Background thematic report no. 5

Progress Report on
Major Health Related Research and Studies
2013 and 2014

Report Prepared for Joint Annual Review (JAR)

February 2015

Government of Nepal (GoN)
Ministry of Health and Population (MoHP)
Ramshah Path, Kathmandu, Nepal

CONTENTS

ACRONYMS AND ABBREVIATIONS

24/7	24 hours, seven days a week
AA	anaesthesia assistant
ANC	antenatal care
ANM	auxiliary nurse midwife
ASBA	advanced skilled birth assistant
AWPB	annual work plan and budget
BCC	behaviour change communication
BEONC	basic emergency obstetric and neonatal care
BZH	Bheri Zonal Hospital
CDMA	code division multiple access
CEONC	comprehensive emergency obstetric and neonatal care
CI	confidence interval
DBP	diastolic blood pressure
DDC	district development committee
DHO	district health office
DoHS	Department of Health Services
DPHO	District Public Health Office
DTT	district technical team
DUDBC	Department of Urban Development and Building Construction
FCHV	female community health volunteer
FHD	Family Health Division
FY	fiscal year
GAAP	Governance and Accountability Action Plan
GESI	gender, equality and social inclusion
HFOMC	health facility operation and management committee
HIIS	Health Infrastructure Information System
HMIS	Health Management Information System
HR	Human Resources
HRH	Human Resources for Health
HTSP	healthy timing and spacing of pregnancy
IEC	information education and communication
INGO	International Non-Governmental Organisation
IUCD	intrauterine contraceptive device
IUD	intrauterine device
JAR	Joint Annual Review
JCM	Joint Consultative Meeting
JE	Japanese encephalitis
JZH	Janakpur Zonal Hospital
LARCs	long-acting reversible contraceptives
LF	Logical Framework
LGCDP	Local Governance and Community Development Programme
LHGSP	Local Health Governance Strengthening Programme
LLIN	long lasting insecticide net
LMD	Logistics Management Division

LMIS	Logistics Management Information System
M&E	monitoring and evaluation
Masl	m above sea level
MCHW	maternal and child health worker
MD	Management Division
MDGP	Doctor of Medicine in General Practice
MIS	management information systems
MoF	Ministry of Finance
MoHP	Ministry of Health and Population
NCD	non-communicable disease
NHRC	National Health Research Council
NHSP	Nepal Health Sector Programme
NHSSP	Nepal Health Sector Support Programme
NMICS	Nepal Multiple Indicator Cluster Survey
OC	outcome
OP	output
OPD	outpatient department
PHCC	primary health care centre
PNC	post natal care
QI	quality improvement
RA	rapid assessment
RR	relative risk
SBA	skilled birth attendant
SBP	systolic blood pressure
SHP	sub-health post
STS	Service Tracking Survey
SZH	Seti Zonal Hospital
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
VDC	village development committee
VHW	village health worker
WHO	World Health Organisation

1 INTRODUCTION

1.1 Background

Nepal's health system has changed dramatically over the last few decades. Changes in the political system, technological improvements, enhanced access to information and services, increased urbanisation and connectivity, changes in the development process, the promotion of equity and social inclusion, and many other changes have shaped a new reality. These and other factors have had a profound impact on the epidemiological and health seeking behaviour patterns of the population. As a result, new opportunities and challenges are arising.

Facing this new reality calls for rethinking the concept of the government's role and of the public policy in health service provision. It is time for innovation, for building new decision making capabilities, and for consolidating and ensuring stability and the effective operation of the government's health policy. With rising expectations and demand for health services, the government's responsibility to provide an efficient and purposeful health system has increased considerably. This responsibility includes protecting economically and socially vulnerable groups, combating poverty, ensuring universal health service coverage and social health protection, promoting equity, mobilising financial and human resources, and protecting vulnerable people against catastrophic payments for treatment.

1.2 Objectives and Methods

The objective of this report is to assemble the main findings from the main health research reports, published articles and studies conducted in 2013 and 2014 to make these findings available to policy makers to use for policy purposes. Information is also included on health research proposals approved by the Nepal Health Research Council (NHRC) in 2013 and 2014 to inform policy makers of ongoing studies that may be relevant for future decision making.

The research reports were collected in December 2014 through email communications, by visits to institutions and organisations, from the library of the Nepal Health Research Council, and by internet searches. The research articles and reports were searched for in the Google Scholar and PubMed databases. Research proposals approved in 2013 to 2014 were collected from NHRC's Ethical Review, Monitoring and Evaluation Section.

Most of the available research reports and articles that were published in 2013 and 2014 are included in this study. Note that the Service Tracking Survey for 2012 and the Household Survey for 2012 (both published in 2013) have not been included here as the many points from these major surveys were included in last year's JAR report (2014 JAR report) and are available there. The main findings of the reports and articles that are relevant to Nepal's health policies are summarised in this report.

1.3 Recent Major Health-Related Studies

The current exercise examined 33 major studies (see Table 1) that were published in 2013 or 2014. Table 1 thus serves as the list of references that are cited in Chapters 3 to 10.

The following chapters 3 to 10 present theme-wise key findings and recommendations of these study reports and articles that are relevant to inform existing major health policies for Nepal. Information from the studies is presented theme-wise by identified issues, desired outcomes and recommended actions to provide easy access to theme-wise information.

Table 1: Major Health Related Studies on Nepal published in 2013 and 2014

	Citation	Reference
A.	**2014 PUBLISHED STUDIES**	
A.1	**Reports (2014)**	
1	Aryal et al. 2014	Aryal, KK, Neupane, S, Mehata, S, Vaidya, A, Singh, S, Paulin, F, Madanlal, RG, Riley, LM, Cowan, M, Guthold, R, Singh, SP, Bhusal, CL, Lohani, GR (2014). *Non communicable diseases risk factors: STEPS Survey Nepal 2013.* Kathmandu: Nepal Health Research Council.
2	Chakraborty et. al. 2014	Chakraborty, N., Murphy, C., Paudel M., and Sharma, S (2014). *Knowledge and Perceptions of Intrauterine Devices Among Family Planning Providers in Nepal: A Cross-Sectional Analysis by Cadre and Sector.* Kathmandu: Population Services International, Nepal.
3	Mehata et al. 2014a	Mehata, S, Paudel, YR, Mehta, R, Dariang, M, Poudel, P, & Barnett, S (2014). Unmet Need for Family Planning in Nepal During the First Two Years Postpartum. *Biomed Res Int*, 2014, 649567.
4	MoHP 2014	FHD (2014). *Results from Assessing Birthing Centers in Nepal.* Kathmandu: Family Health Division, Ministry of Health and Population, Government of Nepal.
5	NMICS 2014	CBS (2014). *Nepal Multiple Indicator Cluster Survey 2014, Key Findings.* Kathmandu, Nepal: Central Bureau of Statistics and UNICEF Nepal.
6	STS 2013	MoHP (2014). *Service Tracking Survey 2013.* Kathmandu: Ministry of Health and Population, Government of Nepal.
7	UNFPA 2014	UNFPA (2014). *Final Facility Based Assessment for Reproductive Health Commodities and Services.* Kathmandu: United Nations Population Fund.
8	USAID 2014	USAID (2014). *A Report on Verbal Autopsy to Ascertain Causes of Neonatal Death in Nepal, 2014.* Kathmandu: United States Agency for International Development.
A.2	**Articles in peer reviewed journals (2014)**	
9	Bhandari et al. 2014	Bhandari, GP, Angdembe, MR, Dhimal, M, Neupane, S, & Bhusal, C (2014). State of Non-Communicable Diseases in Nepal. *BMC Public Health*, 14, 23.
10	Brenman et al. 2014	Brenman, NF, Luitel, NP, Mall, S, & Jordans, M J (2014) Demand and Access to Mental Health Services: A Qualitative Formative Study in Nepal. *BMC Int Health Hum Rights, 14*, 22.
11	Dhimal et al. 2014a	Dhimal, M, Ahrens, B, & Kuch, U (2014). Species Composition, Seasonal Occurrence, Habitat Preference and Altitudinal Distribution of Malaria and Other Disease Vectors in Eastern Nepal. *Parasit Vectors,* 7(1), 540.
12	Dhimal et al. 2014b	Dhimal, M, Gautam, I, Kress, A, Muller, R, & Kuch, U (2014). Spatio-temporal Distribution of Dengue and Lymphatic Filariasis Vectors Along an Altitudinal Transect in Central Nepal. *PLoS Negl Trop Dis,* 8(7), e3035.
13	Dhimal et al. 2014c	Dhimal, M, Aryal, KK, Dhimal, ML, Gautam, I, Singh, SP, Bhusal, CL (2014). Knowledge, Attitude and Practice Regarding Dengue Fever Among the Healthy Population of Highland and Lowland Communities in Central *Nepal. PLoS One,* 9(7), e102028.
14	Dhimal et al.	Dhimal, M, Ahrens, B, & Kuch, U (2014). Malaria Control in Nepal 1963-2012:

	Citation	Reference
	2014d	Challenges on the Path Towards Elimination. *Malar J,* 13, 241.
15	Dhimal et al. 2014e	Dhimal, M, O'Hara, RB, Karki, R, Thakur, GD, Kuch, U, & Ahrens, B (2014). Spatio-Temporal Distribution of Malaria and its Association with Climatic Factors and Vector-Control Interventions in Two High-Risk Districts of Nepal. *Malar J,* 13, 457.
16	Karkee et al. 2014	Karkee, R, Lee, AH, & Khanal, V (2014). Need Factors for Utilisation of Institutional Delivery Services in Nepal: An Analysis from Nepal Demographic and Health Survey, 2011. *BMJ Open*, 4(3), e004372.
17	Khanal et al. 2014	Khanal, V, Adhikari, M, Karkee, R, & Gavidia, T (2014). Factors Associated with the Utilisation of Postnatal Care Services among the Mothers of Nepal: Analysis of Nepal Demographic and Health Survey 2011. *BMC Women's Health*, 14, 19.
18	Mehata et al. 2014b	Mehata, S, Paudel, YR, Dotel, BR, Singh, DR, Poudel, P, & Barnett, S (2014). Inequalities in the Use of Family Planning in Rural Nepal. *Biomed Res In*t, 2014, 636439.
19	Onta et al. 2014	Onta, S, Choulagai, B, Shrestha, B, Subedi, N, Bhandari, GP, & Krettek, A (2014). Perceptions of Users and Providers on Barriers to Utilizing Skilled Birth Care in Mid- and Far-Western Nepal: A Qualitative Study. *Glob Health Action*, 7, 24580.
20	Tiwari et al. 2014	Tiwari, R, Ausman, LM, & Agho, KE (2014). Determinants of Stunting and Severe Stunting Among Under-fives: Evidence from the 2011 Nepal Demographic and Health Survey. *BMC Pediatr*, 14, 239.
21	Upreti et al. 2014	Upreti, SR, Gurung, S, Patel, M, Dixit, SM, Krause, LK, Shakya, G, Wannemuehler, K, Rajbhandari, R, Bohara, R & Schluter, WW (2014). Prevalence of Chronic Hepatitis B Virus Infection Before and After Implementation of a Hepatitis B Vaccination Program among Children in Nepal. *Vaccine*, 32(34), 4304-4309.
B.	**2013 PUBLISHED STUDIES**	
B.1	**Reports (2013)**	
22	Aryal et al. 2013	Aryal, S, Dariang, M & Cullen, R (2013). *Improving the Quality of Pre-Discharge Postnatal Care in Selected Facilities in Banke District.* Kathmandu: Ministry of Health and Population, Government of Nepal.
23	FHD 2013	FHD and NHSSP (2013). *Responding to Increased Demand for Institutional Childbirths at Referral Hospitals in Nepal: Situational Analysis and Emerging Options, 2013*. Kathmandu: Family Health Division and Nepal Health Sector Support Programme.
24	HERD 2013	HERD (2013). Comprehensive District Assessment (CDA) of Health Insurance in Kailali District 2014. Kathmandu: Health Research and Social Development Forum, Nepal.
25	HR Mapping 2013	MoHP (2013). *Mapping the Human Resource Functions across the Ministry of Health and Population and Other Government Ministries, Departments and Agencies.* Kathmandu: Ministry of Health and Population.
26	HRH Nepal country profile 2013	MoHP (2013). Human Resources for Health Nepal Country Profile. Kathmandu: Ministry of Health and Population and Nepal Health Research Council.
27	Malaria TRac Study 2013	PSI (2013). TRaC Study Evaluating LLIN Use among General Population and Children Under 5 years of age in 31 Malaria Risk Districts. Kathmandu: Population Service International Nepal.

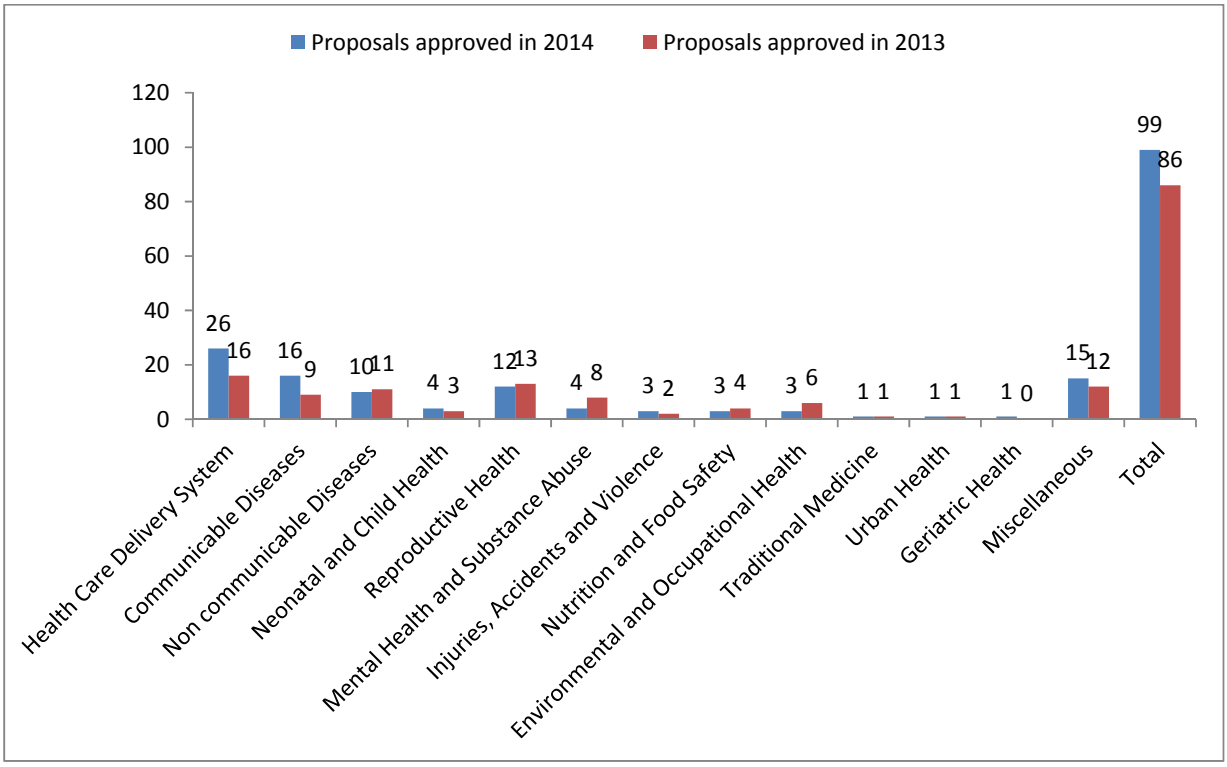
	Citation	Reference
28	RA of LHGSP 2013	RTI (2013). *Rapid Assessment of Local Health Governance Strengthening Programme.* Kathmandu: Research Triangle Institute
29	Upreti et al. 2013	Upreti, SR, Baral, S, Lamichhane, P, Khanal, MN, Tiwari, S, Tandan, M, Elsey, H & Lievens, T (2013). *Rapid Assessment of the Demand Side Financing Schemes: Aama and 4ANC Programmes (The Seventh Rapid Assessment).* Kathmandu: Ministry of Health and Population; Nepal Health Sector Support Programme and Health Research and Social Development Forum.
B.2	**Articles In Peer Reviewed Journals (2013)**	
30	Dumre et al. 2013	Dumre, SP, Shakya, G, Na-Bangchang, K, Eursitthichai, V, Rudi Grams, H, Upreti, SR (2013). Dengue Virus and Japanese Encephalitis Virus Epidemiological Shifts in Nepal: a case of opposing trends. *Am J Trop Med Hyg*, 88(4), 677-680.
31	Karki et al. 2013	Karki, K.B, Prajapati, R, & Baral, B (2013). Role of Civil Society in Human Resources for Health Management in Nepal. *J Nepal Health Res Counc*, 11(24), 138-143.
32	Manandhar et al. 2013	Manandhar, S, Bhusal, CL, Ghimire, U, Singh, SP, Karmacharya, DB, & Dixit, SM (2013). A Study on Relapse/Re-infection Rate of Plasmodium Vivax Malaria and Identification of the Predominant Genotypes of P. vivax in Two Endemic Districts of Nepal. *Malar J*, 12, 324.
33	Upreti et al. 2013	Upreti, SR, Janusz, KB, Schluter, WW, Bichha, RP, Shakya, G, Biggerstaff, BJ (2013). Estimation of the Impact of a Japanese Encephalitis Immunization Program with Live, Attenuated SA 14-14-2 Vaccine in Nepal. *Am J Trop Med Hyg*, 88(3), 464-468.

Note: Downloadable or online versions of the above reports and articles are available at the links embedded in most of the above citations.

1.4 Research Proposals

The 185 research proposals approved by NHRC in 2013-2014 are presented by the national health research priority areas in Figure 1. The highest number of proposals is on 'health care delivery systems' and the least on 'geriatric health'.

Figure 1: Research proposals approved by NHRC in 2013 and 2014



2 REPRODUCTIVE HEALTH

2.1 Family Planning

Identified issues	Desired outcomes	Recommended actions
Few health posts have at least five family planning methods: • Only 18% of health posts had at least five family planning methods (STS 2013). • Only 21% of health posts offered at least five modern contraceptive methods and most of them were from urban areas (UNFPA 2014).	LF OP 4.9: % of health posts with at least 5 family planning methods: • 2015 target = 60%	1. Expand no. of IUCD/implant training sites and strengthen training for health workers on related services. 2. Provide on-site coaching of SBAs on IUCD/implant skills, especially during mobile camps.
Permanent methods of family planning are mostly restricted to hospitals and urban areas: • Permanent methods of family planning were mostly offered by the hospitals, with 63% of them providing vasectomies and 58% minilaps (UNFPA 2014). **Lack of skilled health workers to provide long-term family planning methods:** • The major cause identified for the non-delivery of long term family planning methods was the unavailability of trained staff (UNFPA 2014). **High stock-outs of IUCDs and implants at health posts, particularly in rural areas:** • Stock outs of IUCDs and implants were mostly observed in health posts, specifically rural ones compared to PHCCs and hospitals. The main reason was lack of services and skilled staff (UNFPA 2014).		1. Make family planning services available at all levels of health facilities, predominantly in rural settings. 2. Increase investments on training health workers on family planning. 3. Create an enabling environment by providing essential equipment and supportive supervision. 4. Enable all facilities to quantify, forecast and order family planning commodities based on local evidence, following a pull mechanism.
Low use of modern long-acting reversible contraceptives (LARCs) in rural settings: • Only 2% of married women of reproductive age used long-acting reversible contraceptives — much less than proportion using permanent (18%) & short-term methods (21%). • Only one out of ten hill women (10%) reported using permanent family planning. This figure was even less in Muslim women (4%). • Short term methods are less commonly used by younger and less educated women. • The level of use of LARCs is significantly associated with distance between providing health facility and home (Mehata et al. 2014).		1. Make more focused efforts (behavioural interventions) to increase family planning uptake in rural areas. 2. Make more focused interventions with specific approach to promote LARCs. 3. Women residing far away from services need to be reached through satellite, mobile, or outreach clinics, or by supplying LARCs through lower-level facilities. Short-term methods can also be promoted through such clinics.

Identified issues	Desired outcomes	Recommended actions
Substantial unmet family planning needs in first two years postpartum: • Women desiring another pregnancy within 24 months = 4%; but women experiencing a subsequent pregnancy in less than 24 months (against WHO recommendation) = 50%. • Unmet need for family planning varied greatly: highest among 0-5 months postpartum (85%), lowest among 12-24 months postpartum (56%) in postpartum women. • The unmet need for pregnancy limiting was highest among first 24 months postpartum women, associated with ecological zone. The highest unmet need for pregnancy limiting was in mountains and hill areas in comparison to the Tarai. However, spacing needs were highest in the Tarai (Mehata et al. 2014a).	LF Purpose 7: contraceptive prevalence rate: • 2015 target = 67% LF OC 2.3: % unmet need for family planning: • 2015 target = 18%	1. Coach SBAs on-site on IUCD and implant skills, especially at mobile camps. 2. Further support providers to manage side-effects, and to recognize women in times of high unmet need (such as post-partum or post-abortion), as suitable candidates for IUDs. 3. Intensify post-partum family planning services through the joint Extended Programme of Immunization and family planning services, and scale-up this approach following institutional deliveries. 4. Include PNC checklist and post-partum family planning (focusing on health timing and spacing of pregnancy [HTSP]) in SBA training programme. 5. Develop HTSP audio-visual training materials for trainers and clients. 6. Improve counselling skills of health providers to motivate couples to use family planning and on post-family planning acceptance advice. 7. Develop strategies for informing men about family planning and reproductive health issues using male mobilisers through partnerships with NGOs. 8. Focus on improving the availability of LARCs at health posts.
Half of providers had good knowledge on IUCDs among providers: • Over 50% of providers were able to name the four side effects most frequently associated with IUDs. However, one-third of providers in Nepal view at least one IUD side effect as 'unacceptable'. (Chakraborty et al. 2014).		

2.2 Maternal and Newborn Health

Challenges identified	Desired outcomes	Recommended actions
Basic emergency obstetric and neonatal care (BEONC)		
Few primary health care centres (PHCCs) are providing all BEONC signal functions 24/7: • In 2013, only 23% of PHCCs were able to provide all BEONC signal functions 24/7 (STS 2013).	LF OP 4.6: % of PHCCs providing all BEONC signal functions • 2015 target = 70%	1. Use regional health reviews to focus on PHCCs without birthing centres/BEONC and BEONC signal functions. 2. Assure trained SBAs and equipment is available in PHCCs to provide BEONC services. 3. Trial the placing of SBAs at hospital birthing centres (for a few weeks) for them to gain skills performing assisted deliveries and removal of retained products. 4. Establish hospital-based mentoring systems for SBAs working at PHCCs and lower levels, for skill enhancement.
Of the seven BEONC signal functions, the weakest areas of provision were: • Assisted deliveries — 77% of PHCCs able to provide assisted delivery in 2013 • Remove retained products — 68% of facilities able to remove retained products in 2013. (STS 2013)		
Comprehensive emergency obstetric care (CEONC) availability		
Access to CEONC care is improving: • Increased access to CEONC from 76% in 2013 to 81% in 2014 (FHD records)	LF OP 4.5: % districts having at least one public facility providing all CEONC signal functions • 2015 target = 76%	1. Continue to provide CEONC fund to overcome barriers to CEONC availability at district hospitals (for short term recruitment, buying new equipment, maintenance & repair). 2. Introduce multi-year contracting to improve continuity of human resources (HR) and thus service delivery. 3. Increase production of CEONC service providers including advanced skilled birth assistant (ASBA) and Diploma in Gyn and Obs, and anaesthesia assistants. 4. Continue CEONC workshops and review meetings in selected district hospitals where management is inadequate.

Challenges identified	Desired outcomes	Recommended actions
		5. Provide clear guidelines and ToRs to private sector and do regular performance reviews 6. Strengthen blood transfusion services at CEONC sites
Far away from reaching the target of 80% of health posts having a birthing centre: • Only 68% of health posts have birthing centres doing deliveries 24/7 (STS 2013).	• 2015 target >80%	1. Where feasible, the better use of existing birthing centres. 2. Promote the establishment of new strategically located birthing centres.
Substantially underused birthing centres: • Only 12% of births took place at birthing centres. • Limited awareness in communities about the range of services that birthing centres offered. • Mothers and their families generally believed that birthing centres provided poorer quality services than hospitals, citing limited amenities and the young, inexperienced nurses, who they felt were unwilling to take responsibility for ensuring safe childbirth. A lack of round-the-clock services availability also limited uptake of care at birthing centres (STS 2013) **Unit cost of normal deliveries is low at hospitals and high at birthing centres:** • There was a 12-fold difference between the unit costs of a normal birth in the sample of birthing centres studied (FHD 2013).		1. Enhance hospitals' capacity to accommodate the increased number of childbirths by expanding maternity wards and establishing new birthing units at hospitals. 2. Work out an investment plan for new birthing units in zonal hospitals. 3. Review NHSP-2 Tarai birthing centres expansion plan to increase use of centres at strategic locations, with centre packages that ensure 24/7 services with 80% SBS capacity use, & support & ownership by local stakeholders & communities. 4. Ensure effective referral mechanisms including free transport with links to referral hospitals for technical backup. 5. Review level and use of Aama funds for improving maternity services at the facility level. 6. Enhance use of private sector with appropriate guidelines and monitoring mechanisms. 7. Establish coordination & collaboration between public & private hospitals & DPHOs
Seriously over stretched maternity wards: • In all studied hospitals, maternity ward bed occupancy rates in 2011/12 were 80–145%, indicating that quality of care (QoC) probably was being compromised. • Reasons for overcrowding were: almost 98% of users were self-referred (greater client trust in referral hospitals), the general belief that bigger hospitals provide better quality and safer services, round-the-clock opening times, availability of a wider range of investigation and treatment services at hospitals, ease of access via roads and travel networks, and preference of ambulance drivers to go to referral hospitals		

Challenges identified	Desired outcomes	Recommended actions
(FHD 2013)		& DHOs.
Dramatic increase in demand for maternity services in hospitals in past four years: • The large proportion (88%) of all institutional births that took place in a hospital. Public hospitals (65%) were more commonly used than private hospitals (23%). • The use of hospitals for normal childbirths had increased by 43% overall in previous 4 years. (FHD 2013)		
Inadequate availability and accessibility of skilled birth care: • Major barriers to skilled birth care included inadequate knowledge of the importance of services offered by SBAs, distance to health facilities, unavailability of transport services, and poor availability of SBAs. Other barriers included poor infrastructure, inadequate information about services/facilities, cultural practices and beliefs, and low prioritization of birth care (Onta et al. 2014).	LF P10: 2013 target = **%** of births conducted by an SBA • 2015 target = 60%	1. Train and recruit locally available health workers 2. Help community groups to establish transport mechanisms, and contribute to upgrading physical facilities and services at health institutions.
Antenatal care (ANC)		
Many women not making 4 ANC visits: • Only half (50.1%) of sampled pregnant women had made four or more antenatal care visits while 62.9% did not know any of the four main defined birth preparation activities (Karkee et al. 2014).	LF P8: % of pregnant women attending at least four ANC visits: • 2015 target = 80%	1. Develop communication approaches to reach women, men and in-laws to recognise the benefits of institutional deliveries, 4ANC visits, PNC and the dangers of home-based deliveries. 2. Pilot use of community-based auxiliary nurse midwives (ANMs) in underserved hill and mountain areas to improve provision of ANC. 3. Continue and expand use of antenatal ultrasound in selected remote districts.
Postnatal care (PNC)		
Poor PNC coverage: • Less than half (43.2%) of mothers had attended postnatal care within first six weeks after birth — 40.9% attended immediate postnatal care.	LF P11: **%** of women having three post natal check-ups as per the protocol:	1. Increase awareness of and access to services on PNC visits through community-based programmes,

Challenges identified	Desired outcomes	Recommended actions
• Mothers who did farming work, and whose partners' main occupation was farming were less likely to attend immediate postnatal care Khanal et al. 2014	• 2015 target = 50%	especially for rural, poor, and less educated mothers.
Substantial barriers remain for PNC coverage: • The main barriers for providing institutional pre-discharge PNC were language difficulties, lack of health staff time and low levels of family support for the PNC education process. • Group education sessions were related to greater recall by clients of pregnancy and newborn advice, danger sign information and family planning messages. • The use of checklists strengthened health worker capacity to provide comprehensive, systematic health advice and danger sign information. (Aryal et al. 2013)		1. Widen the reach of pre-discharge PNC messages so they are reinforced in women's communities. 2. Identify opportunities for PNC task-shifting to reduce pressure on hospital wards and reinforce messages in communities. 3. Promote group PNC counselling at facilities where there are sufficient births and augment with standardised, quality-assured IEC materials. 4. Align the branding of PNC information across the tools used by health workers, materials received by women and other PNC materials available at community level. 5. Reconsider the on-going requirement for a checklist as a tool for health workers and as a monitoring tool for delivering PNC. 6. Ensure that pre-discharge PNC focuses on the first 6 to 24 hours post-partum as many women are discharged within 6 hours post-partum. 7. Identify indicators for monitoring level of PNC provision including PNC quality (8 indicators suggested).

Challenges identified	Desired outcomes	Recommended actions
Newborn health		
More neonates die at home, mostly due to neonatal sepsis, birth asphyxia, and prematurity related conditions (USAID 2014): • The majority of deaths occurred at home (53%). • The three leading causes of neonatal mortality were neonatal sepsis (48%), birth asphyxia (16%) and prematurity-related (13%). • Half of all deaths (including stillbirths) occurred by day 3. **More neonatal deaths in disadvantaged ethnic groups:** • Four out of ten neonatal deaths (39%) occurred among disadvantaged Janajatis. **Stillbirth accounted for largest proportion of neonatal deaths:** • Stillbirths accounted for 38% of total neonatal deaths, of which 73% were fresh still births. • Deaths due to neonatal sepsis were more common in hills region. **Health problems faced by most neonates:** • 81% of mothers said that their child had been ill at least once in its first month of life. • More than 50% of mothers gave a history of their babies having chest in-drawing, fever or coughs. • More than half of mothers reported hearing either stridor, grunting or wheezing and flaring of nostrils in their babies at time of illness. • One out of ten babies exhibited developmental delays (USAID 2014). • 66% of mothers were aware about messages of essential newborn care. Only half had received the messages through an FCHV (51%) (USAID 2014)		1. Explore the causes of neonatal deaths and plan appropriate interventions focusing on neonatal sepsis, asphyxia and prematurity related conditions. 2. Improve the quality of perinatal health care. 3. Establish referral mechanisms to address neonatal emergencies. 4. Promote care-seeking behaviour and strengthen links between communities and health facilities in areas with high neonatal mortality and low service use.

2.3 The Aama Programme

Challenges identified	Desired outcome	Recommendation
Client Awareness		
Awareness and understanding of the Aama Programme is good but differs significantly between population groups: • Almost all clients from mountain zones were aware of the transport incentive (99%), whilst only 72% of clients from hill zones and 86% from Tarai zone were aware. • Among clients aware of the transport incentive, most of the clients in mountain districts were aware of it prior to their arrival at the health facility. (STS 2013)	• High awareness and accurate knowledge of both Aama and 4ANC are maintained across all population groups.	1. Make more use of the role and potential influence of health workers in campaigns to raise awareness of the Aama Programme and other safe motherhood incentives.
Inconsistent practices in fund disbursement from DHOs/DPHOs to health facilities: • The inconsistent practices frequently resulted in a fund deficit at DHOs/DPHOs and health facility level (Upreti et al. 2013).	• Funds are disbursed to facilities in a timely and constant way, thus ensuring deficits are avoided.	1. Revise the Aama guidelines to include detailed instructions on the fund flow mechanism to avoid delays in fund disbursement.
Women struggle to prove they meet 4ANC and delivery eligibility criteria (Upreti et al. 2013)	• Women are able to easily access the 4ANC programme to obtain incentives.	1. Review the criteria for accessing the 4ANC incentive, taking into consideration the practicalities for women at the time of delivery.
Aama payments are an important and increasing source of income for public hospitals: • The share of hospitals' income from Aama payments increased from 12% in 2008/09 to 22% in 2011/12 (FHD 2013).		
Not all facilities are implementing the Aama Programme: • All sampled district hospitals & PHCCs were implementing the Aama Programme, but one-third of sampled health posts (32%) were not (STS 2013). **The 4ANC programme is poorly implemented:** • The 4ANC programme is poorly implemented in all facilities. One of the explanations for this is the difficulty women face in meeting the criteria required to obtain the 4ANC programme	• All public hospitals, PHCC and birthing centres implement the Aama Programme	1. More closely monitor public health facilities' implementation of the Aama Programme. 2. Review the criteria for accessing the Aama incentive, taking into account the practicalities for women at the time of delivery.

Challenges identified	Desired outcome	Recommendation
incentives (Upreti et al. 2013)		
Women frequently pay for 'free' delivery care under Aama: • 38% of women received free care. • 58% of maternity clients paid for delivery care • 60% of Dalit and Janajati maternity clients paid for delivery care (STS 2013)	• Women receive free delivery care services in public health facilities and listed private facilities	1. Improve monitoring of public health facilities' implementation of the Aama Programme.
Women are frequently denied transport incentives: • 17% of mothers hadn't received their transport incentives (STS 2013).	• All eligible clients receive their full transport incentives	
Not all women are receiving free care: • Overall, 57% of clients (including at private facilities) are still paying some costs to health facilities for their deliveries. The explanations provided by HFOMCs of what the unit cost is used to cover and the distribution of the incentive among staff was not always clear. This may provide a grey area which may facilitate fund misappropriation (Upreti et al. 2013).		1. Improve orientations to HFMOCs on recommended uses of the Aama unit cost payments as specified in the Aama Programme guidelines.
Incentives frequently given to relatives, not women clients: • In the Tarai districts the majority of incentives disbursed were handed to husbands or other relatives rather than the women clients directly. (Upreti et al. 2013)	• Incentives are disbursed directly to women in line with guidance.	1. Work with health workers in Tarai districts to explore culturally appropriate ways to ensure that Aama incentives are given directly to women rather than to husbands or other relatives.
Lack of orientations on guidelines: • District offices (DHOs and DPHOs) and health facilities are rarely orientated on the Aama and 4ANC programmes (Upreti et al. 2013).	• Orientation on Aama and 4ANC programme provided regularly to facility staff	1. Provide orientations on the Aama guidelines for all involved in implementing the Aama Programme. Explore the feasibility of using a cascade approach.
Reporting systems show mismatches of information about Aama fund distribution: • There was a discrepancy of around 10% between health facility and district office records on Aama fund distribution. • There was a discrepancy of around 5% between health facility records and reports from women. • Although the guidelines state that planning and budgeting for the Aama Programme should be	• All reporting systems provide matching data about fund disbursement. • Clients' reports match facilities' records.	1. Strengthen reporting systems between health facilities and DHOs/DPHOs & regularly monitor with cross-verification to deter fund misuse. 2. FHD should engage DHOs and DPHOs to develop locally appropriate and

Challenges identified	Desired outcome	Recommendation
done centrally, it was found that those districts involved in developing their own plans and budgets were more likely to manage their budgets well and have less fund deficits throughout the year. (Upreti et al. 2013)		owned plans and budgets for Aama and 4 ANC progs.
Poor public accountability over distribution of Aama incentives: • Only 57% in round 7 facilities had publically displayed Aama beneficiaries (Upreti et al. 2013).	• All facilities publically display information from Annex 10 of the Aama guidelines on a routine basis.	**1.** Routine monitoring and supervisory visits are needed to ensure the routine display of Aama beneficiaries at facilities. The engagement of HFOMCs in this is also required to ensure that Annex 10 is displayed.

3 CHILD HEALTH

3.1 Immunization

Issues identified	Desired outcome	Recommended actions
Lack of information related to cold chain system for effective vaccine management	• WHO recommends an at least 80% score in vaccine supply chain management criteria	1. Information related to cold chain system needs to be generated

3.2 Nutrition

Issues identified through research	Desired outcome	Recommended actions
The burden of malnutrition: • The prevalence of stunting and severe stunting were 26.3% and 10.2% respectively for children aged 0–23 months, and 40.6% and 15.9% respectively for those aged 0–59 months. • The most consistent significant risk factors for stunted and severely stunted children, aged 0–23 months and 0–59 months were household wealth index (poorest households), perceived size of baby (small babies) and breastfeeding for more than 12 months. (Tiwari et al. 2014) • The Nepal Multiple Indicator Cluster Suvey reports the prevalence of stunting and severe stunting as 37% and 16%; the prevalence of wasting and severe wasting as 11% and 3%; and the prevalence of underweight and severe underweight as 30% and 9% respectively for children aged 0–59 months (NMICS 2014).	% of children under five who are stunted • 2015 target = 28%	1. Community-based interventions are needed to target children born to mothers of low socioeconomic status.

4 EPIDEMIOLOGY AND DISEASE CONTROL

Issues identified	Desired outcome	Recommended actions
Malaria and mosquito borne diseases		
Not everyone in 31 malaria risk districts was using long lasting insecticide nets (LLINs): • 83% under-5 children had slept under a LLIN the previous night. • 78% people had used an LLIN at house the previous night. • The use of LLINs in high-risk districts was lower (73%) than in moderate-risk districts (78%) (Malaria Trac study 2013)	LF OC3.1: % of children under 5 years sleeping under a long lasting insecticide treated bed net the previous night in high-risk areas: • 2015 target = 80%	1. The mass distribution of LLINs every 3 or more years in high risk VDCs according to attrition rate of specific brands. And if resources permit, also in moderate risk areas at a rate of 1 LLIN per 1.6 persons.
Nepal has a high receptivity and vulnerability to malaria transmission: • Of total malaria cases reported in Nepal in 2013, 30–40% were categorized as imported cases. [1]	Malaria elimination in Nepal by 2026	1. Fill key staff positions at the Epidemiology and Disease Control Division (EDCD), Vector Borne Disease Research and Training Centre (VBDRTC) and in districts. 2. Perform a comprehensive human resources and training needs assessment to finalize a comprehensive human resources plan with clear ToRs and appropriate structures at all levels. Include post-training follow-up mechanisms. 3. Develop training packages for each category of key staff to be trained. 4. Need mass distribution of LLINs every 3 or more years in high risk VDCs according to attrition rate of specific brands. And if resources permit, also do in moderate risk areas at ratio of 1 LLIN per 1.6 persons.
Shift of malaria and other diseases vector to higher altitude (mountains): • The known malaria vectors in Nepal — *Anopheles fluviatilis*, *A. annularis* and *A.*		1. Initiate monitoring, surveillance and research on vector borne diseases in previously disease-free,

[1] Information received from secondary source — original source not available.

Issues identified	Desired outcome	Recommended actions
maculates complex members, were recorded from 70 to 1,820 m above sea level (masl). • The vectors of chikungunya and dengue virus (*Aedes aegypti* and *A. albopictus)*, the vector of lymphatic filariasis (*Culex quinquefasciatus)*, and that of Japanese encephalitis (*Culex tritaeniorhynchus)*, were found from 70 to 2,000 masl in eastern Nepal. • Larvae of *Anopheles*, *Culex* and *Aedes* species were recorded up to 2,310 masl (Dhimal et al, 2014a)		densely populated and economically important regions.
Significant reduction of Japanese encephalitis (JE): • The post-campaign JE incidence rate of 1.3 per 100,000 people was 72% lower than expected than if no campaigns had occurred, and an estimated 891 JE cases were prevented. In addition, acute encephalitis syndrome (AES) incidence was 58% lower, with an estimated 2,787 AES cases prevented (Upreti et al, 2013). • The epidemiological shift (opposing trends) of two important flaviviruses in Nepal — Japanese encephalitis (JE) and dengue. • Nepal experienced a remarkable reduction in JE burden after mass immunizations from 2005 to 2010 but, with its emergence in 2006, dengue has become a significant challenge with rapid expansion across the country (Dumre et al. 2013)		1. Expand JE immunization programme in all 75 districts. 2. National surveillance on dengue virus is urgently needed to define the burden and to recommend control and prevention measures. 3. The use of existing JE surveillance networks for integrated dengue surveillance may represent the most appropriate alternative.
Climate change has facilitated geographical expansion of diseases vectors in central Nepal: • The geographical distribution of the dengue virus vectors *Aedes aegypti* and *A. albopictus* is reported to now extend up to 1,310m altitude in the middle mountain region (Kathmandu), and the distribution of the lymphatic filariasis vector *Culex quinquefasciatus* extends up to at least 2,100m in the high mountains (Dhunche). (Dhimal et al 2014b)	• Elimination of Lymphatic filariasis by 2020 in Nepal	1. The surveillance, monitoring and scaling-up of vector-borne disease control programmes in the mountainous areas of Nepal.

Issues identified	Desired outcome	Recommended actions
Low levels of good knowledge on dengue fever: • Only one out of ten people had good knowledge of dengue. • Only third of people (37%) had good practices related to preventing dengue. • Educated people had good practice levels. (Dhimal et al. 2014c)		1. Start massive awareness programme by developing IEC/BCC programmes on dengue fever and by using radio and TV for messaging on dengue virus (DENV) vector control and by orienting more health professionals, teachers and community leaders. 2. Include dengue fever prevention and control in school and university curricula to raise awareness among students, and use them as multipliers.
Over the last decade, the incidence of confirmed malaria has declined significantly in Nepal. (Dhimal et al. 2014d). **The constant incidence of *P. falciparum* and clinically suspected malaria:** • An analysis of malariometric indicators of 31 malaria-risk districts between 2004 and 2012 showed no significant reduction in incidence of *P. falciparum* and clinically suspected malaria (Dhimal et al, 2014c).		1. Improve access to diagnostic facilities to confirm clinically suspected cases and their treatment. 2. Carry out more operational research to generate local evidence on sustainability and risks of malaria elimination efforts in Nepal. 3. Strengthen the regional initiative for Bangladesh, Bhutan, India and Nepal (BBIN) to implement cross-border activities for the control of vector borne diseases including malaria. 4. Establish border malaria check posts and screen all fever cases there. 5. Protect high risk groups that are currently not covered by the indoor residual spraying/LLIN strategy (e.g. people affected by natural disasters, labourers returning from malaria endemic areas, forest dwelling populations) with protection from malaria vectors.

Issues identified	Desired outcome	Recommended actions
		6. Strengthen the current preventive and control measures to sustain and consolidate achievements made so far, with improved community involvement without reducing national and international support.
Opposing trends of malaria incidence reported in high-risk malaria districts after introducing LLINs: • Confirmed malaria incidence reduced from 2.24 per 10,000 in 2007 to 0.31 per 10,000 people in 2011 in Morang district, but increased from 3.38 to 8.29 per 10,000 people in Kailali district. • Malaria hotspots persisted mostly in the same villages of Kailali district, whereas in Morang malaria hotspots shifted to new villages after introducing LLINs. • A 1°C increase in minimum and mean temperatures increased malaria incidence by 27% (relative risk [RR] =1.27, 95% confidence interval [CI] =1.12-1.45) and 25% (RR =1.25, 95% CI =1.11-1.43), respectively. The reduction in malaria incidence was 25% per one unit increase of LLIN (RR = 0.75, 95% CI = 0.62-0.92). • The incidence of malaria was 82% lower in Morang than in Kailali (RR = 0.18, 95% CI = 0.11-0.33). (Dhimal et al. 2014e)	• Malaria elimination by 2026 in Nepal	1. LLIN coverage should be scaled up to entire districts rather than high-incidence foci only. 2. Consider climatic factors for malaria micro-stratification; prescribe mosquito repellents for those who live in forests, forest fringes and foothills and who regularly visit forests. 3. Control imported cases by establishing fever check posts at border crossings.
High relapse rate of *Plasmodium vixax* malaria in Nepal: • A relapse/re-infection rate of 17% (n = 137) was determined for P. vivax in Kailali and Kanchanpur districts	• Malaria elimination by 2026 in Nepal	1. Expand such studies to other endemic regions of Nepal to help provide a complete picture on relapse/re-infection rates and parasite genotypic variability to help control and manage malaria.
Low burden of chronic HBV infection (hepatitis B) among children born in both pre- and post-vaccination cohorts: • Of 1,200 children born in the pre-vaccination cohort, 0.28% (95% CI 0.09-0.85%) were positive for HBsAg. Of 2,187 children born in		1. Continue current hepatitis B vaccination strategies.

Issues identified	Desired outcome	Recommended actions
the post-vaccination cohort, 0.13% (95% CI 0.04-0.39%) were positive for HBsAg (p=0.39). • Of the six children who tested positive for HBsAg, two had mothers who were HBsAg positive (Upreti et al. 2014)		
Non-communicable diseases (NCDs)		
High prevalence of NCD risk factors: • Currently smoke tobacco = 37% (male 27%, female 10.3%). • Currently drink alcohol (in past 30 days) = 17% (male 28%, female 7%). • Less than average of 5 servings of fruit and/or vegetables per day = 99% (male & female = 99%). • Not engaged in vigorous activity = 54% (male 44%, female 63%). • Raised blood pressure (SBP ≥ 140 and/or DBP ≥ 90 mmHg) who are not currently on medication for raised blood pressure = 88% (male = 89%, female = 87%) **Combined risk factors** • Almost all the sample (99.6%) had at least one risk factor to NCDs**.** (Aryal et al., 2013) **Rising prevalence of NCDs:** • Proportion of all patients in non-specialist hospitals suffering from NCDs was 31%. • The reported most common NCDs were chronic obstructive pulmonary disease (43%), cardiovascular disease (40%), diabetes mellitus (12%) and cancer (5%) (Bhandari et al. 2014)	• To reduce avoidable mortality from non-communicable diseases by 25% from 2015 to 2025 (the '25 by 25' goal).	1. Design and implement a prevention and control strategy to address the burden of NCDs. 2. Ensure that an NCD surveillance system is in place (this is essential!). 3. Implement the Framework Convention on Tobacco Control (FCTC) and the Tobacco Control Act and policy together with strong monitoring mechanisms. 4. Allocate sufficient budget funds to carry out prevention and control activities for NCDs and to ensure effective surveillance, monitoring, evaluation and research. 5. Implement special tools, such as the globally promoted Package of Essential Non Communicable (PEN) Disease Interventions for diagnosis and treatment of NCDs. 6. Design and implement innovative behaviour change communication strategies tailored to different demographic groups in order to promote healthy behaviours and reduce risk factors. 7. Strengthen health education and promotion and counselling to promote healthy behaviours in primary care settings.

Issues identified	Desired outcome	Recommended actions
There are numerous obstacles for delivering mental health services: • Pragmatic barriers at the health facility level, the stigma against mental health problems, lack of awareness and some cultural norms reduce access and demand for mental health services (Brenman et al. 2014).		1. Improve awareness, such as by channelling education through trusted and respected community figures, and responding to the need for openness or privacy in educational programmes. 2. Design and adapt interventions to address and overcome stigma against seeking treatment for mental health problems

5 HEALTH INFRASTRUCTURE

Challenges identified	Desired outcome	Recommended actions
A lack of continuous electricity supply affects the functionality of health facilities: • Only 47% of hospitals had round-the-clock power supplies. The situation was worse at PHCCs (23%), health posts (18%) and SHPs (9%) (STS 2013).	• All facilities have a reliable source of electricity available 24/7	1. Where there is no electricity, require all new health posts and PHCCs to install solar power systems; and where there is electricity require facilities to install solar power backup systems (as specified in standard design guidelines). 2. Assess sites (health posts, PHCCs) without solar power/ backup systems using the Health Infrastructure Information System (HIIS), and based on this the Management Division should allocate budget for such sites to install solar back-up systems (phase-wise). The Management Division (MD) and MoHP should coordinate with Alternative Energy Promotion Centre on this. 3. For district hospitals and above, MoHP to provide budget for connecting to electrical supply through feeder lines (for no load shedding). This has already been done by some hospitals.
• Piped water and water from a tubewell remain the most commonly reported sources of water at health facilities (STS 2013).		
There is often no functional telephone at lower level facilities meaning that emergency communication between facilities cannot take place: • In 2013, 56% of PHCCs, 73% of SHPs, and 93% of health posts had no access to landline telephones (STS 2013).	• All facilities have a functioning telephone	1. Adopt CDMA technology, which is based on radio frequency. 2. MoHP to adopt this strategy with proper guidelines for use.
Limited access to health posts/SHPs: • 62% of the population live within 30 minutes travel time of a health post or SHP (HIIS)	OC1.1: % of population living within 30 minutes travel time to a health post or sub-health	1. Verify data on travel time to health post/SHPs using web-based HIIS.

Challenges identified	Desired outcome	Recommended actions
• Median time taken to reach nearest health facility was 30 minutes for maternity clients and 20 minutes for outpatients (STS 2013).	post • 2015 target = 80%	
Existing higher level facilities frequently lack space: • In 2013, 48% of maternity clients and 30% of outpatients thought their facility was overcrowded (STS 2013).	• All facilities have sufficient space for patient and family needs.	1. The new standard designs for hospitals accommodate up to 50 beds up to district hospital level, with possibility for further expansion. Outpatient dept (OPD) capacity is based on maximum volume of visits. 2. Plan for and expand budgets for district hospitals that need more resources based on HIIS information and HMIS data on occupancy and OPD visits. All expansion should be demand- and need-based (DHOs to be proactive on this). Building projects to be implemented through DUDBC and budget allocated by MoHP. 3. For higher level facilities (zonal hospitals and above), which have more autonomous control over spending and budgeting, decision making takes place at MoHP level. Budgets should be included in hospital block grants based on rational demand from facilities for expansion or upgrading with master plans, technical designs and estimates prepared by appropriate govt entity as per norms. MoHP should give high priority to this.
Poor medical waste management: • Only 7% of facilities had comprehensive biomedical waste management in place (puncture-proof bin for needles, bin for disposing of plastics, bin for disposing of blood-/fluid-stained items, pit for placenta/deep burial) (STS 2013).	• Health Care Waste Management Guidelines fully implemented.	1. Implement standard building design guidelines to improve health care infrastructures and their management of waste
Unfulfilled items in facilities as per Safer Motherhood Programme (SMP) Guidelines, 2068/69:	• Target items= 47 as per SMP guideline 2068/69	1. The availability of prerequisite items should be assured at all birthing centres.

Challenges identified	Desired outcome	Recommended actions
• The majority of birthing centres (95%) did not meet all pre-requisites of the SMP Guidelines 2068/69. **Lack of HIV testing in birthing centres:** • There was no HIV testing provision at all of the birthing centres (USAID 2014). **Only a few SHPs have fridges:** • Only 23% of SHPs had fridges for storing essential drugs (STS 2013).		2. Essential equipment like fridges should be made available including in sub-health posts 3. Strengthen the distribution and use of checklists and job aids for providing quality health services.

6 HEALTH FINANCING

Challenges identified	Desired outcome	Recommended actions
Free care		
Patient awareness of free care differs between ecological zone: • Most outpatients (88.8%) were aware of free care. The level of awareness was significantly associated with ecological zone. **Not all are receiving free care:** • One out of ten outpatients paid for care under the free care policy. (STS 2013)		1. Sensitize consumers on their rights to free health services through awareness campaigns.
Many outpatients paid for services that should have been free: • Outpatients were most commonly charged for registration fees at all levels of health facilities (60% of hospitals, 9% of PHCCs, and 2% of health posts), and free medicines (47% of hospitals and 7% of PHCCs) (STS 2013).		
Insurance costs hard to bear by poor people: • Underprivileged people and people with minimal earnings found it difficult to bear the cost of health insurance premiums. **Limited knowledge of health insurance:** • Only 11% (6% in rural and 32% in urban areas) had heard of the term 'health insurance' and a mere 2% had good knowledge about health insurance. (HERD 2013)		1. Launch proportionate premiums scheme targeting underprivileged and poor people. 2. Involve key persons to motivate community people to be positive about national health insurance programme. 3. Create public awareness on health insurance through awareness campaigns, especially in rural areas.
Less preparation and submission of financial reports in lower level facilities: • A greater proportion of hospitals (81%) were likely to have conducted external financial audits compared to health posts (26%), PHCCs (18%), and SHPs (10%) (STS 2013).		1. Train health workers on financial management 2. Strictly ensure the preparation and submission of financial reports through strong monitoring and supervision.

Challenges identified	Desired outcome	Recommended actions
Insufficient human resources for financial management: • Insufficient human resources for financial management were reported by 38% of PHCCs, 17% of health posts, 14% of hospitals, and 5% of SHPs, as the main reason for not submitting financial reports.		
Release of funds		
Delays in the release of fiscal year budgets: • 60% of hospitals had received budget from the government once or twice during FY 2069/70; and 33% had requested a budget four times or more (STS 2013).		

7 LOGISTICS MANAGEMENT AND PROCUREMENT

Challenges identified	Desired outcome	Recommended actions
Stock outs of essential drugs: • In 2013 63% of hospitals, 34% of health posts, 31% of SHPs and 31% of PHCCs experienced no stock outs of essential drugs (STS 2013).	LF OP7.1: % of public health facilities with no stock outs of listed free essential drugs in all four quarters: • 2015 target = 40% of all facilities experience no stock out of listed free tracer essential drugs.	1. Define or revise minimum stocks of essential drugs. 2. Investigate reasons for stock outs and which drugs are most stocked out. 3. Provide staff training on the timely ordering of drugs. 4. Introduce an alternative system for obtaining drugs if certain drugs cannot be provided from an MoHP warehouse. 5. Consider introducing text message or smart phone - ordering system for key drugs. 6. Statistically, there should be agreement between different health facility surveys (including LMIS and STS) on which drugs are traced and the methodology used. LMIS measures once a quarter.
Infrequent reviews of drug supplies: • Annual reviews of drug supplies are not routinely undertaken in all facilities. Reviews are less likely in lower level facilities with just 34% of SHPs undertaking reviews in 2013 (STS 2013).	• Facilities regularly monitor and proactively manage drug supplies.	1. Introduce systems and guidelines on how to monitor and manage the drugs supply. 2. Introduce a feedback system with ad-hoc inspections from LMD contract managers and central warehouse managers visiting facilities.
Inappropriate drug storage: • In 2013, 63% of facilities were found not to be storing drugs in cool and dry places (STS 2013).	• Facilities store drugs securely and in line with manufacturers' storage recommendations (all facilities should store drugs in cool and dry places).	1. Improve awareness of the importance of keeping drugs in cool and dry places. Introduce the use of shelves for storing drugs on.
• In 2013, 23% of facilities with drugs did not store them as per first expired, first out (FEFO) principles.	• All facilities that store temperature-sensitive drugs have constant access to at least one refrigerator. Where	2. Together with relevant DoHS divisions and centres, LMD's contract management unit should

Challenges identified	Desired outcome	Recommended actions
• In 2013, all the hospitals had at least one functional refrigerator while 96% of SHPs, 59% of health posts and 23% of PHCCs did not have a functional refrigerator to maintain the cold-chain. (STS 2013)	power supply is unreliable, ice-boxes (and solar power) should be used. • All facilities use a 'first in-first out' storage system	track which facilities receive refrigerators, and make a priority list of where to supply new refrigerators, as well as ensure that all facilities are aware of how to procure spare parts. Distributed a refrigerator maintenance manual to all facilities.
Less availability of essential maternal and reproductive health medicines at lower level facilities: • There was a big discrepancy in the availability of essential maternal and reproductive health medicines (7 essential drugs) between hospitals (97% had them in stock) and SHPs (only 14.3%). **Inadequate lifesaving drugs:** • Only about 61% of health facilities had the 7 life-saving drugs. These were mostly in Western and Far-Western Regions (UNFPA 2014)		1. All facilities should be able to quantify, forecast and order commodities based on relevant local evidence following a pull mechanism. 2. Strengthen supply chain management, particularly for below-district level facilities, and increase the availability of refrigerators.
Gaps in equipment, especially in PHCCs: • 67% of PHCCs faced problems related to shortages of equipment in the last FY — a proportion greater than in health posts (47%), SHPs (37%), and hospitals (36%). • The most common problems faced were shortages of x-ray machines in hospitals and aneroid blood pressure machines (in 35% of PHCCs, 28% of health posts and 24% of SHPs). • A greater proportion of PHCCs (41%) faced supplies problems (drugs and equipment) than health posts (35%), SHPs (25%) and hospitals (24%) (STS 2013)	• Facilities have enough equipment available to provide quality care. • The use of mobile phones (SMS/smart phone apps) in the pull system for ordering and monitoring.	1. Investigate reasons for equipment shortages: • Provide training if due to poor understanding by storekeepers of 'minimum levels'. • If due to lacking possibility to obtain equipment from LMD (or other source), LMD (with NHSSP support) should investigate reasons for it happening and find and implement solutions. • If due to problems in ordering system (pull/push), revise system (e.g. improve LMIS), introducing better warehouse management systems, strengthen IT capacity in facilities and/or

Challenges identified	Desired outcome	Recommended actions
		introduce text message system for ordering (if pull system is used). 2. Analyse how different modern technologies (such as text messaging and barcodes) can improve present LMIS system, especially for more precise ordering (pulling) and the distant monitoring of inventory levels. 3. It is also recommended to assess the supply of medical equipment supplied from local markets (often funded by HFMOCs or local government) to estimate whether these resources can be harnessed in a more strategic way.
Non-functioning equipment found in most health facilities: • In the last FY, around half of PHCCs (51%), 44% of health posts, 35% of hospitals, and 29% of SHPs faced the problem of equipment not working as a result of breakages (STS 2013).	• Sub-standard equipment is not received into the system. Put a preventive management system for acceptance in place and follow procedures. • Equipment is checked regularly and faulty equipment is repaired or replaced. • Budget is available to cover equipment repair and maintenance costs.	1. Investigate reasons for broken equipment. 2. Establish earmarked budgets managed by district health authorities for regular repair and maintenance of medical equipment. Include in AWPBs according to GAAP requirement. 3. Update the Equipment Management Implementation Guidelines (no date) to: o refer to preventive maintenance manual, and repair and maintenance budgets; and o include advice on use of preventive maintenance and of technicians for repair and maintenance.

8 HUMAN RESOURCES

Challenges identified	Desired outcome	Recommended action
A low (and reducing) proportion of sanctioned doctor posts are filled across the health system: • In 2013, only 23% of sanctioned doctor posts were filled at PHCCs. • In 2013, only 47% of sanctioned doctor posts were filled at district hospitals. (STS 2013)	LF OP3.1.1: % of sanctioned posts filled – doctors at PHCCs • 2015 target = 90% OP3.1.2: % of sanctioned posts filled – doctors at district hospitals • 2015 target = 90%	
A low (and reducing) proportion of sanctioned nurse posts are filled across health system: • In 2013, 39% of sanctioned nurse posts were filled at PHCCs. • In 2013, 55% of sanctioned nurses' posts were filled at district hospitals (STS 2013)	OP3.1.3: % of sanctioned posts that are filled – nurses at PHCCs • 2015 target = 90% OP3.1.4: % of sanctioned posts that are filled – nurses at district hospitals • 2015 target = 90%	
Very poor performance on district hospitals having adequate staff to provide CEONC services: • In 2013, no district hospital had at least 1 MDGP or obstetrician/gynaecologist; 5 nurses and 1 anaesthetist or anaesthetist assistants (AAs) (= NHSP-2 target) (STS 2013).	LF OP3.3: % of district hospitals that have at least 1 MDGP or obstetrician/ gynaecologist; 5 nurses (SBA), and 1 anaesthetist or anaesthetist assistant: • 2015 target = 80%	1. Encourage medical colleges to place resident postgraduates in district CEONC hospitals. 2. Develop and implement a plan to increase number of trainee ASBAs and AAs as part of wider HRH planning. 3. Continue to use the Diploma in Gynaecology and Obstetrics (DGO) training programme to increase number of trained obs/gyn staff as a short term measure. 4. Create MDGP/obs-gyn/AA posts at the district level

Challenges identified	Desired outcome	Recommended action
Too few sanctioned posts filled: • Less than three-quarters (72%) of sanctioned positions in higher-level hospitals were filled (STS 2013).	• Sanctioned post numbers reflect staffing needs in health facilities.	5. Continue to use CEONC funds as transitional strategy until recommended staffing is available through government-sanctioned posting. 6. Clarity on guidance for using multi-year contracts to enable effective recruitment and retention.
All SBAs trained: • All nurses/ANMs (57%) have received SBA training (MoHP 2014)	LF OP3.3: Number of production and deployment of SBAs • 2015 target = 7,000	1. Provide SBA training to all nurses/ANMs assigned to provide labour and delivery (L&D) services to birthing centre clients.
Poor gender and ethnic mix of health providers: • The sex of health providers is closely related to the type of staff position, with women most likely to occupy nursing positions and MCHW roles, and men more likely to be doctors, medical officers, health assistants, AHWs and VHWs. • Across every level of health facility, the majority of senior positions were held by staff from the Brahmin and Chhetri caste groups. There was very low representation of Dalits and Muslims across all health facilities. (STS 2013)		1. Fully implement the 'Guidelines for GESI Mainstreaming in the Health Sector' (2013)
Human resources management and development constraints: • The overlapping functions for human resources information, postings and transfers and the management of personnel training. • Gaps in terms of the lack of separate entities, i) for the overall coordination of HR activities, ii) to oversee HR development and iii) to oversee employee relations. • Bottlenecks: i) long multi-step processes for carrying out activities such as forming new posts, and ii) required involvement of multiple entities within and outside MoHP for approving and		1. *Improve coordination* — As interim step, explore mechanisms for improving coordination across govt entities that carry out HRH functions and between HRH departments and departments as the new health strategy is developed and implemented. 2. *Improve organisational structure* — In the short term, reduce the turnover of senior HRH resource leaders. In the longer term, identify a more suitable structure for managing all HRH functions in a more coordinated way, noting best practices of other countries.

Challenges identified	Desired outcome	Recommended action
implementing changes. • The critical shortage of human resource professionals within MoHP and DoHS, with no professional staff with specific human resource qualifications. • Rapid staff turnover — especially critical for leadership roles (HR Mapping 2013)		
Absorbing qualified health workers: • There is sufficient production of the main health professionals, with high future supply very likely. There is a need to ensure that there are effective strategies in place, such as those contained in the HRH Strategic Plan, to absorb qualified health workers that are produced and available for work into the public and private health sectors (HRH Nepal country profile 2013).		**1.** In the short term, develop ways of building capacity of human resources leaders. In the longer term MoHP should consider creating posts for professional human resource leaders who remain within MoHP.
Role of civil society in human resource management: • The roles of civil society in HRH management need to be recognized and documented to ensure their active participation in formulating and implementing policies, strategies and planning related to HRH for effective and quality healthcare services in Nepal (Karki et al. 2013).		

9 LOCAL HEALTH GOVERNANCE

Challenges identified	Desired outcomes	Recommended actions
Local Health Governance		
National level: • The continuation of centralised annual work planning and budgeting. • The absence of a defined institutional home within MoHP for the local governance of health services. • The current grant provision for comprehensive health care is grossly insufficient, with delayed fund flows. • Synergy with other community development initiatives under MoFALD, i.e. LGCDP and other community based programmes (on- and off-budget), is insufficient. • Sub-optimal coordination (inter-sectoral and intra-ministerial), in particular MoHP–MoFALD. (RA of LHGSP 2013) **District level:** • Revisit composition of district technical teams (DTTs) to ensure participation of community reps at district level. • Urgently need to clearly define the division of labour between DPHOs/DHOs and district development committees • District health planning and approval is being inadequately implemented and resource management and financial governance mechanism needs improving. (RA of LHGSP 2013) **Health facility level:** • Local planning process needs further standardisation. • Single year contracting is an issue in local hiring of human resources. • Although HFOMCs have been somewhat strengthened; they lack full capacity to operate, lead and manage policy, and deal with overall health service delivery functions and health facility management.	• Improved health governance	1. Expand the Local Health Governance Strengthening Programme (LHGSP) to cover all VDCs in pilot districts. 2. Align the profile analysis, planning, programming and budgeting process with DDCs' and VDCs' standard planning processes. 3. Promote transparency and formal checks and balances. 4. Increase grants and expand DTTs. 5. Clarify roles and responsibilities of key stakeholders. 6. Revisit LHGSP's institutional setup, especially its management functions. 7. Strengthen M&E and local accountability checking by HFOMCs. 8. Enable and promote research on health local governance.

Challenges identified	Desired outcomes	Recommended actions
• Great need to integrate planning process at local level with greater participation of community people. • The several sub-sector and programme specific committees at local level are not linked: i.e. health, agriculture, education, water supply and forestry. • The reporting mechanism and financial management capacity of HFOMCs is weak. Translating issues from social audits and community hearings into action is weak due to weak local capacity, inactive local bodies and resource gaps. • No authority is delegated to HFOMCs for local hiring to fill vacant positions. (RA of LHGSP 2013)		
2013 targets for social auditing have been met;(with higher level facilities performing less well): • 15% of health facilities that undertook social audits as per MoHP guidelines in the last fiscal year. • 11% of facilities conducted a social audit in the last fiscal year, made findings public and incorporated recommended actions in AWPB. • 31% of facilities with a HFOMCs/ hospital development committee (HDC) meeting on a monthly basis. • 70% of facilities had at least 3 females and at least 2 Dalit and Janajati members in their HFOMC/HDC. (STS 2013)	% health facilities undertaking social audits as per MoHP guidelines: • 2015 target =25% % of facilities with at least 3 females and at least 2 Dalit and Janajati members on HFOMC/HDC: • 2015 target =100%	
Representation of females and Janajati and Dalits		
Met 2013 target: • 72% of health facilities had at least three females and at least two Dalit and Janajati members on HFOMCs and hospital development committee (HDCs) (STS 2013)	OP 1.3: % of HFOMCS with at least 3 female members and at least 2 Janajati and Dalit members. • 2015 target = 100%	

Challenges identified	Desired outcomes	Recommended actions
Quality of Services		
Satisfied clients: • Most (85%) of maternity clients and outpatients (90%) were satisfied with the services they received at health facilities. • The top five recommendations made by maternity clients to improve the health facility in which they had delivered were: o maintain clean and hygienic health facilities (35%); o provide adequate number of beds (23%); o free services (13%); o have more helpful staff (13%); and o encourage good behaviour among health workers (13%). • The top five recommendations made by outpatients to improve the health facility that they had attended were: o maintain cleanliness and hygienic health facilities (19%); o increase the availability of competent and skilled health workers (18%); o maintain privacy more (9%); o increase the number of female service providers (9%); and o reduce waiting times (7%) (STS 2013).	% of clients satisfied with health care at public health facility • Target by 2015=80%	
Supervisory visits: • PHCCs (95%) and health posts (92%) were more likely to have received a supervisory visit in the last year than hospitals (65%) and SHPs (79%) (STS 2013)		
Many positions lay vacant: • Many vacant posts including all senior posts (medical superintendents [MSs], matrons, and nursing supervisors) across all six referral hospitals. • Only 45% of gynaecologist/obstetrician positions were filled. • 60% of anaesthetist positions were vacant, and three hospitals (SZH, BZH, JZH), were managing without anaesthetists.		1. Ensure the availability of appropriately skilled human resources as per sanctioned positions at hospitals 2. Revise the human resources strategy (sanctioned positions) as per the current population structures and service use pattern for ensuring quality services.

Challenges identified	Desired outcomes	Recommended actions
• Hospital development committees (HDC) had hired health workers locally to address staff shortages; but a gap of 277 SBAs and 28 obstetricians and doctors remained in these referral hospitals (FHD 2013)		3. Develop guidelines on hiring required human resources including fair salaries and benefits at local level. 4. Enhance the capacity of hospital development committees (HDCs) on hospital management including their role and responsibility for ensuring quality services 5. Run experience sharing visits for HDC members to learn from better performing hospitals
Quality improvement committees common on hospitals: • More hospitals had quality improvement committees (41%) and QI plans (35%) than lower level-health facilities (STS 2013).		

10 CONCLUSIONS

Credible measures of the effects of health policy are powerful instruments for focusing the attention of policy makers on improving and promoting equity in health services. Evidence produced using rigorous methodology and systematic research is very useful for measuring, describing, monitoring, evaluating and analysing the implementation of health policies.

In Nepal, the various components of essential health care services, including reproductive, maternal and child health services, have sufficient evidence to enable clear and systematic planning and action to improve the health indicators. However, other areas, including nutrition, mental health, oral health, non-communicable diseases, and other areas need more research to generate necessary information.