Government of Nepal

NEPAL

APPLICATION FOR SUPPORT TO IMMUNIZATION SERVICES AND NEW AND UNDER-USED VACCINES

SEPTEMBER 2007

Government of Nepal
Ministry of Health & Population
Department of Health Services
Nepal

CONTENTS

Abbreviations and Acronyms

AD	Autodisable (syringes)
ADIP	Accelerated Development and Introduction Programmes
AFP	Acute Flaccid Paralysis
BCG	Bacille Calmette-Guerin
cMYP	Comprehensive Multi Year Plan for Immunization
DoHS	Department of Health Services
DFID	Department for International Development
DQSA	Data Quality Self Assessment
DPT	Diptheria-tetanus-pertussus
EPI	Expanded Program on Immunization
EVSM	Effective Vaccine Store Management
EU	European Union
EDP	External Development Partner
FCGO	Financial Controller General Office
FY	Fiscal Year
GoN	Government of Nepal
GTZ	Gesellschaft für Technische Zusammenarbeit (German Technical Agency)
GAVI	Global Alliance for Vaccines and Immunization
HMIS	Health Management Information System
HepB	Hepatitis B
Hib	Haemophilus influenza type b
ICC	Interagency Co-ordination Committee
IMR	Infant Mortality Rate
ISS	Immunization Services Support
JICA	Japan International Co-operation Agency
JE	Japanese Encephalitis
MoH&P	Ministry of Health and Population
MDG	Millennium Development Goal
MoF	Ministry of Finance
NGO	Non-Governmental Organization
NDHS	Nepal Demographic & Health Survey
NVS	New and Under-used Vaccine Support
NIP	National Immunization Program
NHSCC	National Health Sector Coordination Committee
NHSP-IP	Nepal Health Sector Program - Implementation Plan (2004 – 2009)
RED	Reach Every District
RCS	Regional Cold Store
RHD	Regional Health Directorate
SWAp	Sector Wide Approach
TT	Tetanus toxoid
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VPD	Vaccine Preventable Disease
VDC	Village Development Committee
3YP	Three Year Plan for Health Sector 2007 – 2009
WB	World Bank
WHO	World Health Organization

Executive Summary

Nepal, a landlocked, mountainous country, has a population of 26.8[1] million. Nepal has a decade long history of political instability and civil conflict since 1996. However, after the success of pro democratic movement, peace has been restored and development efforts intensified. The Government of Nepal (GoN) has made a political commitment for the health of people at the highest level by declaring "Basic Health as Human Rights" in the Interim Constitution of 2007.

Despite the difficult terrain, conflict and civil unrest, there has been remarkable progress in health in Nepal, especially towards decreasing Child Mortality. The Nepal Demographic and Health Survey (NDHS 2006) reports an IMR of 48 per 1000 live births and <5 years mortality of 61 per 1000 live births. Immunization coverage is steadily increasing and in 2006 83% of children <1 year of age were fully immunized[2] (NDHS 2006), and dropout rates between DPT1 and DPT3 are also steadily decreasing (cMYP 2007-2011). However, despite the successes, there are large disparities among ethnic groups, geographical regions, and gender for immunization coverage, drop-out rates, as well as in IMR and U5MR (NDHS 2006).

The GoN is committed to improving the immunization status of children in the country. Immunization is the government's priority number one health program (P1). The pattern of financial support for immunization shows that the GoN is funding an increasing share of the budget allocation for EPI, reflecting its commitment to the programme. To this end, the GoN procures all traditional vaccines (BCG, polio, measles and TT) from its own resources and has committed to co-finance the new combo vaccine (DPT-HepB-Hib).

With goal of improving immunization, the GoN developed a comprehensive "Multi Year Plan on Immunization 2007-2011" (cMYP). The ICC played active role in development of the cMYP. The overall goal stated in cMYP is to reduce child mortality, morbidity and disability associated with vaccine preventable diseases.
The cMYP outlines following objectives:

- Achieve and sustain 90% coverage of DPT3 by 2008 and all antigens by 2010.
- Maintain polio free status
- Sustain MNT elimination status
- Initiate measles elimination
- Expand VPD surveillance
- Accelerate control of other vaccine-preventable diseases through introduction of new vaccines
- Improve and sustain immunization quality
- Expand immunization services beyond infancy

Immunization Service Support (ISS):

DPT3 and measles coverage for FY 2006/07* as per HMIS is 84% and 83% respectively. Likewise drop-out rate for BCG-measles and DPT1-DPT3 are 8.7 and 3.3 respectively in FY 2006/07. The NDHS (2006) showed DPT3 and measles coverage of 89% and 85%, and coverage for all antigens is 83%. As per the milestones set in the cMYP, the GoN is committed to increase and sustain the coverage for all routine antigens to 90% by 2010 in all 75 districts. The GAVI-I ISS support has been very instrumental in achieving immunization goals. Many activities targeted to

[1] Health Management Information System, Management Division, DHS/MoHP, 2007.
[2] A fully immunized child is a child who by their first birthday has received BCG, 3 doses of DTP and OPV, and one measles-containing vaccine.

increase and sustain immunization coverage were conducted at different level with ISS support. The list of activities included capacity building of health staff through training, upgrading and strengthening cold chain system, operation and transportation support, micro-planning using RED strategy, DQSA, internal observation tour for EPI staff for staff motivation, performance review meeting at district level, supervision and monitoring and others. Most of the ISS supported activities were focused at district and below level.

The GoN is committed to provide equitable health services, including immunization for poor, marginalized, disadvantaged and hard-to-reach population.

With GAVI-II ISS support the GoN plans to develop and carry out activities/strategies aiming to achieve immunization targets set in cMYP. Many successful activities or strategies wii be continued with GAVI-II ISS support. The government also initiated micro planning in municipalities. Currently municipalities lack government public health structures. With the migration of people to urban and increasing number of slums and poor and disadvantaged population, it is very crucial to address their health problem. The government also plans to construct new cold chain store to accommodate new vaccines. Improvement in vaccine management will be done based on recommendation made by EVSM assessment.

The government appreciates the GAVI-I ISS support and is requesting GAVI to provide GAVI-II ISS support for the period of the current cMYP (2007-2011).

Estimate of fund expected from ISS (US$):

	2007	**2008**	**2009**	**2010**	**2011**
DTP3 Coverage rate	83.7%	91%	92%	93%	95%
Number of infants reported / planned to be vaccinated with DTP3	623,228	769,678	816,519	866,192	928,646
Number of additional infants that annually are reported / planned to be vaccinated with DTP3	-	146,450	46,841	49,673	62,127
Funds expected ($20 per additional infant)		2,929,000	936,820	993,460	1,242,540

Support for New Vaccine Introduction (NVS):

GoN has plans to introduce new vaccines into routine immunization as per objective 6 of the cMYP. With GAVI-I support Nepal introduced HepB vaccine into its routine immunization. HepB vaccine is now provided in the form of the tetravalent (DPT-HepB) in all 75 districts of Nepal.

The GoN, in consultation with Minister of Health and other high level officers from the Ministry of Health and Population and ICC members, has decided to introduce Hib vaccine (single dose liquid) into routine immunization from January 2009. The request for support is for the duration of the current cMYP (2007-2011). The GoN has thoroughly taken into consideration different aspects of introduction new vaccine into routine immunization (disease burden, health staff capacity, financial sustainability & cold chain capacity)

Disease burden: With technical support from WHO there has been attempt to estimate Hib disease burden in Nepal:

A) Hib surveillance was integrated with AFP surveillance in 2005. Currently there are 4 sentinel reporting sites.

B) A Hib Rapid Assessment tool (RAT) study supported by WHO was conducted in March 2003 that showed:

- Hib is likely to be the commonest cause of bacterial meningitis in U5s

- Meningitis CFR 10-30%: excludes those that don't make it to hospital
- Neurological sequelae: ~5-25%
- Labs generally unable to isolate Hib

C) WHO/HQ with the Hib initiative and GAVI's PneumoADIP undertook an exercise to estimate Hib disease by mathematical modelling, using available and published data that showed:

- Cases of severe Hib illness estimate 76,459 (range: 59459-108204)
- Deaths from Hib estimate 2745 (range: 1442-4155)
- Estimates presented likely represent an underestimate of the true burden of Hib

Before the introduction of Hib vaccine planning meeting, advocacy meeting and refresher training to all health staff will be conducted at different level.

The government has carried out effective vaccine store management (EVSM) assessment at central store in Aug-Sept. 2007. As per assessment new vaccine could be stored taking into consideration regional space when delivered in 4 shipments. The government has plan to implement all recommendations made by the assessment. Government is planning to conduct EVSM at regional and district level in 2007/08. The Government has already taken initiation for construction of new cold storage capacity of 20 CuM to accommodate new and other vaccines by using ISS funds.

Specifications of the vaccines

Vaccine: DPT-HepB-Hib (single dose & liquid)	**Year 2009**	**Year 2010**	**Year 2011**
Number of children to be vaccinated with first dose	843,144	894,133	957,972
Number of children to be vaccinated with third dose	816,519	866,192	928,646
Estimated vaccine wastage factor	1.11	1.11	1.11
Country co-financing per dose	$0.20	$0.20	$0.30

All figures are as per cMYP (2007-2011)

Proportion of supply to be co-financed by the country (cost estimate US$)

	Year 2009	**Year 2010**	**Year 2011**
Number of vaccine doses	178,100	171,900	296,000
Number of AD syringes	190,100	181,900	313,100
Number of safety boxes	2,125	2,025	3,500
Total valued to be co-financed by country	$664,000	$571,500	$920,500

Proportion of supply to be co-financed by the GAVI Alliance (cost estimate US$)

	Year 2009	**Year 2010**	**Year 2011**
Number of vaccine doses	3,141,900	2,684,900	2,772,000
Number of AD syringes	3,354,600	2,840,300	2,932,800
Number of safety boxes	37,250	31,550	32,575
Total valued to be co-financed by GAVI	$11,717,000	$8,925,500	$8,622,000

The GoN has spelled out a financial sustainability plan for introduction of new vaccine in the cMYP. The government has shown this by procuring all traditional vaccines from its budget. The government sustainability plans includes:

- The government is committed to increase per capita health expenditure (Three year health plan 2007-2010). Immunization is high priority (P1) program. Immunization will get a greater share of the increased health budget
- Ongoing support from development partners: Many developmental partners have been supporting immunization in Nepal. These are WHO, UNICEF, USAID, JICA, WB, GTZ, DFID, Rotary and other various NGOs and INGOs. The government is planning to explore possibility of support from various other EDPs such as EU, AusAID, government of India and others
- Use of pool fund: Different partners (WB-$50 million and DFID-$54 million for period of 2005-2009) have joined pooled funding under a SWAP approach. The pooled funds have been a significant help to immunization activities
- The government plans to mobilize local resources under decentralization strategy
- Program efficiency: Accelerating the potential improvement in program efficiency
- The ICC could play a crucial role in resource mobilization

The application was developed through a participatory approach. Extensive consultations were held among the ICC members. The ICC members will be involved in planning, implementation, supervision and monitoring of GAVI supported activities. The work plan for ICC members for 2008 has been developed (Document No.4c). The application has been shared with a wide audience, including development partners, high level officers from ministry of finance and health, the Nepal Planning Commission and the Department of Health Services. Comments and recommendations were incorporated into the final draft of the document. The vaccine introduction plan was presented in NHSCC which agreed for and directed DoHS to take necessary action for putting NVS application.

The programme will be monitored through district level coverage report through HMIS and coverage survey as well as assessment of cold chain management. DQA is planned for 2010.

2. Signatures of the Government and National Coordinating Bodies

Government and the Inter-Agency Coordinating Committee for Immunisation

The Government of Nepal would like to expand the existing partnership with the GAVI Alliance for the improvement of the infant's routine immunisation programme of the country, and specifically hereby requests for GAVI support for immunization service support and introduction of pentavalent (DPT-HepB-Hib) vaccine.

The Government of Nepal commits itself to developing national immunisation services on a sustainable basis in accordance with the comprehensive Multi-Year Plan presented with this document. The Government requests that the GAVI Alliance and its partners contribute financial and technical assistance to support immunisation of children as outlined in this application.

Table No 6.5 of page 21 of this application shows the amount of support in either supply or cash that is required from the GAVI Alliance. Table No. 6.4 of page 21 of this application shows the Government financial commitment for the procurement of this new vaccine (NVS support only).

Ministry of Health & Population:

Signature: .....

Name: Mr Ram Chandra Man Singh, Secretary

Date: 26 Sept 2007

Ministry of Finance:

Signature: .....

Name: Mr Vidyadhar Mallik, Secretary

Date: 26 Sept 2007

National Coordinating Body - Inter-Agency Coordinating Committee for Immunisation:

We the members of the ICC met on the 21st September 2007 to review this proposal. At that meeting we endorsed this proposal on the basis of the supporting documentation which is attached.

- The endorsed minutes of this meeting are attached as DOCUMENT NUMBER: 4

Name/Title	Agency/Organisation	Signature
Dr GP Ojha (Chairman)	DG-DoHS	
Dr YV Pradhan	Director-CHD	
Dr MG Sherpa	Director-LMD	
Dr SS Tiwari	Director-MD	
Mr LR Ban	Director-NHEICC	
Mr AB Singh	Chief-PME&FAD/MoH&P	
Mr DR Lekhak	Section Officer-MoF	
Mr GK Shrestha	Under Secretary-national Planning Commission	
Dr Kan Tun	WHO Country Representative	
Dr Gillian Mellsop	UNICEF Country Representative	
Dr Nastu P Sharma	Sr. Health Specialist-World Bank	
Ms Anne M Peniston	Chief, Health & family Planning-USAID	
Mr TR Manekshaw	Chairman, National PolioPlus Committee-RI	
Dr Friedeger Stierle	PM-GTZ Health Sector Support Program	
Ms Susan Clapham	Sr. Health advisor-DFID	
Miwa Hiasa	Representative-JICA	
Dr SR Upreti (member-secretary)	Section Chief-NIP, CHD	

In case the GAVI Secretariat has queries on this submission, please contact:

Name: Dr. Shyam Raj Upreti
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Department of Health Services, Teku,
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The Inter-Agency Coordinating Committee for Immunisation

Profile of the ICC/HSCC

Name of the ICC: Inter Agency Coordinating Committee (ICC)

Date of constitution of the current ICC: It was established to strengthen the coordination of the National Immunization Program in June 2000.

Organisational structure (e.g., sub-committee, stand-alone): ICC is a stand-alone inter-ministerial committee chaired by Director General of Department of Health Services with members from various external development partners.

Frequency of meetings: At least 4 times per year

Composition:

Function	Title / Organization	Name
Chair	Director General, Department of Health Services	Dr GP Ojha
Secretary	Chief, EPI Section	Dr SR Upreti
Members	Director-CHD	Dr YV Pradhan
	Director-LMD	Dr MG Sherpa
	Director-MD	Dr SS Tiwari
	Director-NHEICC	Mr LR Ban
	Chief-PME&FAD/MoH&P	Mr AB Singh
	Section Officer-MoF	Mr DR Lekhak
	Under Secretary-national Planning Commission	My GK Shrestha
	WHO Country Representative	Dr Kan Tun
	UNICEF Country Representative	Dr Gillian Mellsop
	Sr. Health Specialist-World bank	Dr N Sharma
	Chief, Health & family Planning-USAID	Ms Anne M peniston
	Chairman, National PolioPlus Committee-RI	Mr TR Manekshaw
	PM-GTZ Health Sector Support Program	Dr Friedeger Stierle
	Sr. Health advisor-DFID	Ms Susan Clapham
	Representative-JICA	Miwa Hiasa

Major functions and responsibilities of the ICC:

1. Provide technical support to NIP as necessary, especially in the following areas:
    a) Strengthening and expansion of immunization services including introduction of new vaccines and ensuring of safe immunization techniques
    b) Effective implementation of immunization program
    c) Reviewing/monitoring the immunization program using various indicators
    d) Planning medium/long term plans for immunization program
2. Secure technical support to the NIP
3. Coordinate with international partners in the delivery of immunization services including resource mobilization
4. Coordinate and monitor with other health programs in relation to enhance effectiveness and quality service in immunization and to assure program sustainability
5. Invite any other international/national partners involved in immunization program in Nepal for their input, feedback and expertise
6. Form sub-committees and working groups as necessary
7. Coordinate with GO/NGOs and international development partners for mobilizing necessary resources for immunization program
8. Assure effective and efficient use of and overall immunization and GAVI funds
9. Provide support and monitor ongoing polio eradication activities

Three major strategies to enhance the ICC's role and functions in the next 12 months:

1. Active participation of ICC members on planning, implementation and monitoring of the activities
2. Joint integrated planning with assignment of responsibility and area of work
3. Regular monitoring of performance and feedback with increased frequency of meetings

3. Immunisation Programme Data

- Please refer to the Comprehensive Multi-Year Plan for Immunisation, and attached as DOCUMENT NUMBER 2
- Please refer to the two most recent annual WHO/UNICEF Joint Reporting Forms on Vaccine Preventable Diseases and attached as DOCUMENT NUMBERS 1
- Please refer to Health Sector Strategy documents, and other reports, surveys etc, as appropriate. DOCUMENT NUMBERS 7

Table 3.1: Basic facts for the year 2006-2007

	Figure	Date	Source
Total population	26,805,469	2007	Health Management Information System, Management Division, DoHS/MoHP, 2007
Infant mortality rate (per 1000)	48/1000	2006	Nepal Demographic and Health Survey, 2006
Surviving Infants*	754,206	2007	Comprehensive Multi Year Plan on Immunization (2007-2011)
GNI per capita (US$)	$US 290	2006	World Bank, World Development Indicators Database, July 2007 (data refers to 2006)
Percentage of GDP allocated to Health	1.5%	2003-2004	UNDP Human Development Report, 2006 (data refers to 2003-2004)
Percentage of Government expenditure on Health	5.23%	2005-2006	GoN, Financial Comptroller General Office, Consolidated Financial Statements FY 2005-2006

* Surviving infants = Infants surviving the first 12 months of life

Please provide some additional information on the planning and budgeting context in your country:

Please indicate the name and date of the relevant planning document for health
1. Three Year Plan (2007/08-2009/10)
2. Nepal Health Sector Programme- Implementation Plan (2004-2009)
3. Comprehensive Multi-Year Plan on Immunization (2007-2011)

Is the cMYP (or updated Multi-Year Plan) aligned with this document (timing, content etc)
Yes

Please indicate the national planning budgeting cycle for health

The National planning budgeting cycle (FY) is from 15 July to 14 July next year

Please indicate the national planning cycle for immunization

National planning cycle for immunization follows the budgeting cycles from 15 July to 14 July next year.

Table 3.2: Current Vaccination Schedule: Traditional, New Vaccines and Vitamin A Supplement *(refer to cMYP)*

Vaccine *(do not use trade name)*	**Ages of administration** *(by routine immunisation services)*	**Indicate by an "x" if given in:**		**Comments**
		Entire country	**Only part of the country**	
BCG	At birth	X		
DPT-HepB	6,10 and 14 Weeks	X		
OPV	6,10 and 14 Weeks	X		
Measles	9 month	X		
TT	Pregnant Women	X		
JE	12 to 23 months		X	Only in JE endemic districts that have completed campaign
Vitamin A	6 -59 months of age	X		Two rounds in a year (Oct and Apr) as a mass campaign approach

Table 3.3: Trends of immunisation coverage and disease burden
(as per last two annual WHO/UNICEF Joint Reporting Form on Vaccine Preventable Diseases)

Trends of immunisation coverage (in percentage)						**Vaccine preventable disease burden**		
Vaccine		**Reported**		**Survey**		**Disease**	**Number of reported cases**	
		2005	**2006**	**2001**	**2006**		**2005**	**2006**
BCG		92.4	96.1	83	93	Tuberculosis *	NA	NA
DTP	DTP1	86.3	93	83	93	Diphtheria	46	72
	DTP3	80.04	93	71	89	Pertussis	2170	1092
Polio 3		83.01	91.9	90	91	Polio	4	5
Measles (first dose)		79.2	87.5	64	85	Measles	5023	2838
TT2+ (Pregnant women)		68.5	51.3	45	63	NN Tetanus	29	42
Hib3		NA	NA	NA	NA	Hib **	NA	NA
Yellow Fever		NA	NA	NA	NA	Yellow fever	NA	NA
HepB3		NA	NA	NA	NA	hepB sero-prevalence*	NA	NA
Vit A supplement	Mothers (<6 weeks post-delivery)	56.3	49.3	10	29.4			
	Infants (>6 months)	112.3	112.2	81	90			

* If available
** Note: JRF asks for Hib meningitis

If survey data is included in the table above, please indicate the years the surveys were conducted, the full title and if available, the age groups the data refers to:

Nepal Demographic and Health Survey (NDHS) were conducted in 2001 and 2006. The age groups the data refers are children under one year of age (childhood immunization) and 6-59 months of age for vitamin A distribution

Table 3.4: Baseline and annual targets *(refer to cMYP)*

Number		Baseline and targets				
		Base year 2007+	**Year 1 2008**	**Year 2 2009**	**Year 3 2010**	**Year 4 2011**
Births		806,120	845,800	887,520	931,389	977,522
Infants' deaths		51,914	51,594	51,476	51,226	50,831
Surviving infants		754,206	794,207	836,044	880,163	926,691
Pregnant women		806,120	845,800	887,520	931,389	977,522
Target population vaccinated with BCG		747,567	820,426	860,895	903,448	948,197
BCG coverage*		90.3%	97%	97%	97%	97%
Target population vaccinated with OPV3		747,567	769,678	816,519	866,192	928,646
OPV3 coverage**		83.9%	91%	92%	93%	95%
Target population vaccinated with DTP3***		623,228	769678			
DTP3 coverage**		83.7%	91%			
Target population vaccinated with DTP1***		644,301	795,052			
Wastage rate in base-year and planned thereafter			15%	15%	15%	15%
Target population vaccinated with **3rd dose** of DPT-HepB-Hib				816,519	866,192	928,646
…… Coverage**				92%	93%	95%
Target population vaccinated with **1st dose** of DPT-HepB-Hib				843,144	894,133	957,972
Wastage rate in base-year and planned thereafter				15%	15%	15%
Target population vaccinated with **1st dose** of Measles		610,920	727,388	798,768	856,878	928,646
Target population vaccinated with **2nd dose** of Measles						
Measles coverage**		82.5%	86%	90%	92%	95%
Pregnant women vaccinated with TT+		483,672	592,060	710,016	791,681	879,770
TT+ coverage****			70%	80%	85%	90%
Vit A supplement	Mothers (<6 weeks from delivery)	NA	NA	NA	NA	NA
	Infants (>6 months)	NA	NA	NA	NA	NA
Annual DTP Drop out rate [(DTP1-DTP3)/DTP1] x100		3.3	6%	5%	4%	3%
Annual Measles Drop out rate (for countries applying for YF)						

+ projected data is adjusted by HMIS every year
* Number of infants vaccinated out of total births
** Number of infants vaccinated out of surviving infants
*** Indicate total number of children vaccinated with either DTP alone or combined
**** Number of pregnant women vaccinated with TT+ out of total pregnant women

Table 3.5: Summary of current and future immunisation budget *(refer to cMYP)*

	Estimated costs per annum in US$				
Cost category	**Base year 2007**	**Year 1 2008**	**Year 2 2009**	**Year 3 2010**	**Year 4 2011**
Routine Recurrent Cost					
Vaccines (routine vaccines only)					
Traditional vaccines	1,067,053	923,129	1,001,407	1,017,498	1,095,493
New and underused vaccines	4,539,741	3,855,638	11,136,397	11,812,296	12,660,684
Injection supplies	902,620	525,988	638,034	679,923	729,136
Personnel					
Salaries of full-time NIP health workers (immunisation specific)	327,966	341,493	351,162	361,082	371,258
Per-diems for outreach vaccinators / mobile teams	1,644,844	1,678,372	1,713,022	1,748,387	1,783,567
Transportation	302437	56,576	56,154	33,568	35,331
Maintenance and overheads	4950	1,109,848	1,191,271	855,707	935,201
Training	210708	478,500	488,070	497,831	507,788
Social mobilisation and IEC	22848	308,234	263,700	268,974	274,354
Disease surveillance	N/A	979,772	1,238,653	1,092,945	1,222,301
Program management	95963	232,364	243,336	254,976	267,330
Supervision & monitoring	1,062,887	1,084,919	1,106,834	1,129,192	1,152,001
Subtotal Recurrent Costs	**10,182,017**	**11,574,833**	**19,428,040**	**19,752,379**	**21,034,444**
Routine Capital Costs					
Vehicles	-	18,277	14,341	14,627	-
Cold chain equipment	91,393	844,689	123,627	126,451	129,517
Other capital equipment	179,189	217,500	186,428	258,614	193,960
Subtotal Capital Costs	**270,582**	**1,080,466**	**324,396**	**399,692**	**323,477**
Campaigns					
Polio	5,559,787	2,999,904			
Measles		2,869,749			
JE campaign	2,120,868				
MNT campaigns (school immunization)		709,722	737,349	763,971	793,883
other campaigns					
Subtotal Campaign Costs	**7,680,655**	**6,579,375**	**737,349**	**763,971**	**793,883**
GRAND TOTAL	**18,133,254**	**19,234,674**	**20,489,785**	**20,916,042**	**22,151,804**

Table 3.6: Summary of current and future financing and sources of funds *(or refer to cMYP)*

		Estimated financing per annum in US$				
Cost category	**Funding source**	**Base year 2007**	**Year 1 2008**	**Year 2 2009**	**Year 3 2010**	**Year 4 2011**
Routine Recurrent Cost						
1.Tradisional Vaccine	1.GoN	1,067,053	923,129	1,001,407	1,017,498	1,095,493
2.New Vaccine	2.GoN,GAVI,Pool Fund	4,539,741	3855,638	11,951,566*	9,141,353*	9,203,655*
3.Injection Supplies	3. GAVI, Pool Fund	902,620	525,988	638,034	679,923	729,136
4. Salaries of full-time NIP health workers (immunisation specific)	4. GoN	327,966	341,493	351,162	361,082	371,258
5. Per-diems for outreach vaccinators / mobile teams	5. GoN, GAVI, Pool Fund	1,644,844	1,678,372	1,713,022	1,748,387	1,783,567
6.Transportation	6. GoN, GAVI, Pool Fund	302,437	56,576	56,154	33,568	35,331
7. Maintenance and overheads	7. GoN. GAVI	4,950	1,109,848	1,191,271	855,707	935,201
8. Training	8. GoN, GAVI, WHO, Unicef	210,708	478,500	488,070	497,831	507,788
9. Social Mobilization and IEC	9. GoN, GAVI, WHO, Unicef	22,848	308,234	263,700	268,974	274,354
10. Disease surveillance	10. WHO	N/A	979,772	1,238,653	1,092,945	1,222,301
11. Program management	11. GoN, GAVI	95,963	232,364	243,336	254,976	267330
12. Per-diems for supervision and monitoring	12. GoN, GAVI	1,062,887	1,084,919	1,106,834	1,129,192	1,152,001
Routine Capital Costs						
1.Vehicles	1. GAVI	N/A	18,277	14,341	14,627	0
2. Cold chain equipment	2. JICA, GAVI	91,393	844,689	123,627	126,451	129,517
3. Other capital equipment	3. GAVI	179,189	217,500	186,428	258,614	193,960
Campaigns						
1. Polio	1. GoN, WHO, UNICE, Rotary	5,559,787	2,999,904			
2. Measles	2. GoN, WHO, UNICEF	0	2,869,749			
3. School immunization TT	3. GoN, UNICEF	N/A	709,722	737,349		
4. JE	4. GoN, WHO	2,120,868				
GRAND TOTAL		**18,133,254**	**19,234,674**	**21,304,954**	**17,481,128**	**17,900,892**

**These figures are as per cMYP (Figures as per application annex 2a are 11,951,566 and 9,141,353 and 9,203,655)*

4. Immunisation Services Support (ISS)

Table 4.1: Estimate of fund expected from ISS (US$)

	Base Year 2007	Year 1 2008	Year 2 2009	Year 3 2010	Year 4 2011
DTP3 Coverage rate	83.7%	91%	92%	93%	95%
Number of infants reported / planned to be vaccinated with DTP3 (as in Table 3.4)	623,228	769,678	816,519	866,192	928,646
Number of *additional* infants that annually are reported / planned to be vaccinated with DTP3	-	146,450	46,841	49,673	62,127
Funds expected ($20 per additional infant)		2,929,000	936,820	993,460	1,242,540

* Projected figures
** As per duration of the cMYP

Major Lessons Learned from Phase 1	Implications for Phase 2
1. Funds were used for training of staff to build their capacity at different levels, development and printing of guidelines, manuals, monitoring charts and training materials, supervision and monitoring, transportation cost, supply of computers, procurement of cold chain spare parts and hiring of human resources.	1. Uses of ISS funds will continue for funding of the activities carried out in phase one. Fund will be used for strengthening cold chain capacity to accommodate introduction of pentavalent vaccine (DPT-HepB-Hib) in 2009
2. Funds were also used for program activities ; district level performance review, microplanning, DQSA and internal observational tour for EPI staff	2. Funds will also be used for program activities; district level performance review, micro planning using RED strategy, strengthening urban immunization, data quality audit, establish or expand outreach services in hard-to-reach areas, disadvantaged, poor, marginalized and low caste communities.
3. Flexibility in use of funds made easier for implementation of immunization activities	3. Annual EPI planning starts around April of each year. Strategies and activities are identified with budget and timeline. Due to flexibility in using ISS funds, financial gaps in the plan are filled by the ISS funds
4. Majority of the activities supported by ISS funds were focused at district level & below	4. Continue focusing the activities at district and below

Financial Management of ISS Funds:

With the approval of this application, the MoHP has the authority to receive funds for this program. GAVI-II ISS funds will be channeled through the same mechanism that has been successfully utilized for GAVI-I ISS funds. All the strategies/activities targeted to improve and sustain routine immunization for upcoming FY are discussed in detail with ICC members. After the discussion and consensus from ICC members the EPI Section, CHD prepares an annual plan with budget, which is then submitted DoHS and then to MoH&P. MoH&P submits to the National Planning Commission for approval of the programs. After approval of the activities/programs, the plan is submitted to the MoF for budget allocation. After approval of the budget by the MoF, the annual health plan together with the national plan is submitted to parliament for approval. Once the plan is approved by parliament it is reflected as the annual consolidated plan in the "Red Book". The MoF sends the approved plan with budget to MoHP. MoHP gives authority to DoHS for implementation of plan. DoHS send authority to all districts health offices for expenditure of the fund as per approved activities in the annual plan. District health offices send monthly expenditure statement to DTCO and get reimbursement based on the monthly expenditure statements. Activity progress reports are sent every month by the district health offices through the Health Management Information System. The health sector budget including GAVI ISS budget will undergo internal as well as external audit as per established procedures of the government of Nepal. District health offices maintain district level accounts by budget heading and send monthly expenditure statements to the departments and respective DTCOs for internal audit. DTCOs carry out quarterly internal audits at district level. External audit is carried out by the Auditor General Office annually on the consolidated statement prepared by Ministry of Health and Ministry of Finance after internal audit.

If you have not received ISS support before, please indicate: **Not Applicable**

5. Injection Safety Support: **Not Applicable**

6. New and Under-Used Vaccines (NVS)

Please give a summary of the cMYP sections that refer to the introduction of new and under-used vaccines. Outline the key points that informed the decision-making process (data considered etc):

The government recognizes immunization as one of the most cost effective program contributing reduction of morbidity and mortality of children. Immunization is high priority (P1) program. The objective of government of Nepal as outlined in cMYP-immunization (2007-2011) is to expand VPD surveillance (objective-5) and accelerate control of other vaccine-preventable diseases through introduction of new vaccines (objective-6). As per the above mentioned objective the GoN has targeted to introduce pentavalent (DPT-HepB-Hib) vaccine into routine immunization in 2009. Surveillance of Hib has been integrated with AFP surveillance since 2005.

With technical support from WHO Nepal conducted Hib Rapid Assessment tool (RAT) study in March 2003. The study showed:

- Hib is likely to be the commonest cause of bacterial meningitis in U5s
- Meningitis CFR 10-30%: excludes those that don't make it to hospital
- Neurological sequelae: ~5-25%
- Labs generally unable to isolate Hib

WHO/HQ with Hib initiative and GAVI's PneumoADIP undertook an exercise to estimate Hib disease by mathematical modelling, using available and published data showed:

- Cases of severe Hib illness estimate 76,459 (range: 59459-108204)
- Deaths from Hib estimate 2745 (range: 1442-4155)
- Estimates presented likely represent an underestimate of the true burden of Hib

On the basis of above mentioned evidence GoN has decided to introduce pentavalent (DPT-HepB-Hib) single dose vial liquid vaccine into routine immunization starting from 1 January 2009.

Please summarise the cold chain capacity and readiness to accommodate new vaccines, stating how the cold chain expansion (if required) will be financed, and when it will be in place. Please use attached excel annex 2a (Tab 6) on the Cold Chain. Please indicate the additional cost, if capacity is not available and the source of funding to close the gap

Effective vaccine store management assessment was carried in Aug-Sept 2007 with support of WHO. As per preliminary finding of the assessment cold room capacity at the central store for positive vaccines is 21,020 liters and negative vaccine space is 12,420 liters. This existing positive space is enough to accommodate present routine vaccines (18,713 liters). When Nepal introduces DPT-HepB-Hib vaccine in 2009, the positive space requirement will increase from present 21,020 liters to 59,059 liters. With 4 deliveries/year plus 25% buffer stock, minimum cold store space required at central level will be 32,575 litres. The country needs 6,042 liters to accommodate campaign vaccine. So present cold store capacity at central store will not be enough to accommodate pentavalent. In addition to central cold room, there are 5 regional cold stores to support immunization program The total storage capacity of 5 RCS is 40CuM. With this space available at regional cold store additional quantity of vaccine could be shifted to regions for storage and allowing more space at center cold store. Nepal is planning to construct additional 20 CuM of cold room storage space to accommodate future vaccine in the center cold room

Nepal plans to conduct the assessment of regional and district cold store with the support of WHO/UNICEF by 2007/08. The outcome of assessment will guide government to take necessary future actions on improving cold chain space and overall vaccine management.

On the basis of recommendations given in preliminary report of EVSM assessment 2007, an implementation plan with timeline has been developed to address the shortcomings. Action has been already initiated.

ICC has endorsed the government plan to implement EVSM recommendations using ISS funds. The construction of cold room at the centre will be completed before the introduction of new vaccine.

Table 6.1: Capacity and cost (for positive storage)

		Formula	Year 1 2007	Year 2 2008	Year 3 2009	Year 4 2010	Year 5 2011
A	Annual ***positive*** volume requirement, including new vaccine (litres)	*Sum-product of total vaccine doses multiplied by unit packed volume of the vaccine*	34,095	35,094	69,059	61,527	65,149
B	Annual ***positive*** capacity, including new vaccine (litres)*	#	21,020*	21,020	21,020	21,020	21,020
C	Estimated minimum number of shipments per year required for the actual cold chain capacity	*A / B*	1.62	1.66	2.81	2.93	3.1
D	Number of consignments / shipments per year	*Based on national vaccine shipment plan*	4	4	4	4	4
E	Gap (if any)	*((A / D) - B)*	(12,496)	(12,246)	(6,255)	(5,638)	(4,732)
F	Estimated cost for expansion**	*US $*					

*Capacity at central store only
** Expansion cost net yet calculated

Please briefly describe how your country plans to move towards attaining financial sustainability for the new vaccines you intend to introduce, how the country will meet the co-financing payments, and any other issues regarding financial sustainability you have considered (refer to the cMYP):

The future resource requirements and financing gap analysis detailed in cMYP outlines the resource requirement and financial sustainability. From the analysis it can be concluded that Nepal can sustain the immunization program for traditional vaccines. However, external support will be extremely critical in introducing new and under-used vaccines such as Haemophilus Influenza, Measles/Rubella. The government recognizes the funding risks and, is exploring various additional funding sources for financial sustainability.

Currently GoN has been procuring the traditional antigens (OPV, BCG,TT and measles) and had strongly place its commitment for co-payment for DPT-Hep vaccine. The government plan for financial sustainability includes:

1) The government is committed to increase per capita health expenditure (Three year health plan 2007-2010). Immunization is high priority (P1) program. Immunization will get more share of the increased health budget
2) Ongoing support from development partners: Many developmental partners have been supporting immunization in Nepal. These are WHO, UNICEF, USAID, JICA, WB, GTZ, DFID, Rotary and other various NGOs and INGOs. The government is planning to explore possibility of support from various other EDPs such as EU, AusAID, government of India and others
3) Use of pool fund: Different partners (WB-$50 million and DFID-$54 million for period of 2005-2009) have joined pooled funding under a SWAP approach. The pooled funds have been a significant help to immunization activities.
4) The government plans to mobilize local resources under decentralization strategy.
5) Role of ICC: ICC could play crucial role in resource mobilization
6) Program efficiency: Accelerating the potential improvement in program efficiency

Table 6.2: Assessment of burden of Hib disease:

Disease	Title of the assessment	Date	Results
Hib	Hib Rapid Assessment tool (RAT) study supported by WHO	March 2003	• Hib is likely to be the commonest cause of bacterial meningitis in U5s • Meningitis CFR 10-30%: excludes those that don't make it to hospital • Neurological sequelae: ~5-25% • Labs generally unable to isolate Hib
Hib	WHO/HQ with Hib initiative and GAVI's PneumoADIP undertook an exercise to estimate Hib disease by mathematical modelling, using available and published data	2006	• Cases of severe Hib illness estimate 76,459 (range: 59459-108204) • Deaths from Hib estimate 2745 (range: 1442-4155) • Estimates presented likely represent an underestimate of the true burden of Hib
Hib	Surveillance of Hib has been integrated with AFP surveillance. Currently there are 4 hospitals	2005	• 12 confirmed Hib cases reported from 4 sites

If new or underused vaccines have already been introduced in your country, please give details of the lessons learnt from storage capacity, protection from accidental freezing, staff training, cold chain, logistics, dropout rate etc., and suggest to address them:

Lessons Learned	Solutions / Action Points
Need additional storage capacity based on type of vaccine introduced and associated logistics	Storage capacity was increased at central, regional and district store with support from JICA.
HepB vaccine is very sensitive to cold. All staff handling vaccine should be very careful and need to know importance of proper temperature maintenance.	Staff training on vaccine management was very useful from preventing accidental freezing. This has created old concept of vaccine freezing.
Cost of new vaccine are high and there is urgent need to address vaccine wastage	Training focusing on strategies on reducing wastage rate was important
Improve access and utilization of new vaccine especially hard-to-reach, marginalized, disadvantage and poor people.	Micro planning using RED strategy and review meetings at different levels were conducted to achieve high access and utilization of vaccination.
Local level community mobilization using local volunteers and community leaders to increase vaccine demand was very useful	Advocacy and orientation meeting need to be conducted at various levels

Please list the vaccines to be introduced with support from the GAVI Alliance (and presentation): DPT-HepB-Hib vaccine, single dose liquid form from January 2009

First Preference Vaccine

As reported in the cMYP, the country plans to introduce Hib*. (antigen)* vaccinations, using DPT-HepB-Hib vaccine, in *single dose liquid* form.

Table 6.3: Specifications of vaccinations with new vaccine

Vaccine: DPT-HepB-Hib	*Use data in:*		**Year 1 2009**	**Year 2 2010**	**Year 3 2011**
Number of children to be vaccinated with the third dose	*Table 3.4*	#	816,519	866,192	928,646
Target immunisation coverage with the third dose	*Table 3.4*	#	92%	93%	95%
Number of children to be vaccinated with the first dose	*Table 3.4*	#	843,144	894,133	957,972
Estimated vaccine wastage factor	*Annex 2a or 2b Table E - tab 5*	#	1.11	1.11	1.11
Country co-financing per dose *	*Annex 2a or 2b Table D - tab 4*	$	$0.20	$0.20	$0.30

* Total price pre dose includes vaccine cost, plus freight, supplies, insurance, fees, etc

Table 6.4: Portion of supply to be co-financed by the country (and cost estimate, US$)

		Year 1 2009	**Year 2 2010**	**Year 3 2011**
Number of vaccine doses	#	178,100	171,900	296,000
Number of AD syringes	#	190,100	181,900	313,100
Number of re-constitution syringes	#	0	0	0
Number of safety boxes	#	2,125	2,025	3,500
Total value to be co-financed by country	**$**	$664,000	$571,500	$920,500

Table 6.5: Portion of supply to be procured by the GAVI Alliance (and cost estimate, US$)

		Year 1 2009	**Year 2 2010**	**Year 3 2011**
Number of vaccine doses	#	3,141,900	2,684,900	2,772,000
Number of AD syringes	#	3,354,600	2,840,300	2,932,800
Number of re-constitution syringes	#	0	0	0
Number of safety boxes	#	37,250	31,550	32,575
Total value to be co-financed by GAVI	**$**	$11,717,000	$8,925,500	$8,622,000

Procurement and Management of New and Under-Used Vaccines

a) Please show how the support will operate and be managed including procurement of vaccines (GAVI expects that most countries will procure vaccine and injection supplies through UNICEF):

Nepal will procure vaccine and injection supplies both GAVI and government co-finance part through UNICEF. Government's co-finance amount will be paid to UNICEF as per agreement

b) If an alternative mechanism for procurement and delivery of supply (financed by the country or the GAVI Alliance) is requested, please document:

- Other vaccines or immunisation commodities procured by the country and description of the mechanisms used.
- The functions of the National Regulatory Authority (as evaluated by WHO) to show they comply with WHO requirements for procurement of vaccines and supply of assured quality.

N/A

c) Please describe the introduction of the vaccines (refer to cMYP)

Nepal plans to introduce DPT-HepB-Hib vaccine into routine immunization throughout the country from January 2009. Following activities will take place before the introduction of new vaccine:

1) Develop guideline and training manuals on vaccine introduction
2) Develop advocacy and IEC materials for health staff and general population, communities' leaders and volunteers
3) Develop communication messages to be broadcast from radio or TV
4) Organize planning meeting at various levels (national, region, district and below district)
5) Organize trainings of health staff at various levels
6) Organize vaccine introduction ceremony with involvement of high levels officers, political and social leaders
7) Implement recommendations made by effective vaccine store management assessment at different levels to accommodate new vaccine

d) Please indicate how funds should be transferred by the GAVI Alliance (if applicable)

N/A

e) Please indicate how the co-financing amounts will be paid (and who is responsible for this)

Ministry of Health and Population, GoN will pay the co-financing amounts to UNICEF as per MoU.

f) Please outline how coverage of the new vaccine will be monitored and reported (refer to cMYP)

MoH& P has established information management system (HMIS) in place for reporting and monitoring of coverage data. Immunization coverage, drop-out and wastage rate for all antigens are collected from peripheral level (Village development Committees) monthly. These collected data are sent to the district by all VDC bases health facilities by 7th of every month using given HMIS format. Districts compile and analyze the data and send the data to HMIS section, DoHS nad RHD by 15th of every month. HMIS section verifies and enters the data into the computer system. HMIS provided feedback to all divisions and district every 3 months. Divisions at DoHS have direct access to HMIS raw data. Each district organizes quarterly performance review meeting of all health facilities and take necessary action as required. Management Division organizes annual review meeting at regional level (5 regions) and national review meeting at national level and provides feedback to MoH&P for annual planning.

New and Under-Used Vaccine Introduction Grant

Table 6.5: calculation of lump-sum

Year of New Vaccine introduction	N° of births (from table 3.4)	Share per birth in US$	Total in US$
2009	887,520	$ 0.30	$266,256

Please indicate in the tables below how the one-time Introduction Grant[3] will be used to support the costs of vaccine introduction and critical pre-introduction activities.

Table 6.6: Cost (and finance) to introduce the first preference vaccine (US$)

Cost Category	Full needs for new vaccine introduction	Funded with new vaccine introduction grant
	US$	US$
Training	327,565	200,000
Social Mobilization, IEC and Advocacy	64,273	20,094
Cold Chain Equipment & Maintenance	200,000	0
Vehicles and Transportation	123,077	0
Programme Management	46,162	46,162
Surveillance and Monitoring	27,692	
Human Resources	0	
Waste Management	27,692	
Technical assistance		
Other (please specify)		
Other (please specify)		
Other (please specify)		
Other (please specify)		
Total	816,462	266,256

[3] The Grant will be based on a maximum award of $0.30 per infant in the birth cohort with a minimum starting grant award of $100,000

7. Additional comments and recommendations from the National Coordinating Body (ICC)

Since its inception in 2000 ICC has played a significant role in improvement of national immunization program in Nepal. Immunization program is priority one (P1) program of GoN. GoN is committed to achieve milestone targeted in cMYP with support from all immunization partners. NIP targets to increase and sustain the routine immunization coverage and introduce new and underused vaccines based on evidence into routine immunization which requires technical as well as financial support. ICC including all immunization partners play a crucial role in assisting GoN achieving the targeted goals.

The ICC members actively participated in development of application for ISS and introduction of new vaccine (HepB) in GAVI-I support. The ICC members regularly monitored the introduction of DPT-HepB vaccine and improving routine immunization. The ICC members have expressed their satisfaction over government commitment for purchase of traditional vaccines.

With existing disease burden and GAVI's support for new vaccine introduction ICC members strongly recommend for introduction of Hib vaccine into routine immunization in the formulation of DPT-HepB-Hib (pentavalent single dose liquid vaccine). The ICC members asked GoN to implement recommendations made by EVSM assessment (2007) as early as possible to address cold store capacity.

The coverage for all antigens is high (>83% shown by NDHS-2006). The ICC members expressed the need for increasing immunization access to poor, marginalized, hard-to-reach and disadvantaged population

The ICC welcomes the GAVI-II support for introduction of new (Hib) vaccine and strengthening of immunization services.

The ICC further reiterate its commitment to play active role in achieving cMYP (2007-2011) immunization goals leading to control, elimination or eradication of vaccine preventable diseases in Nepal.

Government of Nepal
Ministry of Health & Population
DEPARTMENT OF HEALTH SERVICES
Tel. : 4261436
: 4261712
Fax : 4262238
Pachali, Teku
Kathmandu, Nepal

Ref. No.

Date : February 5, 2008

Dr Julian Lob-Levyt
Executive Secretary
GAVI Alliance Secretariat
C/O UNICEF
CH-1211 Geneva 10
Switzerland

Subject: NVS support for introduction of Pentavalent vaccine

Dear Dr Julian

This letter is in response to your letter to the Minister of Health & Population on "Nepal's proposal to the GAVI Alliance" dated 11 December 2007. We are pleased to know that GAVI Alliance Board has approved the "Immunization Services Support" for Nepal. We know that with this support many children of Nepal will be benefitted from immunization services.

Regarding the support for introduction of Pentavalent (DPT-HepB-Hib) vaccine we are pleased to response to the conditions set by the GAVI Board. We have in consultation with and active involvement of ICC members developed a more detailed introduction plan documenting the activities, the time frame and the budget to address all the programmatic, logistic and financial implications related to the transfer from Tetravalent to Pentavalent vaccine. We also have included a cold chain upgrade plan integrated into the introduction plan.

The introduction plan has been discussed in detail during the ICC meeting (minutes attached for your information). The comments made by the ICC members were in-cooperated into the introduction plan.

The government of Nepal would like to extend its sincere gratitude to GAVI Board for its continuous support in saving lives of many children of Nepal.

Thanking you and looking forward for further cooperation in future.

Yours sincerely,

Dr Govinda Prasad Ojha
Director General
Department of Health services
Ministry of Health & Population
Nepal

Plan of introduction of Hib vaccine into the National Immunization Program, Nepal

Background

In Nepal, the Expanded Programme on Immunization started in 1979 in 3 districts with two antigens (BCG & DPT). By 1989 the program expanded to all 75 districts with six antigens. Currently, the National Immunization Program (NIP) provides BCG, DPT-HepB, OPV and measles to children less than one year of age and TT vaccine to pregnant women. Nepal introduced HepB monovalent vaccine into the NIP with GAVI support in November 2002. Monovalent HepB vaccine was replaced in a phase wise manner by tetravalent vaccine (DPT-Hep B) in 2005 and throughout the country by 2006. Nepal plans to introduce, in phase wise manner, Japanese encephalitis (JE) SA 14-14-2 vaccine from current FY (2008) to all children 12-23 months in post-JE campaign districts.

Immunization Schedule

The following immunization schedule for children less than one year is being followed in the country at present:

Vaccine	Ages of administration
BCG	At birth
DPT-HepB	6, 10 and 14 weeks
OPV	6, 10 and 14 weeks
Measles	9 months
TT	Pregnant women

Immunization is a high priority (P1) program in Nepal. The government recognizes immunization as one of the most cost effective program contributing reduction of morbidity and mortality of children. The objective of government of Nepal as outlined in the cMYP (2007-2011) is to expand VPD surveillance (objective-5) and accelerate control of other vaccine preventable diseases through introduction of new vaccines (objective-6). As per these objectives, the government of Nepal has targeted the introduction of Hib vaccine into routine immunization. The availability of the co-financing facility under GAVI Phase II further facilitated the decision in this regards. The Ministry of Health & Population (MoHP) plans to introduce Hib vaccine in the form of pentavalent (DPT-HepB-Hib) throughout the country from March 2009 (Earlier plan was to start from January 2009). The pentavalent combination will replace the tetravalent combination and will follow the same immunization schedule as the tetravalent.

Utilization of the existing stocks of tetravalent vaccine

Nepal introduced tetravalent vaccine in a phase wise manner starting from the second half of 2005 and expanding throughout the country in 2006. As per the UNICEF supply division, the approved quantity of tetravalent vaccine and injection safety devices slated for 2007 on behalf of

GAVI/VF will be enough for Nepal until the end of February 2009. After the complete utilization of existing tetravalent vaccine the country will shift to pentavalent vaccine, i.e. from March 2009.

Pentavalent vaccine will be introduced throughout the country from March 2009. So, any child who has received one or two doses of the tetravalent vaccine will receive the first dose of pentavalent vaccine once the vaccine is introduced. Therefore, some children may end up receiving only one or two doses of the pentavalent vaccine.

Preference for vaccine presentation

Taking into consideration pros & cons of available presentations of pentavalent vaccine, Nepal plans to introduce Hib vaccination using DPT-HepB-Hib vaccine in single dose liquid form. Nepal will procure vaccine and injection supplies, both the GAVI funded part and government co-financed part, through UNICEF.

Distribution of the vaccine and injection supplies within the country will follow the existing distribution system operated by the Logistic Management Division (LMD) of the Department of Health Services in coordination with the Child Health Division (CHD). The LMD will supply vaccine and other injection supplies to all districts (75) through regional medical stores (6).

Vaccine Wastage

With geographical terrain with sparse populations and an immunization delivery strategy to reach every target child in every corner of the country, vaccine wastage for some antigens is still high (BCG >70% and measles >50%). In consideration of the plan to introduce new and under-used vaccines that are very expensive, the government is introducing new strategies with close monitoring to reduce vaccine wastage. The current cMYP has put strong emphasis on measures to reduce vaccine wastage (target: reduce wastage < 15% for OPV, DPT-HepB and TT and about 50% to BCG and measles). Strategies outlined to reduce vaccine wastage are:

- Organization of refresher trainings on vaccine management to all EPI staff;
- Analysis of vaccine stocks. The existing logistics management information system needs to be strengthened to ensure that CHD receives accurate and timely up-to-date information on the quantity of vaccines in stock and the status of cold chain equipment.
- Emphasis of proper recording and reporting of the vaccine stocks at all level.
- Monitoring of vaccine wastage at all levels, including storage and service delivery levels.
- Implementation of the multi-dose vial policy up to health facility level.
- Based on district micro plan and following the NIP policy of not missing any child for vaccination, the districts have and could reschedule immunization session. This is especially useful for reducing the wastage of freeze dried vaccine.
- Measuring immunization performance by including vaccine wastage.

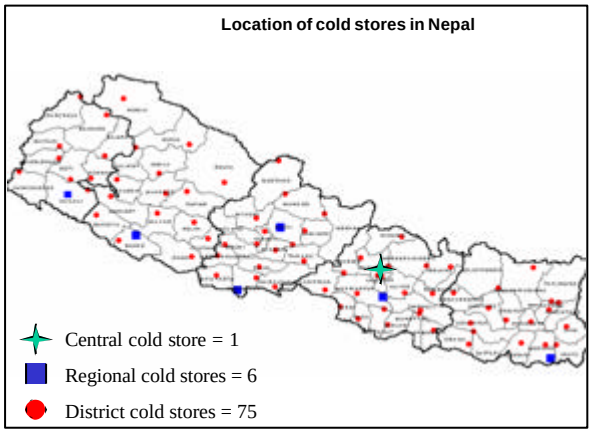
It is anticipated that the wastage rate for pentavalent vaccine will be considerably lower than for other vaccines due to use of the single dose vial.

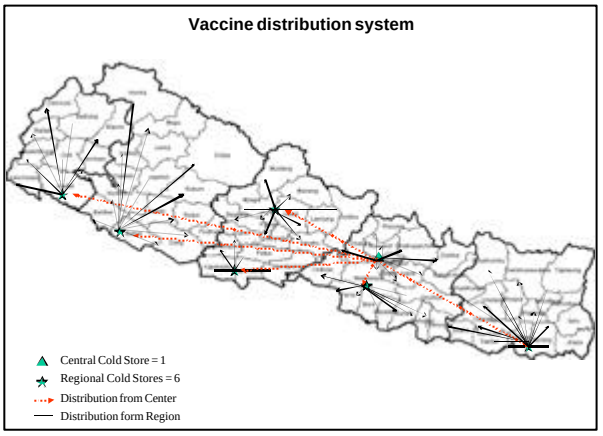
Injection safety

The National Immunization Program has an injection safety policy in place. Auto-disable syringes (ADs) are used for all injectable antigens in routine and supplementary immunization. Used syringes and needles are collected in safety boxes. While some sites dispose waste through incinerator, primarily disposal is through open-pit burning and burying. The government has plans to explore additional methods of waste disposal. The health staffs have been well trained in different opportunities (routine or campaign) on injection safety. AEFI monitoring system is being expanded.

Cold storage capacity

At present the cold chain facilities at the center are adequate to maintain the current requirements, but introduction of new vaccines and conduction of supplementary immunization activities would require additional storage facilities. The current cold chain system includes a central cold store in Kathmandu, 6 regional cold rooms, 75 district cold rooms and sub-centers at the peripheral level.





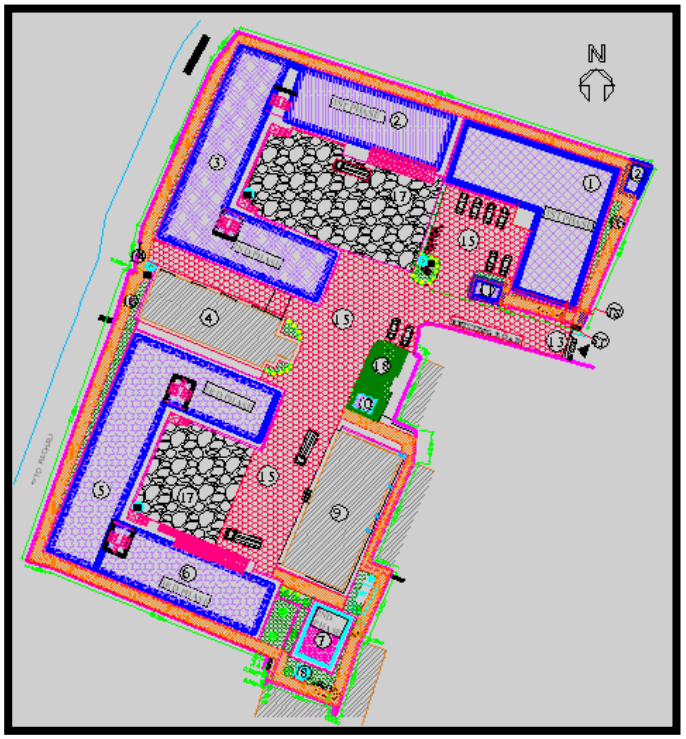
With the assistance of WHO and UNICEF, Effective Vaccine Store Management (EVSM) assessments were carried out in September 2003 and September 2007. As per these assessments, the capacity at the central store for positive vaccine is 21,020 liters and for negative vaccine is 12,420 liters. The existing space is enough to accommodate present routine vaccines (18,713 liters).

When Nepal introduces pentavalent vaccine in 2009, the positive space requirement will increase from current 21,020 to 59,059 liters. With 4 deliveries/year plus 25% buffer stock, minimum cold store space required at central level will be 32,575 liters. The country needs an additional 6,042 liters to accommodate campaign vaccine. So the current cold store capacity at center will not be enough to accommodate pentavalent vaccine.

The government's plans to address the cold store capacity to adjust to the pentavalent vaccine are:

Permanent solution

- The government plans to construct an additional cold room (40CuM) in the center. The ICC has already endorsed the government plan to use GAVI ISS funds for this purpose.
    - UNFPA Nepal is assisting the Logistics Management Division (LMD) to: improve the existing system of procurement of a variety of commodities; develop capacity and upgrade logistics-related skills; improve transportation of essential and annual commodity distribution programs managed by governmental and nongovernmental health facilities from central to community level. With support from UNFPA, LMD has prepared a master plan for strengthening the central storage, including cold storage capacity that will be appropriate for efficient logistics management.



Map-Central store (block 1 will have cold store)

- The construction work will start from August 2008 and will be completed by end 2008, i.e. before the introduction of pentavalent vaccine.

Temporary solutions (if needed)

- The total capacity of the regional medical stores is 40 CuM. Since space is available, vaccine could be shifted to regions for storage, freeing up space in center cold store. This would only be a temporary measure. The district cold store and sub centers have adequate store capacity to store 1-3 months supply of the required vaccine including pentavalent vaccine.
- Nepal plans to conduct EVSM assessment of the regional cold stores in April 2008 with support from WHO (consultant identified and timeline set)
- Besides the 6 regional stores, one additional store has been identified to store vaccine. The capacity is >15 CuM. It is located in Pathalayia, approximately 3 hours from Kathmandu

Monitoring and evaluation

Monitoring of pentavalent vaccine will be conducted as per the existing MoHP reporting and monitoring system for all immunizations. The logistics management information system (LMIS) monitors vaccine stocks at all levels. The MoHP has a well-established health management information system (HMIS) in place for reporting and monitoring of immunization coverage data, drop-out, wastage rate and AEFI. The HMIS provides feedback to each division and concerned partners on a quarterly basis. Each district organizes quarterly performance review meetings of all health facilities at district level. The Management Division organizes annual regional review meetings at regional level (5 regions) and a national review at center. The MoHP also publishes the "Annual Report," which includes all information on health, including immunizations. The ICC meets regularly and discusses on immunization-related issues.

Surveillance

Surveillance for bacterial meningitis was integrated with AFP surveillance (supported by WHO) in 2005. Currently there are 4 sentinel sites. The sentinel sites include government and private health institutions. The sentinel sites are supported with lab supplies, necessary equipments, latex agglutination kits and training in laboratory procedures and quality control. This is done in coordination with National Public Health Laboratory. The future plan is to expand the sentinel sites in the country.

Financial sustainability

Currently, the government of Nepal procures the traditional antigens (OPV, BCG, TT and measles) from its own resources, while GAVI funds the DPT-HepB vaccine. The government is also procuring JE vaccine for routine and for campaigns. Only measles and OPV for campaigns are procured through external resources. The government has strongly placed its commitment for co-payment of DPT-HepB vaccine. The immunization program is a top priority (P1) program, and government has been proving this by allocating more and more funds for immunization in each fiscal year. However, increasing costs of vaccines and the increasing availability of newer vaccines have lead to financial difficulties despite the government strong commitment. The future resource requirements and financing gap analyses are detailed in Nepal's cMYP A. From these analyses it has been concluded that Nepal can sustain the immunization program for

traditional vaccines. However, external support will be extremely critical in introducing new and under-used vaccines such as Hib, pneumococcal, and a rubella-containing vaccine. The government recognizes the funding risks, and is exploring various additional funding sources for financial sustainability.

With introduction of Hib vaccine, the government has to co-finance $ 664,000 in 2009, increasing to $920,500 in year 2011. As outlined in the application for new vaccine, the government plan for financial sustainability includes:

1. The government is committed to increasing per capita health expenditure (Three Year Plan 2007-2010). Immunization is a high priority (P1) program. Immunization will get a large share of the increased health budget
2. Ongoing support from development partners. Many developmental partners have been supporting immunization in Nepal, including WHO, UNICEF, USAID, JICA, WB, GTZ, DFID, Rotary and other various NGOs and INGOs. The government is planning to explore possibilities of support from various other EDPs such as the EU, AusAID, the Government of India, and others.
3. Use of pool funds. Different partners (WB-$50 million and DFID-$54 million for period of 2005-2009) have pooled funding under a SWAP approach. The pooled funds have been a significant help to immunization activities.
4. The government plans to mobilize local resources under its decentralization strategy.
5. Program efficiency: Accelerating the potential improvement in program efficiency

Strategies for introduction of Hib vaccine

Nepal plans to introduce DPT-HepB-Hib vaccine into routine immunization throughout the country from March 2009. The following activities will take place before the introduction of new vaccine:

1. Getting approval of the application for new vaccine from GAVI.
2. Constructing additional space at the center for vaccine storage. The MoHP will allocate funds for the coming FY (Nepal FY runs from mid-July to July). The construction process will start from August of 2008 and will finish by end December 2008.
3. The Immunization Section under The Child Health Division is the responsible focal section for introduction of the vaccine. The Immunization Section will carry out all activities as outlined in this introduction plan.
4. Develop guidelines and training materials to be used at various levels.
5. Recording and reporting: In coordination with HMIS section of Management Division, recording and reporting system will be updated in cooperating the necessary changes with the introduction of vaccine.
6. Advocacy & social mobilization: Advocacy meetings will be held at central, regional and district levels involving professional organizations, public-private organizations and media

people highlighting the need for the new vaccine. This will create awareness at all level and increase demand for all vaccines. Advocacy and IEC materials will be developed and distributed at all levels. The IEC material that includes posters, brochures and other will be developed in local languages targeting local communities, religious leaders, political leaders and parents with purpose to create and increase demand for vaccine. The mass media like TV and radio will be used to disseminate the message. Different TV program will be developed.

7. Planning meetings: Planning meeting with regional and district health managers and immunization staff will be held at central, regional and district levels.
8. Trainings: All district level health staff will be trained on introduction of new vaccine. The training may include information on Hib disease, importance of the vaccine, its cost, storage criteria, side effects, etc. This will be taken as opportunity to refresh health staff on injection safety, cold chain, waste management and vaccine management.
9. Arrival and distribution of vaccine: The country expects to receive the 1st installment of pentavalent vaccine by December 2008. The Logistic Management Division through regional cold store will distribute vaccine to the districts.
10. Launching ceremonies at all levels, with involvement of local leaders or political figures will be conducted.

Cost to introduce the Pentavalent (DPT-HepB-Hib) vaccine

Cost Category	Full needs for new vaccine introduction	Funded with new vaccine introduction grant
	US$	US$
Training	327,565	200,000
Social Mobilization, IEC and Advocacy	64,273	20,094
Cold Chain Equipment & Maintenance	200,000	0
Vehicles and Transportation	123,077	0
Programme Management	46,162	46,162
Surveillance and Monitoring	27,692	
Human Resources	0	
Waste Management	27,692	
Technical assistance		
Total	**816,462**	**266,256**

Timeline for introduction of Pentavalent vaccine into routine immunization

Activity	Estimated cost (US $)	Funded by		Timeline	Responsibility
			NV introduction grant		
Submission of clarification to GAVI	0	-	0	By 8th February 2008	MoH&P
Construction of additional cold store	153,846	ISS GAVI-1	0	By December 2008	MoH&P
EVSM assessment of regional cold store	0	WHO	0	By April 2008	LMD & CHD
ICC meeting	0	-	0	March and then Quarterly	CHD
Develop, print and distribute advocacy and IEC material	20,000	-	20,000	July-August 08	NHEICC, CHD, partners
Develop, print and distribute guideline and training materials	23,000	-	23,000	June-July 08	CHD & partners
Update recording and reporting system	2,000	GoN	0	May-June 08	HMIS, CHD
Develop, print and distribute new forms and in cooperate into HMIS	21,077	GoN	0	May-June 08	HMIS, CHD
Conduct advocacy meetings at all levels with different organization and media	57,350	GoN	0	January-February 09	CHD, MoH&P
Conduct planning meetings at central level to brief about the new vaccine introduction	4,615	-	4,615	December 08	CHD, DoHS
Conduct planning meetings at regional level to brief about the new vaccine introduction Trainings	41,546	GoN	35,488	January 09	CHD, DoHS
Conduct planning meetings at district level to brief about the new vaccine introduction	50,000	GoN	0	January 09	DHO/DPHO
Conduct training of health staff at district level	327,565	GoN	177,000	February 09	DHO/DPHO
Distribution of vaccine to districts	123,077		0	January-February 09	LMD,RMS
Launching of introduction	1,538	-	1,538	March 09	CHD, DoHS
Filed visits for monitoring of the introduction	4,615	-	4,615		
Review meeting at regional level to oversee the implementation	40,000	GoN	0	June 09	RHD
Annual review at central level	5,000	GoN	0	September 09	MD, DoHS
Total	**875,229**		**266,256**		

MINUTES OF THE MEETING
Inter-Agency Coordination Committee for Immunization

Government of Nepal
Ministry of Health & Population
Department of Health Services
Teku, Kathmandu

Date: 25 January 25, 2008 Time: 2:00pm

Venue: DoHS, Teku

Meeting Participants:

Name	Designation	Department
1. Dr GP Ojha	Director General	DoHS
2. Dr YV Pradhan	Director	CHD-DoHS
3. Dr MG Sherpa	Director	LMD-DoHS
4. Dr SS Tiwari	Director	MD-DoHS
5. Mr LR Ban	Director	NHEICC-DoHS
6. Dr J Bilous	Senior Adviser on Immunization	WHO-HQ
7. Mr PB Bangdel	PO	UNICEF
8. Mr TR Manekshaw	President	Rotary International
9. Dr NP Sharma	Health Section Chief	World Bank
10. Ms Arscott-Mills S	Senior Technical Adviser	USAID
11. Dr J Partridge	TO-EPI	WHO
12. Dr R Bohara	NC-IPD	WHO
13. Dr KB Gharti	GAVI-FP	WHO
14. Mr P Adhikari	Coordinator	CORE
15. Dr SR Upreti	EPI Chief(Member Secretary)	CHD-DoHS

Chairperson: Dr Govinda Prashad Ojha, Director General, Department of Health Services chaired the meeting.

Agenda of the meeting:

1. Update on GAVI board decision on Nepal's application on ISS & NVS
2. Government response plan as required by GAVI on Hib vaccine introduction
3. Update on current outbreak of wild poliovirus type 3 in Nepal and government response plan
4. Discussion and other issues
5. Recommendations and closing of meeting

Discussion and issues:

1. The Director General opened the meeting welcoming and thanking all the participants. The meeting started with introduction of the participants
2. Dr SR Upreti, the member-secretary of the ICC, welcomed the participants and outlined the objectives of the meeting.
3. **Polio Outbreak**: Dr Upreti updated the members on current outbreak of wild poliovirus type 3 in Nepal. 4 cases of wild poliovirus type 3 have been reported from 2 districts (3- cases from Dhanusa, 1 case from Siraha district) with date of onset in December 2007. Most probably these cases were imported from Bihar where 48% of total cases of India have been detected in 2007. Due to unrest in these district, routine immunization has suffered during this year with coverage ranging from 25-60% in adjoining villages of the case.
4. **Outbreak Response Plan**: He also presented the government response plan to the outbreak. The government is planning to conduct 2 additional round of SNID in all 20 Terai and part of 3 inner Terai districts bordering UP & Bihar states of India in March and April 2008. MOPV3 will replace mOPV1 in these districts in the 2nd and 3rd round (February and March) and mOPV1 in April round. Rest of the country will receive mOPV1 in February round. He stressed on involvement of other local partners in assisting country in fight against poliomyelitis. Dr Upreti clarified the issues raised during the presentation.
5. **Introduction plan for Hib vaccine**: Dr SR Upreti informed the members about Nepal's application on ISS and NVS and response of GAVI board. GAVI board approved the ISS support and conditionally approved the NVS support. He presented the government response plan on introduction of Hib vaccine as required by GAVI board. The detail vaccine introduction plan has been prepared and solution has been identified to fulfill cold chain capacity for new vaccine storage. The document has been shared with ICC members. The government of Nepal thanked the GAV for their support.

Discussion on polio outbreak:

- Prabhat Bangdel from UNICEF asked about the status of immunization of polio cases. He also stated as mOPV1 was used in 1st round of NID, the child must have received mOPV1 not protecting against type 3.
- Dr YB Pradhan enquired about the vaccination coverage in the district. He asked not to generalize the coverage of few VDC to whole district. He also stressed on replacing mOPV1 with mOPV3 in 3 partial districts in February round. Detecting few cases for some years to come may not be surprising due to outbreak in Bihar
- DG enquired about NID coverage and was not happy on district report of 100% coverage. He also asked about the routine coverage of these districts and cold chain status. He asked what may be the reason behind such low coverage during rapid assessment. He emphasized on government commitment for a successful completion of the campaign.
- Dr J Partridge said that Dhanusa has been using mOPV1 for routine immunization. This may have resulted outbreak of P3 virus there. He also explained global priority on fight against WPV type1. He also stressed on high routine coverage. He also requested DG to put press statement about the recent wild cases. DG said this was good idea and it can be done and get support through media for successful completion of campaign.

- The Director, MD asked why such a low routine coverage was. He said health staffs have been very political. Even health staffs in Dhanusa district have warned DPHO that they will not work if their demands are not met. Dr Pradhan said that usually immunization coverage in first quarter of FY is low due to many festivals. But major problem is due to conflict situation in the Terai districts. Certain hilly people even cannot travel to Terai district.
- Dr J Bilous said that in spite of circulation of many cases in Bihar Nepal was able to stop circulation for years. So Nepal should look closely to find out reason and take action against it.
- Dr Sharma from WB asked government to put proposal to WB for support for future campaign.
- Representative from USAID asked what government expects in upcoming rounds of SIAs. How will conflict and current political situation affect? In what way USAID could be helpful? Dr Pradhan explained on experience of using human right organization during measles campaign. Human right organizations were never used for routine. But CHD is exploring possibility of such cooperation with human right groups or using political leaders.
- Prabhat Bangdel from UNICEF said first round went well but 3 and 4th round may be difficult due to election to constituent assembly election.
- DG agrees with bad situation existing in Terai districts. He enquired with existing outbreak in Bihar state and strategies to stop circulation in Nepal. We need to find solution for the problem.

Discussion on GAVI support:

- Dr YB Pradhan explained government's seriousness about the expansion of cold chain storage space to accommodate new pentavalent vaccine. Government has already agreed to use ISS fund for construction fo new cold storage. They are even ready to use pool funds for the same purpose.
- All partners thanked GAVI for their support to Nepal to introduce Hib vaccine and saving lives of children of Nepal. They also expressed their interest on monitoring the introduction of Hib vaccine.

Recommendation or Decision:

1. The ICC members agreed with government plan in response to outbreak of P3. Representative from WB asked government to put proposal for future support. The government will explore on possibility of such support.
2. The government thanked all partners for their continuous support in fight against polio eradication.
3. The ICC member supported the government introduction plan in response to GAVI board. Some of the members were closely involved in developing introduction plan.
4. The ICC agreed the use of ISS funds for construction of new cold storage. They also expressed their satisfaction on temporary solution government is putting for additional cold storage.
5. The government informed that vaccine introduction plan will be submitted to GAVI board before the February deadline.