target set for 2008 in previous cMYP (2005 – 10). The validity of administrative report on routine EPI coverage has been questioned by different stakeholders in country and abroad based on different independent surveys and estimates e.g. DPT3 coverage is 58.5% in (PDHS 2006 – 07) and 64.5% (CES 2006) respectively.

The number of annual surviving infants used by EPI Pakistan is an extrapolation of the 1998 census data based on district wise population growth rate in 1998. The Federal EPI target figures are generally known to be over projected. However Federal EPI has initiated the process of consultation with the concerned ministries/ departments of GOP as well as other stake holders in having more rational target populations. Till final official decision in this regards Federal EPI has used projections based on current GOP documents like Economic Survey of Pakistan and EPI PC1 2009-10 to 20013-14 in this document to have a more rationale target populations. The target population for baseline 2008 has been used as that reported in JRF for 2008.

There is a wide variation in EPI coverage estimates between provinces and districts. Although some of this variation may reflect diverse geographical and demographic conditions, the most critical factors are most probably the variation between areas in management capacity and commitment, motivation, poor supervision and monitoring and overall abscence of any sorts of accountability for EPI performance. Management at the provincial and district levels is not yet sufficiently committed – or does not possess sufficient capacity - to ensure effective planning, management and supervision or to hold officers to be accountable for immunization performance. Supportive supervision is weak at

every level in terms of quantity and quality. Though extent of work in EPI program has been significantly increased over time with increasing number of target population, need for more data collection & analysis, inclusion of new vaccines and technologies, training need for managers and field workers, advancement in communication etc. but unfortunately program infrastructure and human resource capacity didn't expand at any level since its inception 30 years back to match the current dynamics of program need. The interference of routine EPI with ongoing repeated polio SIAs and inappropriate and untimely distribution of resources may have further aggravated the situation.

Challenges in the provision of immunization services lie mainly at implementation level. There is still limited access to EPI services. Static EPI centres deliver immunization service to only 20 – 25% of the target children and outreach service delivery is the key mode to reach remaining targets. Most of the districts either don't have any outreach session microplan or even if they have those are not updated or not implemented. Even the limited number of sessions which take place irregularly are not properly supervised and monitored. These sessions are usually held in the vicinity of the static centers instead of really far flung/deserving areas and therefore those areas far away from fixed centers are not covered or partially covered. Vaccinators and their managers are not accountable to anybody for not performing their duties. Static services are also often neglected. Still about one-third union councils of the country doesn't have any EPI statice center. One-quater of the government health facilities don't provide EPI service. In addition, the provision of an extensive network of outreach sessions has resulted in an approach where many parents, especially in more remote communities wait for immunization to be brought to them, rather than actively seeking it. Since the outreach network is expensive and difficult to sustain it is clearly desirable to focus EPI predominantly onto fixed centres. A target was set in the last MYP to increase the number of static centres by 20% each year. While some new centres have been established in the past 5 years it is evident that this target has not been reached.

Survey results have indicated earlier that completion of the full course of scheduled immunization was unsatisfactory. There may have been some improvement over the past years: Present national DTP1-DTP3 drop-out rates are 14% (after 16% in 2001). However, proportion of districts reporting a drop-out rate of more than 10% has increased from 41% in 2007 to 69% in 2008. Reasons for this increment is mainly stock out of DPT containing Tetravalent vaccine during transition to Pentavalent vaccine in the middle of the year. Other reasons include irregular outreach activities, failure to trace and motivate defaulters and insufficient client demand, mostly reflecting a lack of knowledge but also, to some degree, a lack of motivation.

EPI Administration and Management

A National EPI Policy with strategic guidelines was developed and approved in 2005. At the federal level, EPI coordination mechanism with partners though better established through Interagency Coordination Committee (ICC) and National Steering Committee (NSC) but the same is not true with other stakeholders e.g. other government department and CSOs/NGOs which have potential to contribute in the filed of immunization. Federal EPI is seriously handicapped with very limited number of effective technical manpower to handle diverse issues like coordination, communication, training, surveillance, monitoring and supervision. Delegation of responsibility in different technical and management areas is severly compromised due to unavailibality of adequate number of competent officers in the office. Similar scenario prevails in the provincial EPI offices. After 30 years of the inception of the program still no specific position has been created at district level for EPI and Surveillance.

At present, about 71% of routine EPI funds are financed by the GOP. The new PC-1 budget, which is for about US$ 319 million from government resource makes provision for decreasing future GAVI and donor support.

Repeated debates are held over the required number of staff to increase EPI performance. The present policy is to allocate at least two vaccinator per UC. Around 6,000 to 8,000 vaccinators are presently employed in the country; additionally 950 have been employed in Sindh and Punjab during 2005 – 06

with GAVI support. These vaccinators are, however, not distributed across the districts equitably. Assuming up to 5.8 million surviving infants in 2008, one vaccinator would be responsible for the routine immunization of 690 to 920 infants per year, i.e. for around four to six infants per day, based on 160 working days per year for routine EPI services. This leaves room for an additional workload of 80 days for polio SIAs in a year (@10 days for each round).

Close to 100,000 Lady Health Workers (LHWs) have been added to the community oriented health-related workforce. Most of them are already trained in intramascular TT vaccination and effectively contributed in MNTE campaigns in the past. Additional 20,000 are now in the process of training for other immunization injections e.g. intradermal and subcutaneous. In 2008 a concensus was made between the EPI program and National Program for Family Planning in using the LHWs for outreach immunization service delivery through their Health House. Gradually all existing LHWs will be trained in giving all immunization injections and EPI training will be an integral part of the basic training for new LHWs during their induction in future. Other key responsibilities i.e. birth registration, social mobilisation, defaulter tracing, participating in SIAs will remain part of their duties.

Many constraints contribute to inadequate staff performance. Rapid turnover of at management level, political influence often leads to bring officers at responsible positions with little program background and technical knowledge. Even if any capacity building attempt is made by development partners for such new recruits that become fruitless due to frequent transfer or lack of motivation and commitment on the part of the officer. Sometimes district level officers hold multiple responsibilities, with immunization getting a relatively small part of their time and attention. In many districts, the management capability of crucial supervisory staff is limited. There are inappropriate channels of authority, e.g. vaccinators report directly to districts, not to the medical officer responsible for provision of health services in the union council (UC) where they work. This has meant that local supervisors have not been accountable for immunization performance. Vaccinators are appointed at a relatively low grade and have little opportunity for advancement in their careers. In conducting outreach and mobile sessions, vaccinators suffers from limited and untimely support for POL from their district authority.

District and tehsil level officials don't consider regular monitoring and supervision of EPI activities is part of their responsibility and they're not held accountable for that by their authority. Supervision checklists have not been updated and are mostly not used. Shortages of transport often made as an excuse for not performing duties. However, inadequate resource allocation from local government and failure to release available funds are also reason. There is a lack of continuity and follow up in supervision. In general, vaccinators and their supervisors are not being held accountable for poor performance and, with little analysis of data been carried out at the district level, poor areas of work are often undetected, with the problems remaining uncorrected.

Surveillance and Data for Decision-Making

The goal of EPI surveillance activities is a well-functioning and sustained EPI and vaccine-preventable diseases (VPD) reporting system, used for taking managerial decisions to improve EPI services. The system was introduced at monthly reporting cycle with the inception of the program and included key epidemiological attributes of VPDs like person, place, time and vaccination status of the cases as well. Later on in 2002 monthly AEFI surveillance was also introduced as a separate system. The EPI reporting system collects data from basic health units, rural health centres, Tehsil (sub-district) hospitals, district hospitals and some teaching hospitals. The detail case informations are aggregated at higher level compilation and reported by age group and immunisation status for acute flaccid paralysis (AFP), measles, diphtheria, pertussis, neonatal tetanus and childhood tuberculosis. However, keenness of the severce providers in the facilities to report any VPD they encounter is questionable and the number of reported cases often doesn't reflect the actual burden of the diseases. Again, lack of awareness on the part of the service providers, abscence of monitoring, analysis and feed back of the data by local and upper level management most of all inaccountability

made this system crippled. Recently after the national measles catch-up campaign, EPI has taken an attempt to revive this age old system with some modification to include laboratory component for confirmation of diagnosis and converted in to a weekly reporting cycle. If this modified weekly VPD surveillance system can be successfully established and made functional then other parallal systems can be withdrawn and thus duplication can be avoided. With WHO assistance EPI is going to recruit Provincial Surveillance Coordinator in each provincial EPI office and put provision in the new PC-1 for creating one position of district epidemiologist for each district according to the National EPI Policy.

The health management information system (HMIS) still appears to provide less representative data on EPI-related diseases and indicators than the routine EPI reporting system. Coordination between the two systems is still limited. An additional VPD surveillance system has been initiated by the polio programme: AFP surveillance staff has started to include apparent cases of measles and MNT derived from patient register review into their reporting system. Cumulative data on these diseases are being reported to the National AFP surveillance cell and will be used for a quality check of the regular EPI VPD reporting system.

Social Mobilisation, Advocacy and Communications

In addition to the programmatic issues, factors that are further contributing to the low immunization coverage are awareness of parents regarding the importance of immunization, little involvement of community and political leadership, and low motivation and poor interpersonal skills of vaccination staff. Most of the resources allocated for social mobilization, advocacy and communications are spent on Polio campaign and almost nothing left to address routine immunization. Moreover, both beneficiaries and service providers are exhausted and fatigued after years of polio campaigns. Intensive communication on polio has also resulted into certain misperceptions e.g. decrease effectivity of routine immunization.

Effective vaccine and stock management

Vaccine management is not of the required standard and is mostly undertaken on an ad-hoc basis. In the recent past, vaccine stock-outs of certain vaccines in certain areas was noticed.This leads to question the credibility of the whole programme. EPI vaccines which are procured by government resource are procured by Federal EPI following the Public Procurement Rules from local supplier/agents of manufacturer. Vaccines procured with donor's support are procured through UNICEF. However, all vaccines either procured locally or through UNICEF are WHO pre-qualified. But in absence of an efficient vaccine forcasting system cerntain vaccines goes stock-out on some occasions and sometimes access vaccine comes under threat of expiry. Recenly, with WHO assistance the federal EPI has made an inventory and computerised all its vaccine and logistics management system using a standard software provided by EMRO. It is expected to ascertain WHO certification for the federal EPI store by the 1st quarter of 2010. The National Regulatory Authority (NRA) has been strengthened in recent years, but is not yet performing all of its necessary quality assurance functions.

With an annual target of over 5 million surviving infants and 6 million pregnant women the cold chain network of EPI Pakistan is though huge and extensive but not yet adequate especially in the light of plan for inclusion of new vaccines over the coming years. Except the federal, provincial and old divisional stores where walk-in cold room/freezer room are in use most of this network is equipped with ILR and Freezer. Besides the donors support, government also invested its own resources over the years in building this network. But unfortunately there is no proper maintenance service available for these expensive equipements. The system of repair and maintenance of cold chain is ad-hoc. EPI doesn't have its own mechanical workshop at any level. Even skilled manpower to repair these equipments when goes out of service is not available or inadequate. Some cold chain units are aging and many have reached the limits of their expected lives.
Mainenance of cold chain is also can't be claimed of standard. Regular temperature monitoring, using proer equipment at different level of service delivey points, storing vaccines following standard

guideline, stock management are some key challenges besides overall improper vaccine management. Expansion of the fixed centre network will need additional cold chain capacity. Transport logistics will also need renewal, as appropriate transport for EPI field supervision activities is still lacking in parts of the country. Supervision of district and health posts in cold chain management is still unsatisfactory and there are no guidelines or written operational procedures except for the province of Punjab.

Injection Safety

Progress has been made regarding safety of injections, albeit starting from disturbing levels. In 2002, only 50% of immunization injections had been administered safely and 94% of sharps waste disposal had been considered unsafe. Less than half of EPI units had a one-week stock of AD syringes and only 5% of health facilities had a sufficient quantity of safety boxes. Now the condions are much better and since 2005, all districts are provided with AD syringes and safety boxes, and a recent spot-check did not find any evidence for re-use of syringes and needles. The challenges in the area of injection safety remains are, habit of recapping the used syringes, not using safety boxes and improper final disposal of the sharp waste.

Accelerated Disease Control Initiatives

The three accelerated disease control initiatives presently run in the country are polio eradication, and elimination of measles and MNT. While the PEI hopes to be able to interrupt wild polio virus transmission in Pakistan in 2012, the MNTE programme has been ongoing with variable success since 2001 and the nationwide measles catch-up campaign was done in phases in 2007 – 08. As a post-campaign follow-up action introduction of measles case-based surveillance is underway and a follow-up campaign is planned for late 2010 – early 2011.

PEI: Major progress has been made in polio eradication in a number of activities. These include the continuous conduct of NIDs, based on house-to-house OPV administration, strengthening of AFP surveillance, use and coordination with the laboratory and supplementation of existing staff with additional national and international experts. As a result of this progress, the incidence of polio is at a historic low, although the target of interruption of wild virus transmission by the year 2000 has not been achieved.

Measles: Country has already conducted a nation-wide measles catch-up campaign targeting approximately 65 million children aged 09 months to less than 13 years. The campaign was implemented in five phases during 2007 – 08 and acclaimed at home and abroad for its success. Later on the program initiated introduction of case based measles surveillance and also included 2nd dose of measles vaccine in the routine immunization schedule. Training for the surveillance is already complete in Sindh, AJK and FANA upto district level and upto Provincial level in Punjab where district level training will be conducted soon. Implementation is delayed in the remaining provinces due to inaccebility for security reasons. EPI Pakistan also planned to conduct the follow-up campaign in 2010 – 11 targetting children born after the last catch-up campaign.

MNTe: Neonatal tetanus is a major cause of preventable mortality in Pakistan. It is estimated that more than 50% of districts have a NT rate of >1/1000 live births and that NT remains endemic with an estimated 25,000 to 28,000 cases annually. Over the last years some improvement is observed in safe delivery practices. PDHS 2005 – 06 indicates 34.3% birth took place in a health facility and 32% of those which were not delivered in any health facility used a safe delivery kit. The same survey also indicates that 60% of the birth during the 5 years preceeding the survey were protected against neonatal tetanus with more than half (53%) of the pregnant women receiving two or more TT injection during their last pregnancy.

Federal EPI did a risk analysis for MNT of all districts in 2008 with assistance of WHO and UNICEF based on a set of composite indicators and categorized all districts in different risk group. According to the analysis EPI has already conducted 2 rounds of MNTE campaign in 6 highrisk districts of Punjab during 2009 and further plan to conduct the same in other provinces by the end of this year with an additional round in Punjab. The campaign targeted all CBA women irrespective of their

marital status and pregnancy. The current challenge in MNTE is to raise the TT2+ coverage uniformly across the country and strengthening surveillance for MNTE including individual case investigation for epidemiological details.

Other EPI Activities

Vitamin A supplementation: Sub-clinical Vitamin A deficiency is prevalent in many parts of Pakistan. Until now Vitamin A supplementation has been provided during Polio NIDs (twice per year). It is foreseen to integrate Vitamin A supplementation into the routine EPI schedule with two doses administered to children aged 6 to 59 months twice per year.

Hepatitis B vaccine has been introduced in 2001 with good success and swiftly increasing coverage, approaching DTP3 coverage. Later on in 2006 EPI introduced tetravalent combo vaccine (DPT-HepB) which made immunization more client complient and safe.

In 2008 – 09 under co-financing agreement with GAVI, EPI Pakistan introduced Hib vaccine in its childhood immunization schedule as a combination Pentavalent (DPT-HepB-Hib) vaccine which replaced tetravalent combo vaccine. EPI has plan to include Pneumococcal (PCV10) vaccine by 2010 and Rotavirus vaccine by 2013 with same GAVI NVS support.

Development of the EPI in Pakistan

Pakistan has rapidly become import-dependent in the area of vaccines while existing national public sector vaccine research and production facilities are insufficient for current and future needs for EPI vaccines. There is, however, an enormous potential for the development and use of vaccine technology and research to promote biotechnology and local vaccine production.

Since 1998, significant progress has been made in strengthening the EPI. With sustained GAVI and further donor support the programme has been re-vitalized. Much of this progress reflects improved management at the federal level and to certain extent in the provinces. Senior federal and provincial EPI staff has realised the need for renewed medium-term planning and has been operational in developing the present multi year strategic EPI plan.

Good progress has been made towards polio eradication. The previous stagnation of EPI policies has been changed with the highly successful addition of Hepatitis B and subsequently Pentavalent vaccine to the routine immunization schedule, the introduction and use of AD syringes and TT campaigns in high-risk areas. Measles SIAs have further added momentum to the programme. Steps have been taken to improve district level management with the successful preparation of micro-plans in priority districts. The well-established active AFP surveillance shows potential to be extended to other VPDs and will further improve the quality of the routine EPI reporting and surveillance system.

There is continuous high level commitment at the federal and provincial levels, but also among national and international partners. It is clear that there is a major opportunity to make the EPI more effective and to allow the disease eradication and elimination targets to be achieved. This optimism should not minimize the major problems facing the programme and these must be tackled in a positive manner, if this opportunity is to be grasped and not lost. The present update of the Multiyear Strategic EPI plan is an essential step towards a logical, well managed future for EPI in Pakistan.

Underlying Principles of the cMYP

Planning for the future of EPI in Pakistan has been assisted by recommendations from meetings of the ICC. National priorities, strategies and objectives were reviewed and revised during a joint planning workshop in Dec.2008 preceded by a joint situational analysis.

A number of principles have been identified which form the basis for specific planning and target setting:

General principles

- Sustainable Immunization services will be planned.
- Alongwith the commitment to polio eradication and MNT and measles elimination, the focus will be placed on ensuring system strengthening and credibilty in routine immunization.

Devolution of responsibility and strengthened planning

- Planning and executive authority will be further devolved to the provinces.
- The federal EPI cell will fulfil a role for technical coordination, policy development, and procurement.
- The key management level is the district, with the EDO Health being fully responsible and accountable for planning, monitoring and progress in the district.
- Within the district,the operational level is the union council, the medical officer being incharge of the basic health unit and thus having control of all the curative, preventive and promotive services in the area , is responsible for planning and implementing immunization services for all communities within the UC.
- The existing network of fixed units offering immunization services is to be extended to ensure at least one such unit in every UC.
- At all levels, written plans of action need to be available and regularly updated.
- Special emphasis for development of routine services is to be directed at high-risk populations.

Improving the quality of EPI services

- Major emphasis is to be placed on ensuring the quality of all aspects of immunization, with special note on the safety of injection practices and vaccine storage.
- Supervision and monitoring is to be strengthened, with written documentation on findings to allow follow-up.
- Systems to allow continuous monitoring of performance based on supervision, reporting and data analysis are to be further improved.
- A comprehensive training plan needs to be developed with all immunization staff to receive technical and management training, as appropriate, with refresher courses at least every three years.
- Lady Health Workers will have a key role in motivation and defaulter follow-up, and routine immunization services, where needed. After proper training they will be also allowed to provide immunization service through outreach session in their own catchment areas.
- Active surveillance through patient register review is to be extended to include MNT and measles.
- It will be explored how the HMIS can develop as an effective operational tool for EPI disease control.
- Surveillance and investigation of adverse events after immunization (AEFI) will be further improved.

Extension of the scope of the present EPI

- Vitamin A will be administered during polio SIAs and routine EPI immunization sessions twice a year.
- New vaccines (ie. Pneumococcal and rotavirus) will be added to the EPI schedule. Addition of the birth dose of Hepatitis B may be considered upon evidence based recommendation by the National Immunization Technical Advisory Group (NITAG).
- Advocacy and communications activities will create client demand and ensure community awareness of available effective health interventions.
- The potential for involving the private sector in immunization will be further investigated and developed.

Based on these principles and in line with the GIVS and global and regional EPI goals the following 09 national objectives for Pakistan were established in major strategic areas:

National Objectives and Milestones 2011-2015

An overview of the global and regional goals of the WHO/EMR together with the national objectives and appropriate milestones is provided in the following table.

Table 3: Global goals, regional goals, national objectives and milestones

Global goals	EMR regional goals	National objectives	Milestones
Coverage[1] By 2010 or sooner all countries will have routine immunization coverage at 90% nationally with at least 80% coverage in every district.	**Coverage** By 2010 all EMR countries will have routine immunization coverage at 90% nationally with at least 80% coverage in every district.	**Coverage** By 2010, 90% routine immunization coverage of all EPI antigens with at least 80% coverage in every district.	2009: 87% routine coverage 2010: 90% routine coverage 2011: 92% routine coverage 2012: 95% routine coverage 2013: 96% routine coverage 2014: 97% routine coverage 2015: 98% routine coverage
Polio[1] By 2005 the world will be certified polio-free.	**Polio** By 2005 the EMR will be certified polio-free.	**Polio** By the end of 2006, wild polio transmission will be interrupted.	2009: 2010: 2011: 2012: Polio transmission interrupted 2013: 2014: 2015: Polio-free certification
Measles[2] By 2010, 90% reduction in infant mortality by 2010 compared to 2000.	**Measles** By the end of 2010, measles will be eliminated in the EMR.	**Measles** By 2010, 90% reduction in measles morbidity and mortality compared to the 2000 level	2009: 87% MCV1 coverage 2010: 90% MCV1 coverage 2011: 92% MCV1 coverage 2012: 95% MCV1 coverage 2013: 96% MCV1 coverage 2014: 97% MCV1 coverage 2015: 98% MCV1 coverage
NT[1] By 2007, elimination in every district.	**MNT** By the end of 2007, elimination in every district.	**MNT** By 2010, neonatal tetanus eliminated in every district.	2009: 70% TT2+ coverage 2010: 75% TT2+ coverage 2011: 80% TT2+ coverage 2012: 85% TT2+ coverage 2013: 90% TT2+ coverage 2014: 92% TT2+ coverage 2015: 95% TT2+ coverage
HepB[3] By 2002, 80% of all countries with adequate delivery systems will have introduced hepatitis B vaccine. By 2007, all countries.	**HepB** By 2007 all countries of the EMR will have introduced HepB vaccine	**HepB** HepB3 coverage will reach 80% nationally by the end of 2010 and in every district by 2012	2009: 83% Penta3 coverage 2010: 85% Penta3 coverage 2011: 87% Penta3 coverage 2012: 90% Penta3 coverage 2013: 92% Penta3 coverage 2014: 94% Penta3 coverage 2015: 96% Penta3 coverage
New Vaccines By 2005, 50% of the poorest countries with high disease burdens and adequate delivery systems will have introduced Hib vaccine.	**New Vaccines**	**New Vaccines** By the end of 2010, Pneumococcal (PCV10) and by 2013 Rotavirus vaccines will be introduced.	2009: 2010: Pneumococcal (PCV10) vaccine will be introduced 2011: 2012: 2013: Rotavirus vaccine will be introduced
Injection Safety By the end of 2003, all countries use only auto-disable syringes for immunization.	**Injection Safety** By the end of 2008, all immunization injections are administered safely.	**Injection Safety** By 2010, appropriate sharps waste management in every district and by 2015 all DHQ and THQ level health facilities would have standard incinerator for safe final disposal of sharp waste.	2010: 100% of districts with safe waste management system and maintenance 2012: all DHQ level facilities and at least 25% of the THQ level health facilities would have standarnd incinerator 2013: at least 50% THQ level health facilities would have standard incinerator 2015: 100% THQ level health facilities would have standard icinerator
Vitamin A	**Vitamin A**	**Vitamin A** By 2015, Vit	2010: 25% of districts with VitA

Global goals	EMR regional goals	National objectives	Milestones
		A supplementation fully integrated into routine EPI schedule.	supplementation through the EPI 2012: 50% districts 2015: 100% districts
Advocacy & Communications	**Advocacy & Communications**	**Advocacy & Communications** By 2010, EPI communication plans implemented in every district with all caretakers of infants understanding the importance of routine immunization.	2010: 30% of districts with EPI communication plan 2011: 50% of districts with EPI communication plan 2012: 70% of districts with EPI communication plan 2013: 85% of districts with EPI communication plan 2014: 95% of districts with EPI communication plan 2015 : 100% of districts with EPI communication plan
Surveillance	**Surveillance**	**Surveillance** By 2010, integrated VPD surveillance including AFP, measles case-based surveillance and NT surveillance fully functioning By 2012, AEFI surveillance fully established and functioning	2009: Completion of training on integrated VPD surveillance training including measles case based surveillnace 2010: AFP surveillance is integrated in the VPD surveillance and NT surveillance introduced in the same system 2011: completion of training on AEFI surveillance 2012: AEFI surveillance system fully established
Effective vaccine and stock management	**Effective vaccine and stock management**	**Effective vaccine and stock management:** By the end of 2012, appropriate vaccine, supply and logistics management at all levels.	2009: Federal EPI vaccine and stock management is fully computerized 2010: Federal EPI store achieve WHO-UNICEF EVM certification standard At least in 2 provincial EPI store vaccine and stock management is computerized 2011: at least 2 provincial EPI store achieve EVM certification standard and the remaining stores are computerized 2012: all provincial stores are EVM certified

1. UNGASS goals 2. Goal set by GIVS 2006-2015 3. GAVI goals 4. WHO/UNICEF goals

National Strategies and Key Activities 2005-2010

In order to achieve these objectives, specific strategies and activities have been developed. Based on the current status of the programme with respect to these objectives, a review of the major issues involved is given for each objective, followed by a list of the proposed strategies and key activities with an indication of the timeline over the next five years. Strategies and activities are listed in the sequence of the eight national objectives given above – not all objectives, however, are relevant in each of the four major strategic areas.

1. Availability of credible service by raising capacity of the program

Objective 1 90% routine immunization coverage of all EPI antigens with at least 80% coverage in every district by 2010

Since its inception in the late 70s the annual target of the program has raised about 3 fold, new expensive vaccines have been added along with new technologies whereas program capacity interms of infrastructure and human resources remain same. Without a thorough restructuring of the program organogram at all level with addition of adequate competent manpower in the management and field work force as well as building adequate infrastructure (cold & dry storage capacity, transportion and delivery, mobility support, communication equipment etc.) at all level the program wouldn't be able

to achieve this fundamental objective to effectively reach every children. The current management structure of EPI is trunketed. Health being a provincial issue, the federal EPI can't hold provinces accountable for their performance. Similarly, the provincial EPI program manager has no authority over the EDOs (H) who is the actual responsible persons for the program achievement in the districts. On the other hand, political influence, misappropriation of resources, incopetencies of self and of other available manpower, abscence of commitment and accountability compeles EDOs (H) not to account for the optimum performance.

Vaccine and logistics volume has been increased many fold over the past decade due to increment in annual target, addition of new vaccines especially single dose preparations and inclusion of SIAs in the program. Though there has been a continuous expansion of the cold chain capacity alongside but that is not matched with the requirement. Still AJK doesn't have any provincial store and other provincial stores don't have adequate capacity. Existing cold chain units were mostly supplied in the 1980s. Many are reaching the end of their useful life. Units need to be replaced in order not to compromise the safety of vaccine storage. It will be important to develop a long-term commitment to replace the cold chain on a 10-year renewal basis. It will not be possible within a short period of time to extend the fixed-site immunization delivery network, unless appropriate, additional cold chain units become available to the programme.

Beyond these, with the view of inclusion of new vaccines in coming years there is need to expand the district stores by replacing the existing smaller equipments (ILR, Freezers etc.) by walk-in cold rooms. Reinstitution of the divisional stores with new equipments can also be considered.

The necessary improvement and expansion of the EPI during the coming years includes,

1. Remodelling of the management structure with new organogram for both federal and provincial EPI office.
2. Creation of new technical positions as required with increased program need in both federal and provincial EPI offices.
3. Creating of district epidemiologist position according to National EPI Policy in each district.
4. Recruitment of competent manpower against the newly created positions and vacant positions
5. Training of different categories of manpower
6. Involvement of LHWs in delivering EPI service through Health House based outreach session after adequate training
7. Expansion of cold chain storage and transport capacity at federal and provincial level with addition of cold room and refrigerated truck/van. Installation of small/medium size cold room in all districts replacing existing small equipments.
8. Expansion of access by opening new fixed centers and regular planned outreach centers
9. Establishment of management linkage and ensure accountability between districts, provincial EPI office and federal EPI office.

At the local level, the link between immunization and other interventions should be strengthened in order to develop mutually beneficial interventions, e.g. with the LHW, MNCH, Hepatitis Control, TB, Malaria Control programmes etc.etc.

It is critical to develop written plans of action for each district. These micro-plans provide coverage targets, staff and resources requirements, the extension of static immunization sites, and the revision of outreach strategies with reduction of dependence on mobile teams. The plans determine the needs for revitalizing and extending the cold chain, upgrading transport logistics and improving essential training. Micro-plans must realistically reflect the situation and the targets for the district and its UCs and they must be used as a template against which to measure progress. It is essential that the EPI teams, at all levels, receive assistance and infrastructure support from the PEI teams in this planning process.

Transportation for vaccinators and supervisors is aging and many vehicles are off the road, limiting the scope and reliability of outreach and mobile team sessions and severely limiting the capacity to supervise. Regular maintenance and replacement of vehicles in poor condition is needed.

There is also an urgent requirement for the development of a comprehensive training plan. This plan should include training both for new appointees and refresher training every three years for all existing staff. Mid-level managers are faced with multiple tasks, for which training will be essential to learn new techniques in planning, management and supervision. Training of cold chain staff needs to be continued and updated, as does training of staff responsible for surveillance and data management.

Poor supervision is a major factor in areas with low immunization coverage. Emphasis will be placed on increased accountability at all levels through improved supervision, with closer monitoring of performance and analysis of relevant data. Overall motivation of health workers is limited at all levels. The implementation of an incentives or rewards system for health care workers will be instrumental in improving widespread low staff morale.This can be achieved through a standardized,transparent mechanism.

The programme will investigate how the private sector can assist in ensuring immunization. This will be done while ensuring the reliability of vaccine quality, safe injection practices and appropriate reporting. Pursuing this strategy will involve identifying persons, organizations and other sectors willing to cooperate, which will eventually release the vast contribution both for advocacy and vaccine administration from paediatricians, gynaecologists and general practitioners.

Funds allocated for immunization by federal and provincial governments, including those received through GAVI have not been released in a timely manner, slowing down achievement of the goals of the last multi-year plan. Use of these resources should be based on budget requests derived from the district micro-plans. The provincial Steering Committees are to ensure that funds are used according to the plans. Greater flexibility in the use of government funds is warranted.
Once organizations and its actors at different levels are made adequate in terms of their capacity and competency then it can be expected that there will be a planned implemention of the activities which will receive regular guidance and supervision from the management and will be monitored to identify progress and flaws where immediate remeady will be provided. And thus the optimum result can be ensured for performance.

Objective 2 Polio transmission interrupted by 2012

The implementation of the strategies of NIDs and AFP surveillance has been instrumental in initial reduction of the number of wild polio cases. Routine OPV3 coverage, estimated at 75% is insufficient to allow interruption of poliovirus transmission without supplementary immunization strategies. In spite of the success of NIDs increasing routine immunization coverage is a vital component of the national strategy to eradicate polio and will be crucial in maintaining a polio-free status. AFP surveillance has improved to reach globally acceptable standards at the cost of widening sensivity and there is scope of further improvement. A Polio Eradication Certification Committee has been constituted which will collect data required to prove that Pakistan has eradicated the disease.
There is a widespread belief – probably erroneous – that the NIDs have markedly damaged routine immunization. Vaccinators are presently performing polio NID duties for almost 60 to 80 days/year, leaving them with 160 to 180 days for routine EPI work. It is important to use the opportunity afforded by polio eradication in terms of management, staffing, supervision, surveillance and, especially, community contact and tracing defaulters to strengthen and promote routine EPI. Anything less will be a major missed opportunity.

Objective 3 90% reduction in measles morbidity and mortality by 2010 compared to the 2000 level

After successful implementation of the national measles catch-up campaign in 2007 – 08 there is significant reduction of measles cases reported. Afterwards in 2008, EPI has introduced 2nd dose of measles vaccine in the routine immunization schedule. However, coverage of the measles 1st dose is still reains far below optimum and there is a recent trend of further deterioration in coverage during the 1st half of 2009. The gain in population immunity achieved through the campaign will be lost

soon if the routine coverage of both 1st and 2nd dose is not raised up to at least 90%. As a part of routine EPI strengthening, attention to raise measles vaccination coverage will also be addressed especially focussing on reducing dropout. A nationwide follow-up campaign is also planned targeting children born after the catch-up campaign by 2010 – 11. Beside these, identification of all outbreaks and mop-up activities in low coverage areas will be done through strengthening case-based measles surveillance.

Objective 4 Elimination of Neonatal tetanus in every district by 2012

As a follow through of current activities the program will complete three rounds and two rounds of SIA for all CBA women in high risk and intermediate risk districts/areas by 2010. Furhter that, MNT surveillance will also be incorporated in integrated VPD surveillance including individual case investigation by 2010. Strengthening of routine EPI to raise coverage of TT2+ along with promotion of safe/clean delivery practices will remain as major components of the MNTE strategy.

Objective 5 Inclusion of new and underused vaccines in routine immunization schedule

Ongoing sentinel surveillance for bacterial pneumonia and rotavirus diarrhoea will continue and further strengthened to provide evidence for the rationale of inclusion of new vaccines and assess impact of such inclusion afterwards. EPI will inctroduce Pneumococcal (PCV10) vaccine by the end of 2010 and Rotavirus vaccine by 2013 with GAVI support under cofinancing agreement.

Objective 6 Appropriate sharps waste management in every district by 2010

EPI Pakistan has successively introduced auto-disable syringes since 2001 with the GAVI/INS support which was totally taken over by government 100%. Now all EPI antigens are given by using WHO pre-qualified AD syringe which are procured by governement. This support from government will continue in coming years to ensure safety and standard of immunization service. EPI has also plan to build permanent facility for final disposal of sharp waste according to international standard in all government health facilities. Regular training of the relevant staff will also be ensured.

Objective 7 Establishing integrated VPD surveillance system including measles case-based surveillance by 2009

The program has inititated measles case based surveillance by strengthening current VPD surveillance system with appropriate modification. This process will be completed by 2009 and then gradually current AFP surveillance and NT surveillance will also intgreted in it by 2012.

Objective 8 Attainment of WHO-UNICEF EVM certification for Federal EPI store by 2010 and for all provincial stores by 2012

Federal EPI has recently introduced the VSSM software with assistance from EMRO for vaccine and stock management in the Federal EPI store and an assessment has also been done on EVM. Based on the findings of this assessment and recommendations of the EMRO consultant EPI will take appropriate actions to bridge the gaps identified in the assessment with an aim to achieve EVM certification by 2010. Specific PoA has been developed on it. EPI has plan to introduce the same software to all provincial stores gradually and achieve certification standard of those as well by 2012.

Other Programmatic Issues

The integration of EPI activities with other health interventions, e.g. NP for LHW & PHC, IMCI, malaria etc will be advanced in a phased-manner approach. Integrated packages for interventions at all levels are to be developed and tested during the regular updates of the multi-year plan. The expansion of immunizations to persons outside the infant age group presently includes the second dose measles vaccine provided to children in their second year of life. With other antigens potentially

included in the future, further age groups will need to be included in EPI schedule. The National Immunization Technical Advisory Group (NITAG), which consists of a broad representation of experts from different areas like epidemiology, paediatrics , EPI , Accademia , etc besides GOP and EPI partners is entrused by GOP for advice on technical expansion of the EPI services.

Table 4A: Service Delivery & Programme Management: Strategies and Key Activities 2011-2015

Objective 1:	**90% routine immunization coverage of all EPI antigens with at least 80% coverage in every district by 2010**	2010	2011	2012	2013	2014	2015
Restructuring the program organogram with appropriate expansion of human resource at federal and provincial EPI cells in accordance with program need	Inclusion of adequate technical positions for Operations, Surveillance, Training and Logistics for the federal EPI office in the Federal PC-1						
	Inclusion of adequate technical positions for Operations, Surveillance, Training, Logistics and Cold chain maintenance for the provincial EPI office in the Provincial PC-1						
	Inclusion of separate position of District Epedeimiologist and EPI co-ordinator in each district in the Provincial PC-1						
	Recruitement of appropriate manpower against the newly created positions and vacant post at all level						
Enhancing human resource capacity at every level with appropriate training and equipments	Basic training of the newly recruited manpower and refreshers training for existing manpower on pertinent issues						
	Develop annual training plans with suitable modules which include: immunization basics and new vaccine developments; vaccine management and cold chain maintenance; strengthening surveillance for EPI targeted diseases; EPI data management; and injection safety.						
	Redefine, expand and adapt EPI in-service training schedules.						
	Offer mid-level managers training at national and provincial level for EDOs and other mid-level managers						
	Train and retrain supervisors at all levels in all aspects of EPI and specifically in supervisory techniques.						
	Train all EPI staff and LHWs on appointment and establish improved on-the-job refresher training every three years.						
	Enable new/existing human resource to function by providing necessary equipement, logistics.and other resource						
Infrastructural development of the program in terms of cold & dry storage capacity, transport, delivery and distribution capacity at every level and standard waste management	Expansion of cold chain storage capacity at federal and provincial level to enable them to store adequate buffer stock and current requirement existing and new vaccines for routine EPI and SIAs						
	Expansion of cold chain storage capacity at district level by replacing smaller equipments with 'walk-in cold room' in each district						
	Expansion of cold chain storage capacity below district level with addition of new equipments and replacing old/out of order equipments						
	Expansion of cold chain transport capacity at federal and provincial level by addition of new refrigerated truck/van for vaccine transportation						
	Building permanent standard waste disposal system at every health facility level						
Recruitment of new vaccinators to fulfil the need as outlined in the National EPI Policy	Creating of at least 2 vaccinator position in each UC according to the National EPI Policy in the Provincial PC-1						
Involvement of LHWs in immunization service delivery with appropriate training	Training of LHWs on EPI to enable them to deliver immunization service through Health House outreach session						
Increasing the number of static	Advocate at provincial and district level for an increase in the number of static EPI centres to at least one such unit per UC.						
	Establish EPI centres in all health facilities and provide these with cold-						

EPI centres to have at least one fixed center in every UC	chain equipment.						
	Increase service provision at existing static centres.						
	Review outreach and mobile team services in view of the increased number of fixed sites.						
Increasing access of the service to the community through regular outreach immunization session in every community at least once in a month following annual/half yearly EPI micro-plan	Implement the RED approach for all EPI antigens in every district						
	Develop operational micro plan for each union council						
	Make UC level facility in-charge accountable for implementation of the mciroplan, its supervision and monitoring of performance by empowering him with appropriate authority						
	Monitor progress of district micro-planning, review, adapt and follow-up on their implementation. Field staff of partner agencies for PEI will provide technical assistance in developing monitoring micro-plan and will monitor the indicators through regular review						
Raising immunization coverage of all antigens	Raising immunization coverage of all antigens up to 90% in all districts by increasing access, raising demand and awareness for immunization, appropriate microplan to reach the clients and its implementation with regular supervision, monitoring and evaluation						
	Establish an incentives or rewards system for EPI staff based on quantifiable output						
	Include routine EPI coverage strengthening in job descriptions of PEI staff						
	Engage LHWs in EPI service delivery through Health House outreach session						
Reduce DTP1-DTP3 (Penta1 – Penta3), DTP1 (Penta1) – Measles1, Measles1 – Measles2 and TT1 – TT2 drop-out rates by tracing defaulters	Ensure that daily and permanent immunization registers are maintained and updated.						
	Ensure additional outreach activities by vaccinators and/or LHWs, based on drop-out data in the registers.						
	Regular monitoring of different dropout rate at UC, Tehsil/taluka, district, province and federal level and appropriate feedback with action						
Strengthen supervision and monitoring at all levels.	Ensure that the federal and provincial Inter-Agency Coordination Committees meet regularly to review progress, assess needs and coordinate support.						
	Schedule inter-provincial review meetings every quarter to review progress, share experience and feedback.						
	Involve MOs i/c of health facilities in the planning, implementation and supervision of EPI activities at UC level.						
	Prepare definition of responsibilities and appropriate checklists for each level.						
	Hold MOs i/c directly accountable for the implementation and performance of immunization services in their areas.						
	Develop a supervision checklist to systematise visits of different level of supervisors to ensure that all EPI units are supervised at least once in a month.						
	Involve MOs at the district level in facility-based supportive supervision throughout their area of responsibility.						
	Integrate the private health sector into training and resource distribution.						
Improve financial and human resource management	Adequate allocation of resources in the national budget for infrastructure development, expansion of service, human resource, provision of traditional vaccines and inclusion of new vaccines, injection equipments, logistics and operations.						
	Improve financial planning and management capacity, base EPI financial planning on budget requests from district micro-plans						
	Commit increased and sustained national budget allocations for vaccines and immunization equipment in line with the cMYP, the established project document (PC-1 2009-10 to 2013-14).						
	Through the ICC, liaise with national and international partners to identify						

	potential funding for elements not covered by government sources.						
	Coordinate funding requests with political, planning and finance authorities in order to guarantee the timely and regular release of GAVI and other donor funds to provinces and districts.						
	Assist provincial EPI planning and financial units to ensure adequate allocations and timely release of funds to districts.						
	Strengthen accounting procedures and report to ICC on quarterly basis.						
	Equitable distribution of available human resource especially vaccinators ensuring every UC has at least one vaccinator till new recruitment is done						

Objective 2:	**Polio transmission interrupted by the 2012**	2010	2011	2012	2013	2014	2015
Improve routine infant immunization coverage.	See Objective 1						
Conduct periodic SIAs to supplement routine immunization service	Conduct adequate number of SIAs ensuring optimum coverage as indicated by surveillance data						
	Include Vitamin A supplementation in Polio NIDs twice per year for children aged 6-59 months till it's integrated in routine EPI.						
Maintain good AFP surveillance.	See 3. Surveillance and Data for Decision-Making						

Objective 3:	**90% reduction in measles morbidity and mortality by 2010 compared to the 2000 level**	2010	2011	2012	2013	2014	2015
Improve routine immunization coverage up to 90% for both doses of measles vaccine.	See Objective 1						
	Include measles immunization appropriately in micro-plans in all districts.						
Conduct measles follow-up campaign	Conduct nation wide measles follow-up campaign targeting children born after the catch-up campaign						
	Conduct mop-up campaign in low performing pockets						
Improve case management of children along with other VPDs	Provide guidelines for measles case management and train health care workers accordingly.						
Improve outbreak response	Establish one outbreak response team per province.						
	Train health care workers in the management and response to measles outbreaks.						
Establish measles surveillance.	See 3. Surveillance and Data for Decision-Making						

Objective 4:	**Elimination of Neonatal tetanus in every district by 2012**	2010	2011	2012	2013	2014	2015
Improve routine TT immunization coverage.	see Objective 1						
	Include routine TT immunization appropriately in micro-plans in all districts.						
	Expand TT immunization through Maternity homes in the private sector						
Conduct appropriate rounds of MNTe campaign in high-risk and intermediate districts/area s.	Conduct 3 rounds of MNTe campaign in all high risk districts targeting all CBA women						
	Conduct 2 rounds of MNTe campaign in all intermediate type 1 districts and specific UCs of intermediate type 2 districts						
	Ensure proper response to reported cases by immunizing all women in a locality where a case has been reported						

Objective 5:	**Introduction of Pneumococcal (PCV10) and Rotavirus vaccines in routine childhood immunization schedule**	2010	2011	2012	2013	2014	2015
Inclusion of new cost-effective	Inclusion of Pneumococcal (PCV10) vaccine in the routine immunization schedule in 2010 with GAVI support under co-financing agreement						

vaccines in routine childhood immunization schedule	Inclusion of Rotavirus vaccine in the routine immunization schedule by 2013 with GAVI support under co-financing agreement						

Inclusion of Rotavirus vaccine in the routine immunization schedule by 2013 with GAVI support under co-financing agreement	Inclusion of Hep B birth dose if evidence based recommendation is made by the NITAG						

Objective 6:	**Appropriate sharps waste management in every district by 2010**	2010	2011	2012	2013	2014	2015
Improve safe injection practices with appropriate safe injection equipments and training	Continue to provide adequate safe injection equipment bundled with vaccines and safety boxes to all districts.						
	Include injection safety in training for EPI workers and managers						
Standard disposal of sharps waste	Building standard incinerator at all DHQ level health facilities						
	Building standard incinerator at all THQ level health facilities						
	Regularly monitor and supervise safe injection practices in all districts						
	Include private health sector staff in injection safety training.						

2. Advocacy and Communications

During the past decade social mobilization has largely been limited to support for polio NIDs. Therefore, a changed strategy is to be adopted to create better/renewed awareness among masses so that they are mobilized to demand all types of vaccination at the fixed centers as well as the EPI staff are motivated to accept their role of enhanced communication.

At the federal level innovative communication planning to address the low awareness, misperceptions and mobilization of communities was initiated. A strategic decision was taken to separate the routine immunization activities from the polio communication plan. To regain the identity of routine immunization services an innovative and consistent approach is to be implemented by branding the communication for EPI. Following the development communication model, industrial marketing techniques such as images, identity and values will be applied to give a new focus and tone to EPI communication. Appropriate efforts will be made to reach and convince remote and illiterate populations.

The EPI Communication Plan develops a programme of active social mobilization, both to educate the public and to create client demand for services appropriate to their needs. The plan aims at convincing at least 80% of parents /caretakers of infants to support the EPI objectives through:

- recognising that routine immunization protects children from eight dangerous diseases;
- knowing where and how to use EPI services and to ask that new disposable syringes are used by health workers for immunization;
- acknowledging that minor side-effects of routine immunization are a sign that immunization is working and normally nothing to worry about;
- accepting that routine immunization is essential in addition to polio drops during NIDs/sNIDs.

A subsequent mass media campaign using the mascot will include television, radio, newspapers and other communications means. The team is also exploring partnerships with the media as well as other intersectoral partnerships to increase the attitudes and perceptions of the community about the importance of immunization.

The vast experience of PEI staff in communications will be used to strengthen EPI social mobilisation, among others through community advocacy meetings with local decision makers including religious leaders, teachers, female counsellors, private practitioners, GPs and traditional healers to ensure their further involvement and support. Particular focus at the community level will be on supporting the implementation of the RED approach, ensuring the active participation of the

community. Efforts will also focus on improving the interpersonal communications skills of the vaccinators and LHWs.

Table 4B: Advocacy and Communications: Strategies and Key Activities 2010-15

Objective 2:	**Polio transmission interrupted by 2012**	2010	2011	2012	2013	2014	2015
Continue PEI advocacy with key policy/decision makers.	Hold polio eradication advocacy meetings, briefings and seminars with key decision makers and potential partners.						
	Print/distribute communication material on polio eradication.						
Communicate with parents of children under 5 years to get every child vaccinated every time.	Establish interpersonal contacts with parents on polio eradication through health workers, boy scouts and girl guides, social mobilization teams, mosque and school announcements and written materials.						
	Improve mass media communication on polio eradication.						
Build capacity in polio advocacy and communication.	Periodically orient and train all polio team members on advocacy and communication.						
Develop innovative approaches to reach the un-reached.	Develop special communication activities for hard-to-reach areas and parents.						
	Form community groups and involve local leaders in polio eradication efforts.						

Objective 4:	**Elimination of Neonatal tetanus in every district by 2010**	2010	2011	2012	2013	2014	2015
Improve MNTE advocacy and communications.	Review existing MNT communication strategies and material, assess their impact and adapt accordingly.						
	Hold briefings, meetings, seminars on MNT elimination with relevant provincial and district decision makers.						
	Hold community events/gatherings, seminars and meetings on MNT elimination at different levels.						
	Develop MNT campaign-specific communication plan for all levels.						
	Develop area-specific mixed media messages for radio, TV, newspapers, mosques, schools, health workers, etc. on MNT elimination.						
	Increase awareness about TT vaccination among teenage girls through health education in high schools and colleges.						

Objective 7:	**Appropriate sharps waste management in every district by 2010**	2010	2011	2012	2013	2014	2015
Strengthen communication activities on injection safety in the EPI programme.	Implement WHO Focus Project communication plan in all districts.						
	Improve community awareness about injection safety through appropriate materials targeting the general public.						
	Monitor implementation of communication strategies on injection safety.						
	Use appropriate experience of HIV/Hepatitis Control programme in improving injection safety.						
	Implement focused communication projects on EPI waste management.						
	Coordinate/collaborate communication efforts on injection safety with other programmes.						

Objective 9:	**EPI communication plans implemented in every district with all caretakers of infants understanding the importance of routine immunization by 2013**	2010	2011	2012	2013	2014	2015
Establish and implement EPI communication plans at all levels.	Develop key messages for routine strengthening so that all caretakers of infants understand the importance of routine immunization.						
	Target key decision makers including political, religious and local leaders.						
	Hold community meetings on VPDs in all districts.						
	Include measles and MNT prominently in key messages on routine EPI.						
	Include key messages on new EPI vaccines, when appropriate.						
	Run mass media campaigns on all the new initiatives.						
	Involve school children through drawing/essay compititions,quiz and						

	debates						
	Design, produce, field test and print communication material on routine immunization including new vaccines and technologies.						
	Develop innovative channels of communication including hoardings, buses, paintings and signs etc.						
	Increase participation of LHWs in social mobilisation through women counsellors/health committees.						
	Monitor and periodically adjust EPI communication plans.						
Use PEI advocacy and communication experience for EPI strengthening.	Adapt Polio advocacy and social mobilisation activities to increase awareness and demand for routine EPI services.						
	Incorporate EPI messages in all PEI related printed materials during polio NIDs.						
Develop EPI special branding and programming on mass media.	Plan, launch and periodically review "Teeku" – a new icon of routine immunization through mass, folk and local media at all levels.						
	Produce branded mass media programmes such as television plays ("Teeku" and "Uncle Sargum") dedicated to the promotion of routine immunization.						
	Design, field test and apply agreed colour scheme to all communication material at all levels.						
	Monitor and periodically adjust EPI mass media plans.						
Establish EPI card initiative through boy scouts and girl guides.	Involve about 100,000 scouts and guides to raise awareness on routine EPI and motivate parents to get their children vaccinated.						
Improve community ownership.	Mobilise female counsellors, through LHWs, to take the lead in awareness raising activities at grassroots level.						
	Institutionalize involvement of GPs and traditional healers through national, provincial and district conventions						
Train relevant staff on EPI advocacy and communications.	Arrange training opportunities for provincial and district health staff on how to effectively plan, implement and review EPI communication plans.						

3. Surveillance and Data for Decision-Making

Three independent surveillance and reporting systems are presently in place in Pakistan: The AFP surveillance network, the routine EPI reporting system, and the HMIS/DEWS.

EPI coverage estimation is based on routine reporting and confirmed by coverage surveys about once every three/four years. The routine EPI reporting system has been validated by a DQA in 2003, making it a reliable tool in providing data on vaccine provision. After the successful district wise coverage survey of 2005, the next is overdue during 2009-10. Major efforts will be made to compile administrative estimates of coverage at all levels and to improve data analysis in order to assist EPI decision-making. This will involve better estimates of target populations, developing cross-checks between reports and vaccine doses administered and establishing better accountability for reported coverage at the UC level.

AFP surveillance is active through patient register reviews in selected health facilities and of expected standard. Virological case definition has been implemented and expert review committees are functional at provincial and federal level. Additional surveillance officers in the provinces and divisions and international consultants have been recruited to strengthen field supervision of Polio Eradication Initiative (PEI).

Surveillance for most other vaccine preventable diseases (diphtheria, pertussis, measles, NT, childhood tuberculosis and Hepatitis B), however, is still insensitive with a vast underreporting of disease episodes. Recently EPI has modified this reporting system with inclusion of case-based surveillance for measles and converted it from monthly reporting cycle to weekly. Introductory training has been completed in Sindh, AJK, FANA, Punjab and underway in NWFP. Training will be completed in the remaining areas of the country by the end of 2009. Necessary tools, forms, guidelines has been developed and distributed in the districts where training is completed.
Separate sentinel surveillance for bacterial meningitis and rotavirus diarrhoea is ongoing in selected tertiary level hospitals across the country. This will provide data for estimation of disease burden and cost-effectiveness analyses for new vaccines against these diseases.

Surveillance for NT is included in the routine VPD surveillance system and individual case investigation of each case would be start soon.
Surveillance of adverse events following immunization (AEFI) has started in 2004 and is mainly reporting severe adverse events.

The HMIS and DEWS are not yet being operationally useful in recording and monitoring the incidence of the EPI target diseases due to limited data (HMIS) and limited coverage area (DEWS). HMIS reporting, however, may become more sensitive, since it reports both outpatient attendance and in-patient admissions.

It is intended to use AFP surveillance network to strengthen the routine EPI VPD reporting system in providing the basis for a broader, more complete surveillance for all EPI target diseases. Measles and MNT have initially been incorporated within the PEI AFP surveillance system. This will allow ongoing quality assurance of the routine EPI reporting system. Once the routine system attains adequate quality, this parallel system can be taken off to avoid duplication.

Table 4C: Surveillance and Data for Decision-Making: Strategies and Key Activities 2011-15

Objective 2:	**Polio transmission interrupted by 2012**	2010	2011	2012	2013	2014	2015
Establishing Integrated VPD surveillance system including measles case-based surveillance system by 2009	Maintain ongoing AFP surveillance						
	Convene the Polio Eradication Certification Committee to provide guidance on improving quality of surveillance and strategies for polio eradication						
	Involve private health care sector in AFP surveillance						
	Complete introductory training on integrated VPD surveillance for all service providers in the districts of Punjab, NWFP, Balochistan and FATA						
	Supply of adequate tools, forms, communication materials, kits and guidelines for the integrated VPD surveillance						
	Hold quarterly meetings of responsible surveillance staff to provide guidance, training and feedback.						
	Conduct awareness/ refresher seminars on VPD surveillance including AFP, Measles and NT reporting for all health care providers.						
	Conduct refresher training on AEFI surveillance for all health care providers						
	Create position of surveillance coordinator at provincial EPI offices and district epidemiologist in each EDO (H) office and recruitement competent persons against those positions						
	Develop comprehensive VPD and AEFI surveillance guideline						
	Prepare training manual on VPD surveillance for managers and field staff.						
	Orient and train health care managers and health care workers on routine VPD surveillance and data management at all levels including computer software training.						
	Identify laboratory focal points and expand laboratory infrastructure for VPD surveillance.						
	Develop standardized requisition forms for VPD laboratory investigation.						
	Train provincial level laboratory technicians in appropriate culture and antigen detection methods for VPDs.						
	Develop national data-base linking laboratory and epidemiologic surveillance data.						

4. Effective vaccine and stock management

Vaccine supply has being interrupted on occasions due to stock out of certain antigens and on the other hand expired due to excess availability than required. The challenge for the EPI is to accurately forecast its logistic needs through a system that can cross-check, identify inconsistencies and proceed with timely procurement and distribution. This needs improved logistics planning and management.

Vaccine and stock management has been recently computerised in the Federal Store with WHO assistance and will be further extended up to provincial stores. Federal store is expected to be certified according to the WHO-UNICEF EVM standard by 2010.

Table 4D: Effective vaccine and stock management 2011-15

Objective 8: Attainment of WHO-UNICEF effective vaccine management certificate for Federal EPI store by 2010 and for provincial stores by 2012		2010	2011	2012	2013	2014	2015
Attainment of WHO-UNICEF certification standard on vaccine and stock management at Federal and all provincial stores	Fulfilling the recommendations of the EMRO team after recent EVM assessment to prepare for final assessment of federal store by 2010						
	Training of Provincial store personnel on EVM						
	EVM self assessment of provincial stores to identify gaps						
	Final assessment of provincial store for attainment of certification						
Efficient vaccine and logistics forecasting, procurement and supply to avoid stock out	Improve long-term vaccine and supplies demand monitoring and forecasting.						
	Prepare routine vaccine requirements according to vaccine utilization and safety stock based on approved district micro-plans.						
	Establish reliable and timely procurement of vaccine and syringes.						
	Distribute appropriate quantities of routine EPI vaccines to UC level and improve storage of routine EPI vaccines in all provinces and districts.						
	Monitor vaccine inventories at the national, provincial and district level using standardized request and release forms, inventory logbooks and a computerized database.						
	Ensure and replenish a 3-month buffer stock of syringes and vaccines at both the federal and provincial levels and a one-month reserve supply at the district level.						
	Distribute guidelines on vaccine management to all vaccinators and health care workers.						
	Improve vaccine ledger in order to be able to monitor vaccine expiry date.						
	Provide relevant training on vaccine management to all health care workers.						
Improve self-reliance in quality assurance and regulatory oversight related to vaccines and immunizations	Strengthen NRA by ensuring further assistance from partners to bring the practice and procedures to appropriate WHO-certified accreditation level.						
Reduce vaccine wastage.	Monitor vaccine wastage at all level and appropriate feedback for correction						
	Respond properly to high wastage rates during supervision visits.						
Improve transportation of vaccines and supplies in every district.	Establish a firm management system of relevant transportation equipment at provincial and district level.						

References / Documents Consulted

GOP/NIH/Federal EPI/CDD Cell: Multi year strategic plan: FY 2009-10 to FY 2013-14

WHO/EMRO: Survey on the Safety of Injections in Pakistan, May 2002

GOP/MOH/NIH: EPI Financial Sustainability Plan 2003-2012, Nov. 2003

GOP/NIH/Federal EPI/CDD Cell: Project Documents (PC-1) of Expanded Programme on Immunization 2009-10 to 2013-14

WHO/VIB: Immunization Profile Pakistan, Sep. 2004

AF Ferguson: Report on the 2003 data quality audit (DQA) of the year 2002, Pakistan, Sept. 2003

GOP/NIH/Federal EPI/CDD Cell: GAVI Annual Progress Report, May 2008

National Communication Committee for EPI – Pakistan: EPI Communication Plan 2004-05, Oct. 2004

AC Nielsen: Draft Report on Identification of Barriers in Immunization Services in Pakistan, Oct. 2004

WHO Pakistan: Injection Safety in the Islamic Republic of Pakistan, Project Proposal, Oct. 2004

GOP/NIH/Federal EPI Cell: National EPI Policy and Strategic Guidelines, Oct. 2005
WHO/EMRO: Measles mortality reduction in Pakistan. Mission report, Oct. 2004

WHO/UNICEF: Global Immunization Vision and Strategies (GIVS), a Strategic Framework for 2006 - 2015, Draft, Nov. 2004
GOP/NIH/Federal EPI/CDD Cell: Multi year strategic plan:
WHO Geneva: cMYP guidelines 2005

GOP/MOH/NIH: EPI surveillance data, Feb. 2009

WHO Geneva: cMYP Costing and Financial Tool and User Guide Version2.2 Feb.2009

ANNEX 1:

Costing and Financing Analysis of the cMYP for EPI Pakistan – 2011-2015

Introduction & Background

For development of the next five years cMYP i.e 2011-2015 , Federal EPI startred the process in December 2008 by arranging a consultative Workshop at Lahore in December 2008. The workshop was participated by representatives from Federal Ministry of Health , Federal EPI Cell, Planning section of Planning and Development Division of GOP, Provincial EPI Cells, Provincial planning departments and partners[2]. During this workhshop which was assisted by WHO EMRO , the objectives , mile stones and key areas to be included in the cMYP within the GIVS frame work and considering the national and provincial level priorites were discussed and agreed. Consequently a core team at Federal EPI Cell was constituted which prepared the draft for consideration by National Inter Agency Coordintion Committee (NICC) which also includes the representatives from the provinces and areas[3].

The cMYP is based on the GIVS, and thus covers all the four strategic areas, which require strengthening of all the components of the programme. Despite considerable efforts by GOP and its EPI partners the EPI coverage did not reach the planned target of ----- in 2008.Unfortunately it declined to 73% in 2008 from 83% in 2007 mainly because of deteriorated security situation in the country , coupled with some periods of stock outs of vaccine and managerial issues in number of the districts. Therefore the major emphasis during the plan period 2011-2015 is on building the managerial capacity at all levels , strengthening of vaccine management including the stocks management , reaching more and introducing the new vaccines as and when appropriate to benefit from their role in preventing vaccine preventable disease . A robust EPI programme is also needed to reach the MDGs and honour the commitments of GOP in this respect. The target population for 2011 – 2015 (Table 1) are based on the indicators in use by Federal EPI (Table 2)

Table 1 : Population Projections

0.2 - Results Table for Routine Immunization

	2008	2011	2012	2013	2014	2015
Population	178,456,400	169,803,084	172,825,579	175,901,874	179,032,927	182,219,714
Births	6,304,865	5,943,108	6,048,895	6,156,566	6,266,152	6,377,690
Surviving Infants	5,830,739	5,485,489	5,583,130	5,682,510	5,783,659	5,886,608
Fully Immunized Children (proxy)	4,256,439	4,772,375	5,024,817	5,227,909	5,436,639	5,651,144
Pregnant women	7,313,643	6,061,970	6,169,873	6,279,697	6,391,476	6,505,244
Child Bearing Age Women	39,260,408	37,356,678	38,021,627	38,698,412	39,387,244	40,088,337
Other target group (enter value in % of total population)	0	0	0	0	0	0
12-23 months	5,830,171	5,486,338	5,583,994	5,683,390	5,784,554	5,887,519

Table 2 : Demographic indicators

	Baseline	Future Years				
Routine Immunization	**2008**	**2011**	**2012**	**2013**	**2014**	**2015**
Population (% growth)	2.830%	1.78%	1.78%	1.78%	1.78%	1.78%
Births (% total population)	3.533%	3.50%	3.50%	3.50%	3.50%	3.50%
Infant Mortality Rate (per 1,000 live births)	75.2	77	77	77	77	77
Pregnant women (as a factor of births)	1.160	1.02	1.02	1.02	1.02	1.02
Childbearing age women (CBAW) (% of total population)	22.0%	22.0%	22.0%	22.0%	22.0%	22.0%

[2] Some of the invites could not participate.

[3] Federally Administered Tribal Areas (FATA) , Federally Administered Northern Areas (FANA) , Azad Jammu and Kashmir (AJK)

In this analysis the future resource requirement of the programme, financial suitability for GOP and the funding gaps have been estimated under three scenarios:

Scenario 1: Continuation of the use of Pentavalent (DPT-HepB-Hib) combo vaccine availing GAVI co-financing opportunity under phase 2 , introduction of Hep B birth dose in 2013, and considering the likely GAVI ISS support under phase II and partial contribution of HSS funds to the EPI activities.

Scenario 2: Within the scenario 1, country wide introduction of Pneumococcal (PCV10) vaccine beginning 1st January 2011.

Scenario 3: Within the scenario 2, country wide introduction of Rota virus vaccine (Rotarix) beginning 1st January 2013.

Salient features of the costing of cMYP

1. The target population for 2008 has been used as that reported in JRF for 2008. The Federal EPI target figures are generally known to be over projected.[4] However Federal EPI has initiated the process of consultation with the concerned ministries/ departments of GOP as well as other stake holders in having more rational target populations. Till final official decision in this regards Federal EPI has used in this document projections based on indicators which are more approximate to current indicators mentioned in Economic Survey of Pakistan and draft EPI PC1 2009-10 to 2013-14 to have a more rationale target populations.

2. The needs are estimated on the basis of the programme requirements to reach the programme objective of at least 90% routine immunization coverage of all EPI antigens with at least 80% coverage in every district by 2012 according to yearly target set in the cMYP.

3. The WHO Multi year Vaccine forecasting tool together with the WHO-UNICEF cMYP costing and financing tool has been used to estimate the requirements and price of vaccines , cold chain injection supplies and associated costs over the plan period.

4. For expansion and strengthening of VPD surveillance, besides provision for operational cost, provision for District Epidemiologist /Surveillance officer as required under National EPI Policy at each district has also been made.

5. For the vaccines procured by GOP in 2008 (Measles, TT, OPV) the actual price of procurement has been used. For the remaining vaccines the weighted average price of the vaccines , injection safety equipment and freight etc as per UNICEF quoted prices in the WHO Multi year vaccine forecasting tool have been used.

6. The Federal and provincial Government contributions for all years and approved US$ 22.9 million as GAVI ISS rewards for which expenditure has been planned for 2011-2013, have been considered as secure financing in this cMYP. The cost of co financing by GAVI of the new vaccines along with the NUVI cost, the likely availability of GAVI ISS Phase I and partial support to EPI activities from GAVI HSS has been included as probable financing.

[4] NICC meeting of 10 July 2009.

7. Introduction of Hepatitis B Birth dose from 2013 onwards in form of Uniject from with estimated coverage of 50% , 55% and 60% in 2013 , 2014 and 2015 has been included in the cMYP.

Past Expenditures on EPI[5]

For the period 1995-1999

The total average annual expenditure on routine EPI activities over 1995-1999 period was approximately $ 21-24 million for about 2 million children being reached. This cost increased to $ 31.6 million in 2003 largely because of inclusion of Hepatitis B vaccine and use of AD syringes. The SIAs for Polio and MNTE during the year incurred an additional expenditure of $ 40.5 million, bringing the total EPI expenditure to $ 72.2 million in 2003. The National and Sub –National Governments, referred herein as Government of Pakistan (GOP) contributed 59% of all funds for routine EPI in 2003 with majority of support being in the form of salaries[6]. Of the salary component, GoP provided 97% of the resources.

For 2005

In 2005, the total expenditure on immunization was estimated to be $ 154 million[7]. This included an amount of $ 125.5 million for immunization specific expenditures besides an estimated expenditure of $ 28.3 as shared cost of the human resource , goods and other activities, utilized for immunization (18% of the costs are shared).

The total expenditure on SIAs (Polio and MNTE) approximated $ 64.7 million (i.e 51.5% of all immunization specific spending), while the expenditure on routine immunization was $61 million (i.e 48.5% out of the total expenditure of $ 125.406 million on Immunization). In other words, for every 2 dollars spent on immunization in Pakistan, one was for campaigns.

The cost per DPT3 child worked out to be $ 16.0, which was a little less than the regional average of US$ 17.2, thus confirming the cost effectiveness of the EPI Pakistan. The per capita expenditure on routine immunization was $ 0.4, which was 1.8 % of total health expenditure. (Table 3).

Table 3: Past Baseline Indicators	2005
Total Immunization Expenditures	$125,571,746
Campaigns	$64,680,727
Routine Immunization only	$60,891,018
per capita	$0.4
per DTP3 child	$16.0
% Vaccines and supplies	16.9%
% National funding	16.9%
% Total health expenditures	1.8%
% Gov. health expenditures	6.4%
% GDP	0.04%
Total Shared Costs	$28,386,411
% Shared health systems cost	18%
TOTAL	$153,958,157

[5] All $ costs in this document are US$
[6] FSP EPI Pakistan , September 2005
[7] Derived through utilizing the cMYP tools

During 2005,GOP covered 71% of the rouitine immunization cost, while remaining 29% was funded by EPI partners, including GAVI .

For 2008

The total estimated expenditure on immunization increased to US$ 234.330 million in 2008 compared to $ 134 million in 2005. This expenditure includes $ 20.151 million (9% of total expenditure as shared cost).

The proportion of expenditure on routine immunization ($ 104.313 million) vs capamigns ($ 109.865 million) in 2008 remained almost same as 1:1 as was in 2005. The cost per DPT3 child increased to $ 24.5 compared to & $16.0 in 2008. This increase is because of introduction of Pentavalent vaccine in immunization schedule the threedoses of which cost appx $ 11. The GOP expenditure on EPI as percentage of Total Health Expenditure increased from 6.4% in 2005 to 22.3% in 2008.

Further details of expenditure in 2008 are given in Table 4

Table 4 : Baseline Indicators	2008
Total Immunization Expenditures	$214,179,140
Campaigns	$109,865,163
Routine Immunization only	$104,313,976
per capita	$0.6
per DTP3 child	$24.5
% Vaccines and supplies	14.5%
% National funding	13.9%
% Total health expenditures	3.7%
% Gov. health expenditures	22.3%
% GDP	0.07%
Total Shared Costs	$20,151,344
% Shared health systems cost	9%
TOTAL	$234,330,484

Scenario 1 : Future cost requirements & Financing

Under this scenario, which is currently being followed and Hepatitis B, birth dose will be added in 2013, the programme will be strengthened during the plan period primarily in terms of its needs for hardware and human resource and disease surveilience.

Under Scenario 1, the total cost required for routine immunization during period 2011-2015 is $ 769.147 million.There is a gradual increase in yearly requirement for routine immunization from $ 119.447 million in 2011 to $ 143.013 million in 2015. It is to be noted that the cost of routine immunization in base year i.e 2008 was $ 104.313 million.
In per capita terms the cost for routine immunization will increase from $ 0.7 in 2011 to $ 0.8 in 2015. The cost per DPT-3 child will range from $ 25.0 to $ 25.7 during the plan period with an average of $ 25.4. (Table 5)

Table : 5

Resource Requirements, Financing and Gaps*	2011	2012	2013	2014	2015	Avg. 2011 - 2015
Total Resource Requirements	**$172,278,648**	**$169,459,181**	**$134,191,969**	**$150,203,507**	**$143,013,358**	**$769,146,664**
Total Resource Requirements (Routine only)	**$119,447,229**	**$128,881,475**	**$134,191,969**	**$137,527,028**	**$143,013,358**	**$663,061,058**
per capita	$0.7	$0.7	$0.8	$0.8	$0.8	$0.8
per DTP targeted child	$25.0	$25.6	$25.7	$25.3	$25.3	$25.4
Total Secured Financing	**$70,970,169**	**$74,771,241**	**$70,827,884**	**$67,468,356**	**$68,705,036**	**$352,742,686**
Government	$28,118,826	$29,703,585	$23,001,572	$23,018,563	$19,794,733	$123,637,279
Sub-national Gov.	$32,197,507	$33,631,640	$36,356,407	$37,516,545	$41,704,278	$181,406,378
Gov. Co-Financing of GAVI Vaccine	$6,105,788	$6,426,856	$6,667,809	$6,933,248	$7,206,025	$33,339,726
GAVI (ISS , NVS, HSS)	$4,548,048	$5,009,160	$4,802,096			$14,359,304
WHO						
UNICEF						
World Bank						
Others (CDC. CIDA, JICA, DFID, Rotary int						
Funding Gap (with secured funds only)	**$101,308,480**	**$94,687,940**	**$63,364,085**	**$82,735,151**	**$74,308,321**	**$416,403,977**
% of Total Needs	59%	56%	47%	55%	52%	54%
Total Probable Financing	**$101,308,480**	**$94,687,940**	**$63,364,084**	**$82,735,151**	**$74,308,322**	**$416,403,977**
Government						
Sub-national Gov.						
Gov. Co-Financing of GAVI Vaccine						
GAVI (ISS , NVS, HSS)	$50,436,597	$57,418,289	$58,901,515	$63,363,149	$67,384,455	$297,504,005
WHO	$5,113,136	$3,900,000	$1,950,000	$3,400,000	$4,440,000	$18,803,136
UNICEF	$15,468,747	$2,911,858	$1,778,252	$15,680,254	$2,362,267	$38,201,378
World Bank	$20,000,000	$20,000,000				$40,000,000
Others (CDC. CIDA, JICA, DFID, Rotary int	$10,290,000	$10,457,793	$734,317	$291,748	$121,600	$21,895,458
Funding Gap (with secured & probable funds)	**$0**	**$0**	**$1**	**$0**	**-$1**	**$0**
% of Total Needs	0%	0%	0%	0%	0%	0%

Of the total resource requirements of $ 769.146 million (including SIA's) for the plan period an amount of $ 352.742 million (46%) is secured while an amount of $ 416.403 million (54%) is probabl.The secured funds include the GOP contribution and GAVI ISS support (rewards) which stand approved.

The composition of funding gap with secure funds is as shown in table 6 and chart 1:

Table : 6

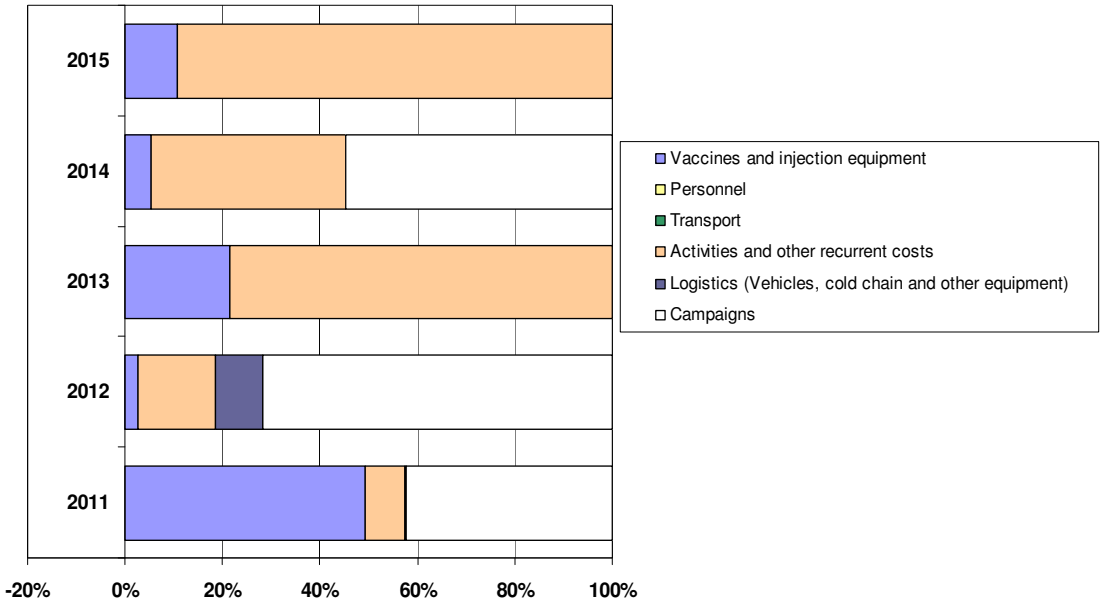
PAKISTAN - Composition of the Funding Gap (Immunization Specific Only)

Show the funding gap with secure funds only	Y	(Select N for displaying the funding gap with both secure and probable funds)

Composition of the funding gap	2011	2012	2013	2014	2015	Avg. 2011 - 2015
Vaccines and injection equipment	$50,056,200	$1,175,312	$1,219,376	$1,267,918	$1,317,802	$55,036,607
Personnel	$0	$0				
Transport						
Activities and other recurrent costs	$8,040,463	$6,691,944	$4,462,570	$9,263,307	$10,884,417	$39,342,702
Logistics (Vehicles, cold chain and other equipment)	$380,396	$4,239,313				$4,619,709
Campaigns	$42,831,420	$30,577,707		$12,676,479		$86,085,606
Total Funding Gap*	**$101,308,480**	**$42,684,276**	**$5,681,946**	**$23,207,703**	**$12,202,218**	**$185,084,623**

Chart : 1

Composition of the Funding Gap*



* Immunization specific funding gap. Shared costs are not included.

cMYP Costing and Financing Graphs for Pakistan under Senerio 1

Chart 2

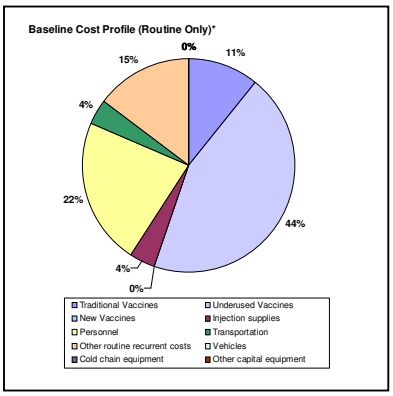


Chart 3

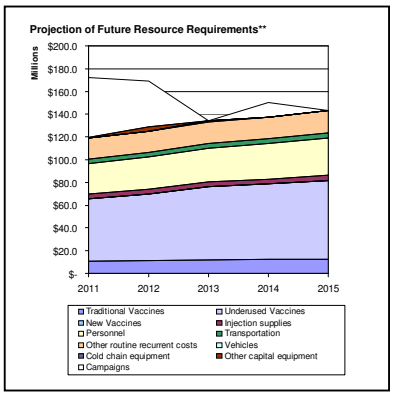


Chart 4

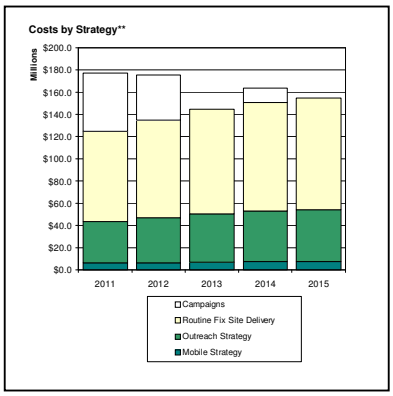
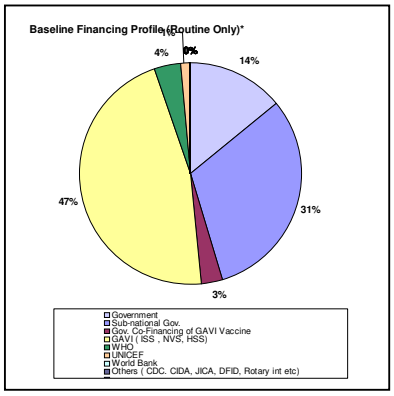
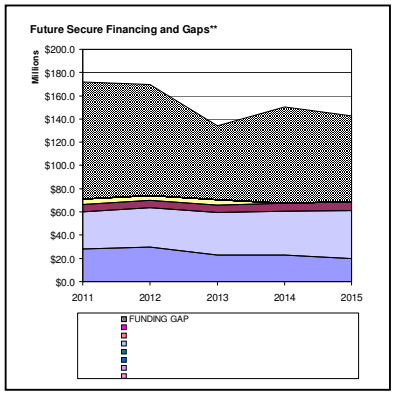
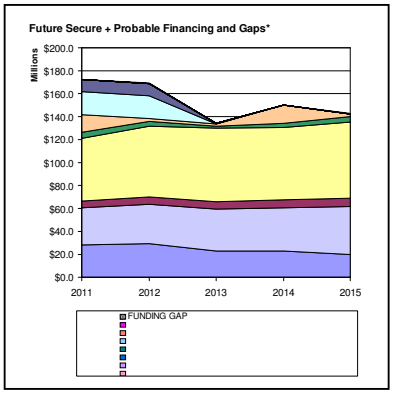


Chart 5







Immunization Sustainability

The immunization sustainability analysis under scenario 1 is depicted in table 6 and chart 8 below.

Table :6

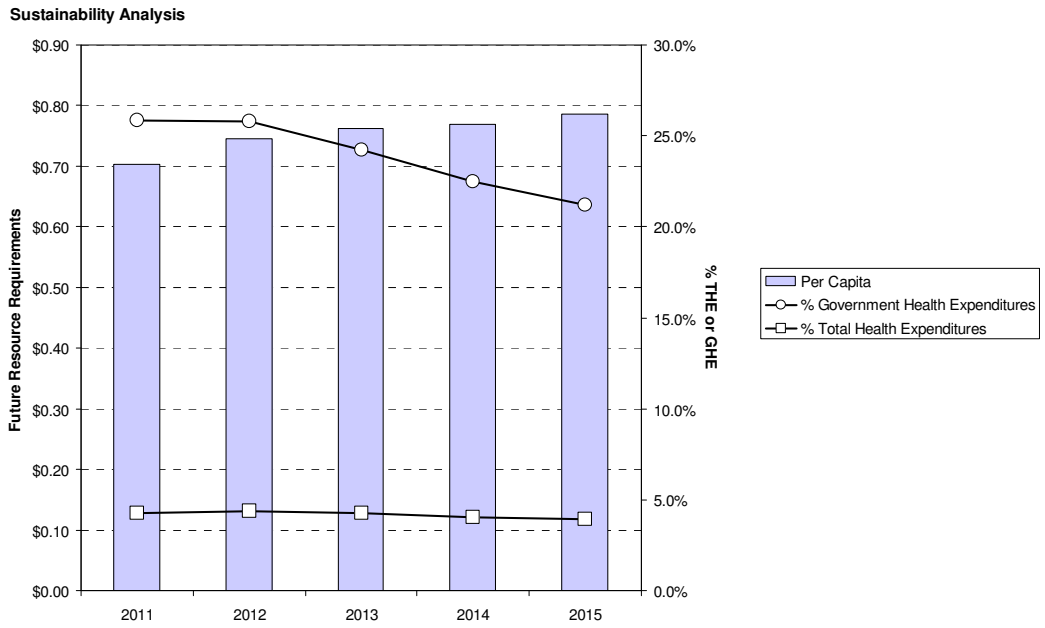
Immunization Sustainability Analysis for PAKISTAN and Selected Indicators

Annualized capital costs?	N	Select Y if you want annualized capital costs reported (by straight line depreciation).
Include shared costs?	N	Select Y if you want to include shared costs.

Macroeconomic and Sustainability Indicators	2008	2011	2012	2013	2014	2015
Reference						
Per capita GDP ($)	$860	$900	$925	$950	$1,000	$1,025
Total health expenditures per capita (THE per capita $)	$16.0	$16.5	$17.0	$18.0	$19.0	$20.0
Population	178,456,400	169,803,084	172,825,579	175,901,874	179,032,927	182,219,714
GDP ($)	$153,472,503,584	$152,822,775,512	$159,863,660,386	############	$179,032,927,457	$186,775,206,405
Total Health Expenditures (THE $)	$2,855,302,392	$2,801,750,884	$2,938,034,840	$3,166,233,734	$3,401,625,622	$3,644,394,271
Government Health Expenditures (GHE $)	$468,269,592	$462,288,896	$499,465,923	$554,090,903	$612,292,612	$674,212,940
Resource Requirements for Immunization						
Routine and Campaigns ($)	$214,179,140	$172,278,648	$169,459,181	$134,191,969	$150,203,507	$143,013,358
Routine Only ($)	$104,313,976	$119,447,229	$128,881,475	$134,191,969	$137,527,028	$143,013,358
per DTP3 child ($)	$24.5	$25.0	$25.6	$25.7	$25.3	$25.3
% Total Health Expenditures						
Resource Requirements for Immunization						
Routine and Campaigns	7.5%	6.1%	5.8%	4.2%	4.4%	3.9%
Routine Only	3.7%	4.3%	4.4%	4.2%	4.0%	3.9%
Funding Gap						
With Secure Funds Only		3.6%	3.2%	2.0%	2.4%	2.0%
With Secure and Probable Funds		0.0%	0.0%	0.0%	0.0%	0.0%
% Government Health Expenditures						
Resource Requirements for Immunization						
Routine and Campaigns	45.7%	37.3%	33.9%	24.2%	24.5%	21.2%
Routine Only	22.3%	25.8%	25.8%	24.2%	22.5%	21.2%
Funding Gap						
With Secure Funds Only		21.9%	19.0%	11.4%	13.5%	11.0%
With Secure and Probable Funds		0.0%	0.0%	0.0%	0.0%	0.0%
% GDP						
Resource Requirements for Immunization						
Routine and Campaigns	0.14%	0.11%	0.11%	0.08%	0.08%	0.08%
Routine Only	0.07%	0.08%	0.08%	0.08%	0.08%	0.08%
Per Capita						
Resource Requirements for Immunization						
Routine and Campaigns	$1.20	$1.01	$0.98	$0.76	$0.84	$0.78
Routine Only	$0.58	$0.70	$0.75	$0.76	$0.77	$0.78

Sustainability Analysis

Chart: 8



Scenario 2

Under scenario 2; Pneumococcocal (PCV10) vaccine will be added to the routine immunization programme from 1st January 2011. The target group and the coverage target will be same as that of the pentavalent (DPT-HepB-Hib) vaccine.

With the introduction of pneumococcal vaccine the cost per DPT3 child will range from $48.7 to $ 49.6, with an average of $ 49.2 during the plan period. The percapita expenditure on routine EPI will become almost $ 1.5 per anum during the planned period.

Considering GOP contributions to programme including co financing as secure, out of total requirement of $ 1,391 million during the plan period 26% of required finances are secure, while 74 % are probable. The probable amount includes $ 904 million from GAVI, mainly co financing of Pentavalent and pneumococcal vaccine. (Table 7)

The graphic presentation of this scenario is given in charts 9-13 below.

Chart 9

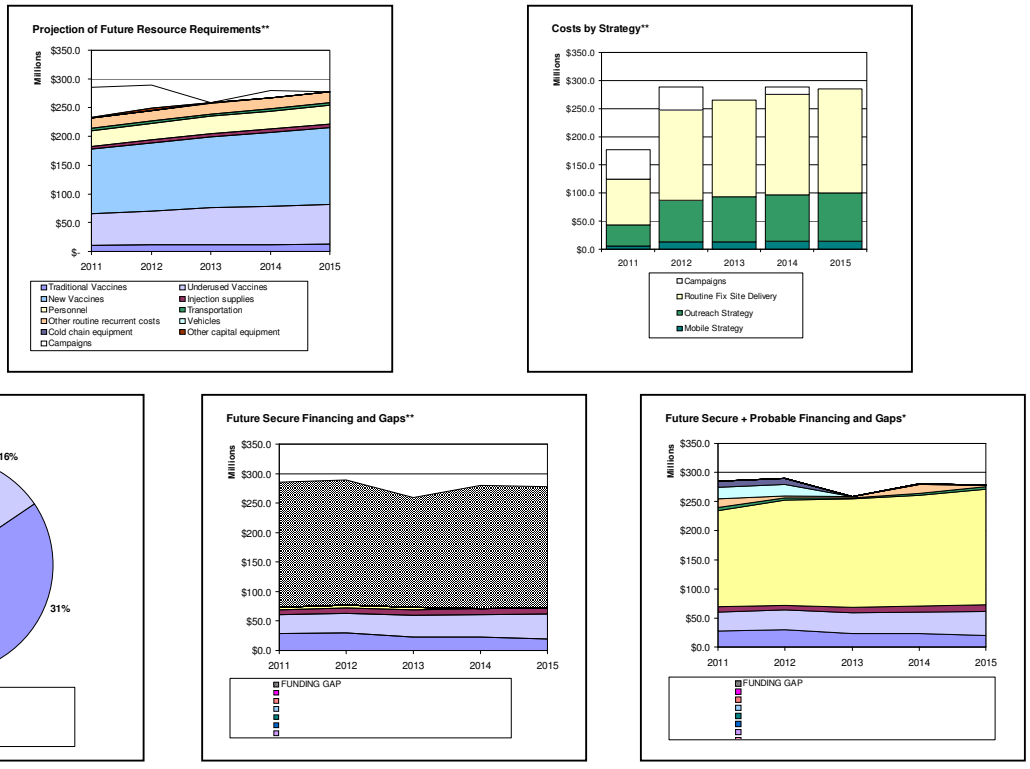


Table 7

Resource Requirements, Financing and Gaps*	2011	2012	2013	2014	2015	Avg. 2011 - 2015
Total Resource Requirements	**$285,444,345**	**$289,587,444**	**$258,935,518**	**$279,905,485**	**$277,807,517**	**$1,391,680,309**
Total Resource Requirements (Routine only)	**$232,612,925**	**$249,009,738**	**$258,935,518**	**$267,229,005**	**$277,807,517**	**$1,285,594,704**
per capita	$1.4	$1.4	$1.5	$1.5	$1.5	$1.5
per DTP targeted child	$48.7	$49.6	$49.5	$49.2	$49.2	$49.2
Total Secured Financing	**$73,986,854**	**$77,352,331**	**$73,546,395**	**$71,146,512**	**$72,508,216**	**$368,540,308**
Government	$28,118,826	$29,703,585	$23,001,572	$23,018,563	$19,794,733	$123,637,279
Sub-national Gov.	$32,197,507	$33,631,640	$36,356,407	$37,516,545	$41,704,278	$181,406,378
Gov. Co-Financing of GAVI Vaccine	$9,088,522	$8,970,820	$9,236,119	$10,611,404	$11,009,205	$48,916,070
GAVI (ISS , NVS, HSS)	$4,581,999	$5,046,286	$4,952,297			$14,580,582
WHO						
UNICEF						
World Bank						
Others (CDC. CIDA, JICA, DFID, Rotary int						
Funding Gap (with secured funds only)	**$211,457,492**	**$212,235,113**	**$185,389,122**	**$208,758,973**	**$205,299,301**	**$1,023,140,001**
% of Total Needs	74%	73%	72%	75%	74%	74%
Total Probable Financing	**$211,457,492**	**$212,235,113**	**$185,389,121**	**$208,758,972**	**$205,299,302**	**$1,023,140,000**
Government						
Sub-national Gov.						
Gov. Co-Financing of GAVI Vaccine						
GAVI (ISS , NVS, HSS)	$160,585,609	$174,965,462	$180,926,552	$189,386,970	$198,375,435	$904,240,028
WHO	$5,113,136	$3,900,000	$1,950,000	$3,400,000	$4,440,000	$18,803,136
UNICEF	$15,468,747	$2,911,858	$1,778,252	$15,680,254	$2,362,267	$38,201,378
World Bank	$20,000,000	$20,000,000				$40,000,000
Others (CDC. CIDA, JICA, DFID, Rotary int	$10,290,000	$10,457,793	$734,317	$291,748	$121,600	$21,895,458
Funding Gap (with secured & probable funds)	**$0**	**$0**	**$1**	**$0**	**-$1**	**$1**
% of Total Needs	0%	0%	0%	0%	0%	0%

Sustability under scenario 2

The sustainability indicators under sceneriro 2 are presented in table 8 and the sustainability analysis is presented in chart 14 below

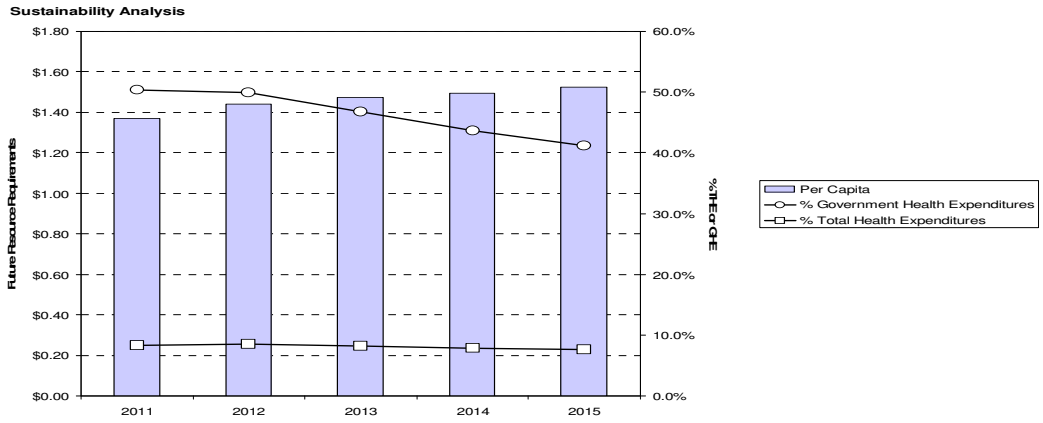
Table 8

Immunization Sustainability Analysis for PAKISTAN and Selected Indicators

Annualized capital costs?	N	Select Y if you want annualized capital costs reported (by straight line depreciation).
Include shared costs?	N	Select Y if you want to include shared costs.

Macroeconomic and Sustainability Indicators	2008	2011	2012	2013	2014	2015
Reference						
Per capita GDP ($)	$860	$900	$925	$950	$1,000	$1,025
Total health expenditures per capita (THE per capita $)	$16.0	$16.5	$17.0	$18.0	$19.0	$20.0
Population	178,456,400	169,803,084	172,825,579	175,901,874	179,032,927	182,219,714
GDP ($)	$153,472,503,584	############	$159,863,660,386	############	$179,032,927,457	$186,775,206,405
Total Health Expenditures (THE $)	$2,855,302,392	$2,801,750,884	$2,938,034,840	$3,166,233,734	$3,401,625,622	$3,644,394,271
Government Health Expenditures (GHE $)	$468,269,592	$462,288,896	$499,465,923	$554,090,903	$612,292,612	$674,212,940
Resource Requirements for Immunization						
Routine and Campaigns ($)	$214,179,140	$285,444,345	$289,587,444	$258,935,518	$279,905,485	$277,807,517
Routine Only ($)	$104,313,976	$232,612,925	$249,009,738	$258,935,518	$267,229,005	$277,807,517
per DTP3 child ($)	$24.5	$48.7	$49.6	$49.5	$49.2	$49.2
% Total Health Expenditures						
Resource Requirements for Immunization						
Routine and Campaigns	7.5%	10.2%	9.9%	8.2%	8.2%	7.6%
Routine Only	3.7%	8.3%	8.5%	8.2%	7.9%	7.6%
Funding Gap						
With Secure Funds Only		7.5%	7.2%	5.9%	6.1%	5.6%
With Secure and Probable Funds		0.0%	0.0%	0.0%	0.0%	0.0%
% Government Health Expenditures						
Resource Requirements for Immunization						
Routine and Campaigns	45.7%	61.7%	58.0%	46.7%	45.7%	41.2%
Routine Only	22.3%	50.3%	49.9%	46.7%	43.6%	41.2%
Funding Gap						
With Secure Funds Only		45.7%	42.5%	33.5%	34.1%	30.5%
With Secure and Probable Funds		0.0%	0.0%	0.0%	0.0%	0.0%
% GDP						
Resource Requirements for Immunization						
Routine and Campaigns	0.14%	0.19%	0.18%	0.15%	0.16%	0.15%
Routine Only	0.07%	0.15%	0.16%	0.15%	0.15%	0.15%
Per Capita						
Resource Requirements for Immunization						
Routine and Campaigns	$1.20	$1.68	$1.68	$1.47	$1.56	$1.52
Routine Only	$0.58	$1.37	$1.44	$1.47	$1.49	$1.52

Chart : 14



It can be seen that although the funding gap in both the scenerios remain the same , however adopting the Scenario 2 option i.e introduction of Pneumococcal vaccine during the plan period , ensures maximum funding for the programme . Though in real terms it includes a component of probable funding , but keeping in view the high chance of a successful co-financing agreement with GAVI , this funding can be considered as somewhat secure funding.

In other words EPI Pakistan will be benefiting from introduction of vaccine against Pneumocopccal related diseases if it introduces Pneomocococcal vaccine. GOP as part of its co payment will have to pay $ 0.15 per dose compared to almost $ 6.7 being paid by GAVI. Though there might be issue of higher price to be paid by GOP with respect to financial sustainability after the GAVI support ends , but keeping in view the highly likelily

hood of GAVI co financing to be available albeit at a relatively higer scale even after 2015, likely decrease in pneumococcocal vaccine price, anticipated much better economic situation of the country, high level of NITAG recommendation for introduction of Pneumococcocal vaccine and above all the impact on disease reduction associated with Pneumococcal vaccine , this does not appear to be an issue beyond 2015.

Scenerio 3

As part of National EPI Policy and strategic guidelines, EPI on the recommendation of NITAG will introduce cost effective vaccines in its immunization schedule as and when available. It therefore plans to introduce Rita virus vaccine in 2013. The expected coverage with two doses of Rota virus vaccine is 85%, 87% and 90% during 2013, 2014 and 2015.

With the introduction of rota virus vaccine the cost per DPT3 child will rise to almost $ 60 per child. There would be a funding gap of $ 1,191 million (76%) considering the GOP secure funds of $ 374 million (Table 9 & 10)

Table 9

Resource Requirements, Financing and Gaps*	2011	2012	2013	2014	2015	Avg. 2011 - 2015
Total Resource Requirements	**$285,444,345**	**$289,587,444**	**$322,500,518**	**$333,415,485**	**$334,287,517**	**$1,565,235,309**
Total Resource Requirements (Routine only)	**$232,612,925**	**$249,009,738**	**$322,500,518**	**$320,739,005**	**$334,287,517**	**$1,459,149,704**
per capita	$1.4	$1.4	$1.8	$1.8	$1.8	$1.7
per DTP targeted child	$48.7	$49.6	$61.7	$59.0	$59.2	$55.9
Total Secured Financing	**$73,986,854**	**$77,352,331**	**$75,453,027**	**$72,751,416**	**$74,202,265**	**$373,745,893**
Government	$28,118,826	$29,703,585	$23,001,572	$23,018,563	$19,794,733	$123,637,279
Sub-national Gov.	$32,197,507	$33,631,640	$36,356,407	$37,516,545	$41,704,278	$181,406,378
Gov. Co-Financing of GAVI Vaccine	$9,088,522	$8,970,820	$11,142,751	$12,216,308	$12,703,254	$54,121,655
GAVI (ISS , NVS, HSS)	$4,581,999	$5,046,286	$4,952,297			$14,580,582
WHO						
UNICEF						
World Bank						
Others (CDC. CIDA, JICA, DFID, Rotary						
Funding Gap (with secured funds only)	**$211,457,492**	**$212,235,113**	**$247,047,490**	**$260,664,069**	**$260,085,252**	**$1,191,489,416**
% of Total Needs	74%	73%	77%	78%	78%	76%
Total Probable Financing	**$211,457,492**	**$212,235,113**	**$247,047,489**	**$260,664,068**	**$260,085,253**	**$1,191,489,415**
Government						
Sub-national Gov.						
Gov. Co-Financing of GAVI Vaccine						
GAVI (ISS , NVS, HSS)	$160,585,609	$174,965,462	$242,584,920	$241,292,066	$253,161,386	$1,072,589,443
WHO	$5,113,136	$3,900,000	$1,950,000	$3,400,000	$4,440,000	$18,803,136
UNICEF	$15,468,747	$2,911,858	$1,778,252	$15,680,254	$2,362,267	$38,201,378
World Bank	$20,000,000	$20,000,000				$40,000,000
Others (CDC. CIDA, JICA, DFID, Rotary	$10,290,000	$10,457,793	$734,317	$291,748	$121,600	$21,895,458
Funding Gap (with secured & probable funds)	**$0**	**$0**	**$1**	**$0**	**-$1**	**$1**
% of Total Needs	0%	0%	0%	0%	0%	0%

Table 10

PAKISTAN - Composition of the Funding Gap (Immunization Specific Only)

Show the funding gap with secure funds only	Y	(Select N for displaying the funding gap with both secure and probable funds)

Composition of the funding gap	2011	2012	2013	2014	2015	Avg. 2011 - 2015
Vaccines and injection equipment	$160,205,212	$118,722,485	$184,902,781	$179,043,953	$186,946,733	$829,821,164
Personnel	$0	$0				
Transport						
Activities and other recurrent costs	$8,040,464	$6,691,944	$4,462,571	$9,416,189	$11,032,417	$39,643,584
Logistics (Vehicles, cold chain and other equipment)	$380,396	$4,239,313				$4,619,709
Campaigns	$42,831,420	$30,577,707		$12,676,479		$86,085,606
Total Funding Gap*	**$211,457,492**	**$160,231,449**	**$189,365,351**	**$201,136,621**	**$197,979,149**	**$960,170,062**

The sustainability indicators and analysis under scenerion 3 are given in table 9 and chart 15

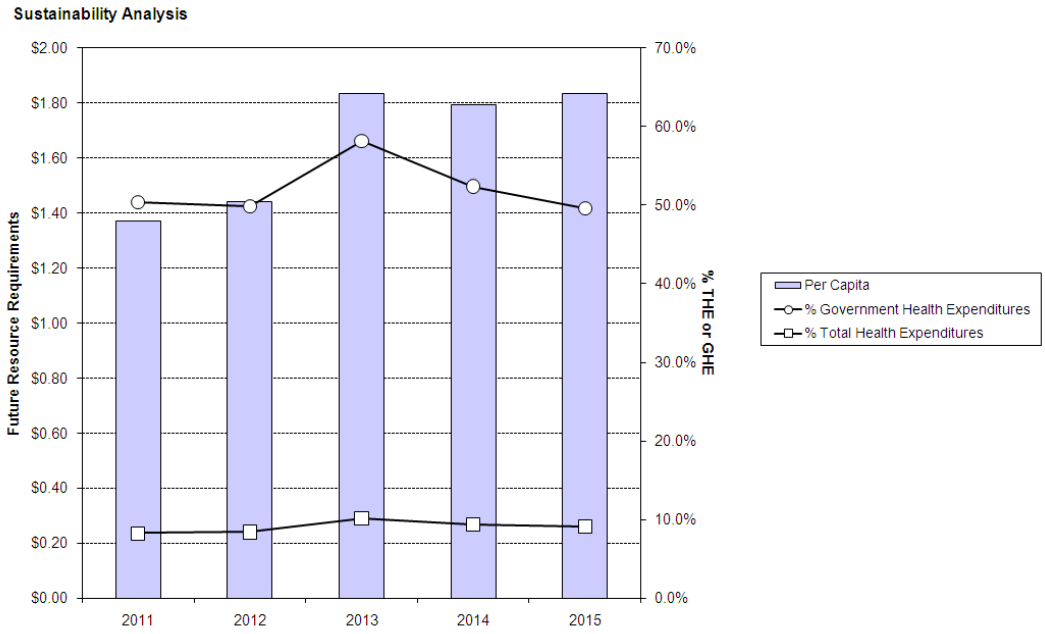
Table 9

Immunization Sustainability Analysis for PAKISTAN and Selected Indicators

Annualized capital costs?	N	Select Y if you want annualized capital costs reported (by straight line depreciation).
Include shared costs?	N	Select Y if you want to include shared costs.

Macroeconomic and Sustainability Indicators	2008	2011	2012	2013	2014	2015
Reference						
Per capita GDP ($)	$860	$900	$925	$950	$1,000	$1,025
Total health expenditures per capita (THE per capita $)	$16.0	$16.5	$17.0	$18.0	$19.0	$20.0
Population	178,456,400	169,803,084	172,825,579	175,901,874	179,032,927	182,219,714
GDP ($)	$153,472,503,584	##############	$159,863,660,386	##############	$179,032,927,457	$186,775,206,405
Total Health Expenditures (THE $)	$2,855,302,392	$2,801,750,884	$2,938,034,840	$3,166,233,734	$3,401,625,622	$3,644,394,271
Government Health Expenditures (GHE $)	$468,269,592	$462,288,896	$499,465,923	$554,090,903	$612,292,612	$674,212,940
Resource Requirements for Immunization						
Routine and Campaigns ($)	$214,179,140	$285,444,345	$289,587,444	$322,500,518	$333,415,485	$334,287,517
Routine Only ($)	$104,313,976	$232,612,925	$249,009,738	$322,500,518	$320,739,005	$334,287,517
per DTP3 child ($)	$24.5	$48.7	$49.6	$61.7	$59.0	$59.2
% Total Health Expenditures						
Resource Requirements for Immunization						
Routine and Campaigns	7.5%	10.2%	9.9%	10.2%	9.8%	9.2%
Routine Only	3.7%	8.3%	8.5%	10.2%	9.4%	9.2%
Funding Gap						
With Secure Funds Only		7.5%	7.2%	7.8%	7.7%	7.1%
With Secure and Probable Funds		0.0%	0.0%	0.0%	0.0%	0.0%
% Government Health Expenditures						
Resource Requirements for Immunization						
Routine and Campaigns	45.7%	61.7%	58.0%	58.2%	54.5%	49.6%
Routine Only	22.3%	50.3%	49.9%	58.2%	52.4%	49.6%
Funding Gap						
With Secure Funds Only		45.7%	42.5%	44.6%	42.6%	38.6%
With Secure and Probable Funds		0.0%	0.0%	0.0%	0.0%	0.0%
% GDP						
Resource Requirements for Immunization						
Routine and Campaigns	0.14%	0.19%	0.18%	0.19%	0.19%	0.18%
Routine Only	0.07%	0.15%	0.16%	0.19%	0.18%	0.18%
Per Capita						
Resource Requirements for Immunization						
Routine and Campaigns	$1.20	$1.68	$1.68	$1.83	$1.86	$1.83
Routine Only	$0.58	$1.37	$1.44	$1.83	$1.79	$1.83

Chart 15



Sustainability Analysis of GOP Health related spending

Pakistan - Macroeconomic Situation: With a population of 163.76 million, Pakistan is the 6th most populous country in the world. With the accelerated efforts of the national population planning programme and other socio economic changes the population growth rate of 2.6 percent in 1981-1998 has been brought down to 1.73 percent per annum by 2008. However, Pakistan is still amongst the high fertility countries with a large population of young adults and children.

Selected Demographic indicators

	2006 (1st July)	2007 (1st July)	2008 (1st July)
Total population (million)	156.26	159.26	161.66
Urban Population (million)	53.85	55.48	57.14
Rural Population(million)	102.41	103.58	104.73
Total Fertility Rate (TFR)	4.1	3.13	3
Crude Birth Rate(Per Thousand)	26.1	25.5	25.0
Crude Death Rate(Per Thousand)	8.2	7.9	7.7
Population Growth Rate (Percent)	1.8	1.78	1.73
Life Expectancy (Years)	63.8	64.3	65.4
Male	63.9	64.3	65.2
Female	63.8	64.4	65.6

Pakistan's macroeconomic environment is affected by intensification of war on terror and deepening of the global financial crises which penetrated into domestic economy through route of substantial decline in exports and in foreign direct inflows. Pakistan's economy continues to remain exposed to the vagaries of international developments as well as internal security environment. In war on terror, Pakistan not only lost precious lives and infrastructure but a conservative estimate has placed economic cost of this war for Pakistan

at around US$ 35 billion since 2001-02. The intensity of global financial crises has further added to Pakistan's predicament. Despite support from IMF and other bilateral and multilateral donors, Pakistan's economic situation remains exposed to a host of uncertainties.

At the beginning of this fiscal year (2008-09), Pakistan economy was confronted with multiple challenges which posed threat to recovery and socio-economic growth including regaining macroeconomic stability, poverty reduction, fiscal retrenchment and weaknesses in external account. The overall vision is to regain growth rate of 6 percent by 20012-13 from 2 percent in 2008-09. In order to ensure macroeconomic difficulties do not further sow down the pace of job creation and adverse affect on poverty reduction programme , the government has recently reached an agreement with IMF for a US$7.6 billion package spread over 23 months.

During F.Y. 2008-09, emphasis was laid on provision of primary health care, better utilization of existing health facilities and continuing the programme of nutrition and preventable diseases including Expanded programme on immunization.

Pakistan's economic stabilization programme is supported by the Stand-By Arrangement (SBA) with IMF approved in Novemebr, 2008. Initial developments in the economy since the implementation of the Programme have been positive:

- State Bank of Pakistan reserves have strengthened from US$ 3.5 billion at the end of October, 2008 to US$ 7.1 billion at the end of March.2009.
- The exchange rate has broadly stabilized enabling the State Bank of Pakistan to buy foreign exchange on a net basis.
- Rate of inflation is estimated to have declined from 25.3 percent in August 2008 to 17.2 percent in April, 2009.
- Overall fiscal deficit is estimated to have been restricted to 4.3 percent in 2008-09

Budgetary Allocations and Expenditures on Health: The importance of health is reflected in specific measurable targets declared at UN Millennium Deceleration of September, 2000. The Millennium Development Goals (MDGs) represent a vision based on an internationally agreed set of time bound goals for reducing extreme poverty, extending gender equality, and advancing opportunities for health and education. These goals serve as a bench mark of progress toward the vision of Millennium Declaration, guided by basic values of freedom, equality, solidarity, tolerance and respect for nature and shared responsibilities

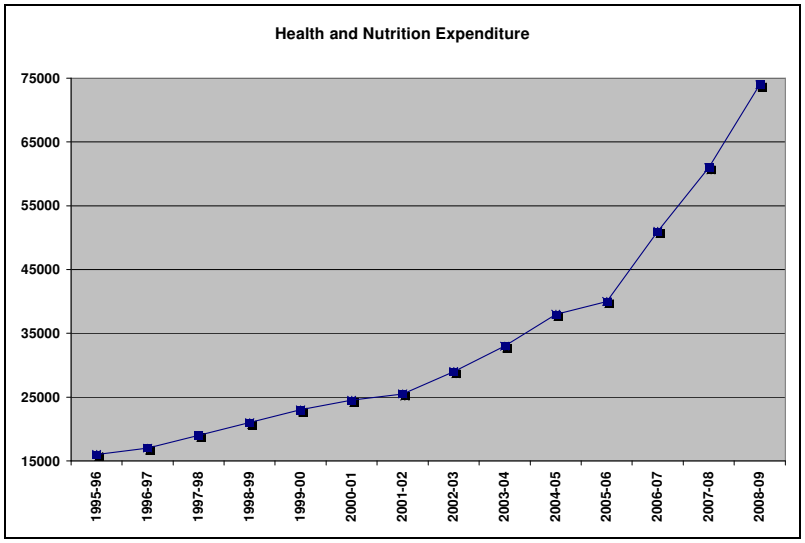
Pakistan is also a signatory to UN Millennium Declaration and is fully committed to extend the agenda of providing basic right of health to all of its citizens. The Government of Pakistan has taken several policy and programme initiatives to fulfill its commitment regarding MDGs. The health vision as reflected in the National Health Policy, 2001 envisaged health reforms as basically a means of poverty reduction.

National Health Policy 2001 identifies ten basic areas for reforms ranging from control of communicable diseases specially T.B, Malaria, HIV/AIDS and EPI cluster. The reforms also address inadequacies in primary and secondary health services and improvements in district health system, including removal of professional and managerial gaps and distortions.

The total budget outlay on health in public sector has increased to Rs. 74 billion in 2008-09 as compared to Rs.60 billion in 2007-08. The Government spending on health as a percentage of on GDP stood at 0.55 percent which is 23 percent increase over the last year as indicated in the following table:

Public Sector Expenditures (Federal & Provincial)

Fiscal Year	Total Health Expenditure (Rs. in billions)	Percentage Change	% of GDP
2003-04	32.81	13.8	0.58
2004-05	38.00	15.8	0.57
2005-06	40.00	5.3	0.51
2006-07	50.00	25	0.57
2007-08	60.00	20	0.57
2008-09	74.00	23	0.55



National Public Health Programmes: Pakistan has an extensive public health infrastructure, which consists of network of more than 12000 first level health care facilities and a range of disease- specific vertical public health programmes. Most of the programmes based interventions are led by the federal government with implementation arms at provincial and district levels.

Expanded Programme on Immunization: The Government of Pakistan attaches high priority to the health care of children of this country who happen to be the most vulnerable segment of the society. To protect the lives of the children of this country against vaccine preventable diseases the Government of Pakistan has an on-going Expanded Programme on Immunization (EPI). The objective of this programme is reduction of the mortality and morbidity resulting from vaccine preventable diseases by immunizing children of age 1-11 months and women of child bearing age. The table below shows the requirement, allocation, releases and expenditure of last five years of the programme.

Releases and Expenditures (In Rs million)	YEARS				
	2004-05	**2005-06**	**2006-07**	**2007-08**	**2008-09**
Requirement	1477.166	1605.599	1758.779	1577.251	5057.879

Allocation	800.000	985.000	1200.000	1600.000	6000.000
Releases	800.000	985.000	1200.000	2100.000	1500.000
Total	**771.990**	**983.189**	**670.264**	**2052.124**	**1437.409**

Apart from Government of Pakistan a number of international agencies are supporting the immunization programme including WHO, UNICEF, JICA, World Bank, Rotary International. Besides these institutions Global Alliance for Vaccines and Immunization (GAVI) is a major contributor to provide support to strengthen the on-going Immunization

The Programme has established a satisfactorily functioning cold chain system, trained all levels of needed health personnel, developed a disease surveillance system, involved health facilities and staff including NGOs into EPI service delivery, achieved UCI 1990 and planned and started implementing global priorities. Surveillance system for routine immunization Programme has been established and started reporting through sentinel and routine system. AFP (Acute Flaccid Paralysis) surveillance system for polio was established in September 1995.

The success of the immunization initiative in Pakistan has been remarkable. This can, by no means, lead to complacency. The problems and constraints facing the Programme have been identified, discussed at various forum and recommendations towards resolving them were made. The achievements and lessons learnt provide ground for optimism that the new challenges facing the immunization Programme in the decade of 2010s can be met.

Stratetegies for financial sustainability

For EPI to achieve financial sustainability, it must achieve the following:

- To reach the coverage Targets, for ensuring projected resources from Government of Pakistan.
- To secure GAVI and other partners funds
- To have continuos and close liaison with Provincial Governments , for reviewing with them EPI Progress, particularly in the following areas :
    - Achievement vs coverage targets
    - Federal , provincial and district resource allocations
- To be used as an advocacy tool for the following:
    - The Government of Pakistan in their dealing with their development partners.
    - The Federal EPI / MoH in their discussions and negotiations with provincial and district governments.

Senior management of the EPI programme for resource mobilisation, programme strengthening and deepening.

- To form the basis for strategic planning for the EPI programme in Pakistan at all levels i.e Federal, provincial and district level.
- To secure resources for EPI at District level from District Governments.

Strategic Plan to Achieve Sustainable Financing

Objective	Actions	Indicator	Responsibility	Means of verification

To reach the coverage Targets, for ensuring projected resources from Government of Pakistan.				
To improve the immunization coverage targets	Continuos monitoring and prompt remedial actions	Monthly coverage reports	Federal & Provincial EPI, NICC,	Coverage reports
To reduce the drop out	Continuos monitoring and prompt remedial actions	Monthly reports	Federal, Provincial and Districts EPI teams	Drop out reports
To secure GAVI and other donor funds				
To secure ongoing GAVI Funding	Complete, approve and deliver cMYP to GAVI.	cMYP accepted	NICC & Federal EPI Cell	Acceptance letter from GAVI
To secure additional GAVI funding	To prepare and submit timely the required reports and proposals	Prepare required reports and the proposal	Federal EPI Cell	Covering letter for submission of the required reports and the proposal
To secure additional donor funding	To bring to the notice of the potential donors the needs for additional funding, in one to one meetings or through NICC	Number of meetings	Federal EPI Cell	Minutes of meeting
To have continuos and close liaison with Provincial Governments , for reviewing with them EPI Progress, particularly in the area of coverage and resource allocation				
To review the EPI progress at the Provincial and District level	Regular meetings with the Provincial EPI to review district level progress	Number of meetings	Federal EPI Cell, Provincial ICC=	Provincial and District coverage reports and minutes of meetings.
Allocation of the Provincial Health Departments for EPI	To submit timely request for the budget for EPI activities	Submission of the budget within time	Provincial EPI Cells	Documents to verify timely submission of the budget
To be used as an advocacy tool				
To brief the EPI partners and potential donors on the achievements of EPI Programme and future plan	Hold briefing and advocacy meetings	Number of advocacy meetings	Federal EPI Cell	Minutes of meetings
To brief district health Governments on	Hold briefing and advocacy meetings	Number of advocacy meetings	Federal EPI Cell, Provincial EPI Cells,	Minutes of meetings

the importance of the EPI Programme and the priority it demands from the district health budget			Provincial ICC	
To form the basis for strategic planning for the EPI programme in Pakistan at all levels				
To develop comprehensive plans at all levels	Develop multi year strategic plan at national level. Develop Provincial multi year strategic plan. Develop district level micro plans.	Planning process undertaken	Federal EPI Cell, Provincial EPI Cell & EDO Health	Availability of actual plans
To secure resources for EPI at District level from District Governments.				
To secure required amount of financing from the District Governments	Convincing the authorities for need of district level resource allocations	Steps taken to convince the district authorities	EDO Health	Actual resources allocated

The following indicators will be used to measure the progress towards financial sustainability:

Dimension of Financial Sustainability	Indicator	Unit
Self sufficiency	Percentage of funds allocated by Ministry of Health as compared to demand by Federal EPI Cell	%
-do-	Programme specific capital expenditures paid for with National resources within the past fiscal year divided by total programme specific capital expenditures	%
Efficient use of resources	Purchase of quality vaccine through UNICEF/or functional NRA	Yes/No
-do-	Purchase of cold chain and transport through competitive bidding	Yes/No
-do-	Annual audit of the expenditure incurred at all levels	Yes/No
Mobilization and use of adequate resources	Plan to set a sight or allocate funds to replace or upgrade capital items essential to immunization programme (e.g. cold chain)	Yes/No
-do-	Well established financial planning process at Federal, Provincial & District level in place	Yes/No
Reliability of resources	Share of actual domestic expenditure	%

	on recurrent cost of immunization programme divided by amount budgeted for recurrent cost within the last fiscal year	
-do-	Share actual district recurrent expenditures to amount budgeted	%

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