The National Strategic Plan on Viral Hepatitis in South Sudan 2018-20

Juba, November 2017

TABLE OF CONTENTS

LIST OF ACRONYMS AND ABBREVIATIONS

AJS	Acute Jaundice Syndrome
BPHNS	Basic Package of Health and Nutrition Services
CDC	Center for Diseases Control and prevention
ELISA	Enzyme-Linked Immuno-Sorbent Assay
HAV	Hepatitis A Virus
HBs Ag	Hepatitis B surface antigen
HBV	Hepatitis B Virus
HCC	Hepatocellular carcinoma
HCV	Hepatitis C Virus
HEV	Hepatitis E Virus
HRH	Human Resources for Health
CHWs	Community Health Workers
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HTWG	Hepatitis Technical Working Group
IDSR	Integrated Disease Surveillance & Response
ICT	Information and Communications Technology
IEC	Information Education Communication
MCH	Maternal and Child Health
MDGs	Millennium Development Goals
MoH	Ministry of Health
NBTS	National blood transfusion services
NCDs	Non Communicable Diseases
NGOs	Non- Government Organizations
NPHL	National Public Health Laboratory
NRL	National Reference Laboratory
PHCC	Primary Health Care Centre
RDTs	Rapid Diagnostic Tests

STIs	Sexually Transmitted Infections
TTIs	Transfusion Transmissible Infections
UN	United Nations (UN) agencies

FOREWORD

EXECUTIVE SUMMARY

Viral hepatitis is an inflammation of the liver caused by one of the five hepatitis viruses, referred to as types A, B, C, D and E. While all these viruses cause liver disease, they vary significantly in terms of epidemiology, natural history, prevention, diagnosis and treatment.

Hepatitis A virus (HAV) is usually transmitted by the faecal-oral route, either through person-to-person contact or ingestion of contaminated food or water. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are infections that can be spread through contamination by blood and other body fluids. Hepatitis D virus (HDV) infections occur exclusively in persons infected with HBV. Like HAV, Hepatitis E virus (HEV) is transmitted through consumption of contaminated water or food.

Immunization is the most effective strategy for prevention of hepatitis B virus infection. Comprehensive prevention strategies for both hepatitis B and hepatitis C viruses include provision of safe blood products, safe injection practices, harm reduction services for people who inject drugs and promotion of safe sex. For viral hepatitis A and E, prevention is through improved sanitation, food safety and vaccination.

According to the Global Burden of Disease estimates, hepatitis B and hepatitis C together caused 1.4 million deaths in 2010, including deaths from acute infection, liver cancer and cirrhosis. This death toll is comparable to that of HIV and tuberculosis. Of these deaths, approximately 47% are attributable to HBV while 48% is attributable to HCV and the remainder attributable to hepatitis A and E viruses. An estimate of 2 billion people have been infected with HBV and approximately 360 million people are chronically infected while more than 185 million live with HCV chronic infection worldwide. Prevention and control of hepatitis can therefore make a significant contribution to saving lives by preventing cancer and thereby reducing the mortality attributed to hepatitis B and hepatitis C.

In South Sudan, the prevalence of HBV and HCV in the general population is not well known and the mortality related to these infections is not accurately established owing to limited data available to the Ministry of Health through routine health information systems, surveillance and research. However, based on the draft situation analysis report of viral hepatitis in South Sudan

produced in 2016, HBV is classified as highly endemic with prevalence of at least 8%. Statistics from the national blood donors put prevalence of Hepatitis B Virus at 8.18% and Hepatitis C Virus at 5.60%.

The health sector in South Sudan has registered significant achievements in the control of infectious diseases in the previous years. However, there are challenges that need to be addressed in order to improve the quality of service delivery for viral hepatitis prevention and control. There is lack of trained health care providers and lack of accessibility of viral hepatitis services at all levels of the health care system. Additionally, there are insufficient fund mobilization frameworks at the state and national levels, deficiency of essential drugs and advanced treatment as well as a lack of viral hepatitis data management.

The strategy describes the contribution of the health sector to combating viral hepatitis, towards its elimination as a public health threat. It promotes synergies between viral hepatitis and other health issues, and aligns the hepatitis response with other health and development strategies, plans and targets. It positions the response to viral hepatitis within the context of universal health coverage - an overarching health target of the 2030 Agenda for Sustainable Development. The strategy outlines a way ahead, and provides:

- A vision where viral hepatitis transmission is halted and everyone living with viral hepatitis has access to safe, affordable and effective care and treatment;
- A goal of reducing morbidity and mortality due to viral hepatitis towards eliminating viral hepatitis as a major public health threat in South Sudan;

The strategy outlines the following specific objectives:

- Creating an enabling environment for managing viral hepatitis through policy development, advocacy and inclusion and stakeholder participation
- Providing effective and affordable preventive services including provision of vaccines
- Providing simple and reliable screening and diagnostic services for viral hepatitis
- Providing care and treatment services in the context of continuum of care and in accordance with universal health coverage
- Utilizing national data generated from research as input for evidence-based decision making

Achieving these objectives will require a radical change in the hepatitis response and will mean that hepatitis is elevated to a higher priority in the public health responses in South Sudan.

1 BACKGROUND AND EPIDEMIOLOGY

Viral hepatitis is an inflammation of the liver caused by one of the five hepatitis viruses, referred to as types A, B, C, D and E. While all these viruses cause liver disease, they vary significantly in terms of epidemiology, natural history, prevention, diagnosis and treatment.

Hepatitis A virus (HAV) is usually transmitted by the faecal-oral route, either through person-to-person contact or ingestion of contaminated food or water. Hepatitis B virus (HBV) and hepatitis C virus (HCV) are infections that can be spread through contamination by blood and other body fluids. Hepatitis D virus (HDV) infections occur exclusively in persons infected with HBV. Like HAV, Hepatitis E virus (HEV) is transmitted through consumption of contaminated water or food.

The most common hepatitis diseases are due to the hepatitis B virus (HBV), the hepatitis C virus (HCV) and the hepatitis D virus (HDV)[1]. There are effective tools and strategies for the prevention and treatment of hepatitis, however low awareness of hepatitis among the general population and key populations, has limited their impact. Since knowledge about the various risks and transmission routes is central to preventing the spread of hepatitis, increasing awareness is an important component of the global public health response[2]. Due to its often long asymptomatic, preclinical phase, viral hepatitis is a silent epidemic as most people are unaware of their infection[3].

1.1. Global Burden of Viral Hepatitis

According to the Global Burden of Disease estimates, hepatitis B and hepatitis C together caused 1.4 million deaths in 2010, including deaths from acute infection, liver cancer and cirrhosis[4]. This death toll is comparable to that of HIV and tuberculosis. Of these deaths, approximately 47% are attributable to HBV while 48% is attributable to HCV and the remainder attributable to hepatitis A and E viruses. An estimate of 2 billion people have been infected with HBV and approximately 360 million people are chronically infected while more than 185 million live with HCV chronic infection worldwide[5]. Prevention and control of hepatitis can therefore make a

significant contribution to saving lives by preventing cancer and thereby reducing the mortality attributed to hepatitis B and hepatitis C. Viral hepatitis is also a growing cause of mortality among people living with HIV. About 5-15% of all people living with HIV are co-infected with HCV and 5-20% with HBV. About 2.9 million people living with HIV are co-infected with HCV while 2.6 million people are co-infected with HBV[6].

1.2. The South Sudan Health Care System

Decades of civil war for independence and post-independence political conflicts have deeply impacted on the social as well as infrastructural fabric of this new nation. As a result the country faces major challenges regarding access and utilization of health services, quality of care is relatively poor with the basic health care package not implemented comprehensively in majority of facilities. Health facilities are maldistributed hence not achieving adequate coverage, number and quality of health workers remains inadequate, supply chain management system and information management are fragmented and weak.

1.3. Human Resources for Health

The situation of Human Resources for Health Crisis is alarming. The staffing status is suboptimal, constraining the delivery of the Basic Package of Health and Nutrition Services (BPHNS). About 80% of the positions of medical doctors in county health systems are vacant and only 3% of midwives and 8% of the nurses are in post leaving huge gaps for human resources for health (HRH) to be filled[7].

1.4. Viral Hepatitis burden in South Sudan

Based on the draft situation analysis report of viral hepatitis in South Sudan produced in 2016, HBV is classified as highly endemic with prevalence of at least 8%, though the exact magnitude of the burden of Hepatitis B is not clearly known due to limited data available to the Ministry of Health through routine health information systems, surveillance and research[7].

A recent study conducted among pregnant women attending antenatal clinic services in Juba Teaching Hospital, in the period December 2012 to March 2013 documented the prevalence of Hepatitis B surface antigen (HBsAg) carrier rate of 11%, an important risk factor for vertical transmission of the infection. In the same study, 70% of babies were born to non-immune

mothers predisposing them to vertical infection[7]. Statistics from the national blood donors put prevalence of Hepatitis B Virus at 8.18% and Hepatitis C Virus at 5.60%[7].

Hepatitis E is endemic in the region near Sudan border, and reported to be the commonest cause of acute hepatitis among pediatric, adult, and displaced populations. Outbreaks of Hepatitis E have frequently been reported in camps and refugee settings in Upper Nile and Jonglei states. In 2013, an outbreak of hepatitis E affected more than 6,000 people in South Sudan refugee camps, and 111 of them had died[7].

A South Sudan national study on the co–infection for HBV with TB revealed 12.8% and HCV/TB co-infection of 8.0%. Co-infection prevalence was higher in HIV negative patients in both HBV/TB and HCV/TB as compared to HIV positive patients[7].

Considering the high prevalence of the different forms of Hepatitis in South Sudan and given the likelihood of transmission in health care settings, its important to determine the level of knowledge and practices among health workers serving in hospitals and primary health care centres.

1.5. Current Viral Hepatitis preventive strategies in South Sudan

Based on the 2016 situation analysis report of viral hepatitis in South Sudan, significant effort is being made to reduce viral hepatitis transmission. These preventive efforts include HBV/Pentavalent vaccination introduced in the country 5 years ago with Pentavalent 3 coverage of 44% as of 2016; Blood safety programmes with a national policy of screening of the 4 Transfusion Transmissible Infections (TTI's) i.e. HIV 1 & 2, HBV, HCV and syphilis; Infection prevention and control including injection safety and protection of human environment. In addition, there are ongoing efforts in creating awareness and promotion of safer sex as part of the overall HIV prevention national effort.

1.6. Challenges with implementation of Viral Hepatitis preventive strategy

Even though the Pentavalent vaccination containing HBV was introduced 5 years ago, coverage remains low at 44% owing to reduced access to health facilities due to insecurity and the fact that

only 56% of populations are covered by health facility. This is also compounded by the fact that only 24% of the 813 health facilities have functioning cold chain. The country currently has no policy in place to vaccinate newborns with hepatitis B vaccine within 24 hours of birth and there is no policy to vaccinate health care workers with hepatitis B vaccine prior to starting work. Furthermore, there is no policy for routine HBV vaccination for special groups such as the military and commercial sex workers.

Coverage for screened blood for all the 4 TTI's remains questionable due to few functioning laboratories for screening blood across the country, weak infrastructure and shortage of human resources. Other challenges include frequent stock outs of testing kits and supplies in some facilities, poor coordination with partners and economic constraints.

1.7. Opportunities to enhance Viral Hepatitis response

Opportunities exist for enhancing and expanding the response through investments in key intervention areas such as vaccination of pregnant women and giving a birth dose in addition to scaling up Pentavalent vaccination; Access to vaccination for at risk groups including health workers, pregnant women, military and commercial sex workers; Making sure that there is proper collection, quality screening and transfusion of blood in the country; Access to safe water, proper sanitation and hygienic practices especially in populations prone to hepatitis E and A; Increasing access to screening, diagnosis and treatment of people with chronic hepatitis infection.

1.8. Focused response to at risk population

In South Sudan, populations most affected and at risk include people who have been exposed to viral hepatitis through unsafe blood supplies and unsafe medical injections and procedures, those exposed through mother to child transmission and those exposed through sexual transmission including young people and adolescents and commercial sex workers.

Mobile populations and people affected by conflict and civil unrest may be at particular risk of all forms of viral hepatitis infection because of their living conditions and due to lack of access to clean water and safe food and medical services. Those requiring special attention include

people with co-infections such as viral hepatitis and tuberculosis and those with HIV and viral hepatitis.

2 VISION, GOAL, OBJECTIVES AND TARGETS

VISION

Halting hepatitis transmission in South Sudan while everyone living with viral hepatitis has access to safe, affordable and effective prevention, care and treatment services

GOAL

Reduce morbidity and mortality due to viral hepatitis towards elimination of viral hepatitis as a major public health threat in South Sudan.

OBJECTIVES

- Create an enabling environment for managing viral hepatitis through policy development, advocacy and inclusion and stakeholder participation
- Provide effective and affordable preventive services including provision of vaccines
- Provide simple and reliable screening and diagnostic services for viral hepatitis
- Provide care and treatment services in the context of continuum of care and in accordance with universal health coverage
- Utilize national data generated from research as input for evidence-based decision making

TARGETS FOR 2018-20

TARGET AREA	Baseline (2016)	Targets		
		2018	2019	2020
Impact Targets				
Incidence: New cases of chronic viral hepatitis B & C infections	No data	10% reduction	20% reduction	30% reduction
Mortality: HBV and HCV deaths	No data	5% reduction	10% reduction	15% reduction
Service delivery targets				
HBV vaccination coverage (Pentavalent 3 vaccine)	44%	60%	75%	85% infants
Prevention of HBV mother to child transmission (HBV birth dose coverage)	No policy in place			20%
Blood safety	100%	100%	100%	90% of blood donations screened in a quality assured manner
Safe injections: % of injections administered with safety engineered devices		30%	40%	50%
HBV and HCV diagnosis	No data	10%	20%	30%
HBV and HCV treatment	No data	10%	20%	30%

3 DEVELOPMENT OF POLICY GUIDELINES AND STRATEGIC PLANS

3.1 National health policy

The Ministry of health in South Sudan has a national health policy covering the period 2016 to 2026 with 3 strategic objectives. The first objective addresses health service organisation and infrastructure development for effective and equitable delivery of the Basic Package of Health and Nutrition Services, and Universal Health Coverage. The second objective addresses issues of leadership and management of the health system with the aim of increasing health system resources for improved health sector performance. The third objective addresses issues of partnerships for healthcare delivery and health systems development.

According to this policy, the Ministry of health will design appropriate control interventions against priority common endemic communicable diseases including viral hepatitis. The national health policy will be delivered through two 5-year health sector strategic plans 2017-22 and 2022-27.

3.2 Health sector strategic plan 2017-22

The HSSP 2017-22 is currently in its final stages of development. This strategy aims at providing actionable details to the health systems strengthening goal of the national health policy covering the three main areas described above. In this strategy, a comprehensive Basic Package of Health and Nutrition Services (BPHNS) will be delivered through five programme areas as follows:

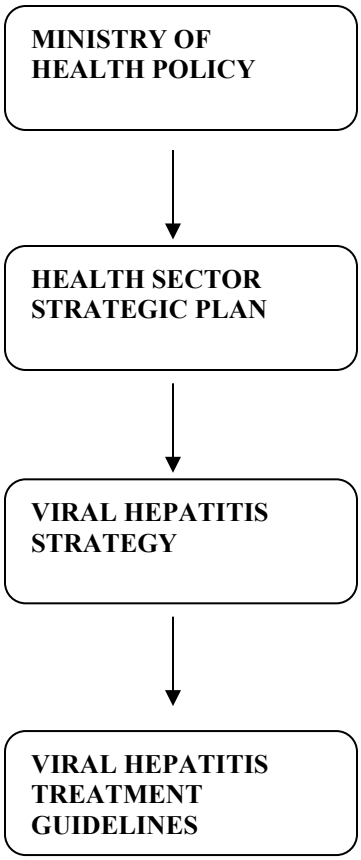
- Health Promotion
- Maternal and Child Health
- Communicable diseases
- Non-communicable diseases
- Emergency, epidemics and disasters.

The strategy will address priority common endemic communicable diseases such as malaria, tuberculosis, HIV/AIDS, hepatitis B and acute respiratory tract infections.

3.3 Development of viral hepatitis strategy and treatment guidelines

The development of the national viral hepatitis strategy and treatment guideline is in with the national health policy 2016-26 and the current health sector strategic plan 2017-22. The strategy provides a platform to reduce morbidity and mortality due to viral hepatitis towards elimination of viral hepatitis as a major public health threat in South Sudan. The hepatitis management guidelines currently being developed will provide the necessary tools to health care workers to effectively manage acute and chronic forms of hepatitis.

Fig.1: South Sudan Framework for national health policy, strategy and treatment guidelines



3.4 The viral hepatitis program in Ministry of Health

Viral hepatitis has been established as a programme in the Ministry of Health, under the Directorate of HIV & STI. The viral hepatitis activities fall under the HIV and Emergency Preparedness and Response departments in the Ministry of Health. There is a designated focal person coordinating the viral hepatitis response. The viral hepatitis program in the Ministry of Health has a Technical Working Group (TWG) consisting of members from departments within the Ministry of Health. There are plans to expand the team to include members from other relevant ministries, national professional medical societies, academia, organizations involved in service delivery of Hepatitis, and Key Affected Populations[5].

3.5 Contribution to the 2030 Agenda for Sustainable Development

The viral hepatitis strategy will contribute to the attainment of the 2030 Agenda for Sustainable Development and specifically to the health related Goal 3 (target 3.3). The strategy describes priority actions required to achieve the global hepatitis targets and how the hepatitis response can contribute to the achievement of universal health coverage, other health targets and the broader 2030 Agenda. It is aligned with other relevant health strategies and plans, including those for HIV, sexually transmitted infections, safe injections, blood safety, vaccines, tuberculosis and non-communicable diseases, and responds to the requirements of World Health Assembly resolutions on viral hepatitis that were adopted in 2010 and 2014.

3.6 Partnerships, Advocacy and community action

The objectives for high-level advocacy include:

- To improve public knowledge of hepatitis virus infection
- To improve access to hepatitis testing and treatment services
- To increase engagement of government and partners
- To improve knowledge of their hepatitis epidemics based on improved surveillance efforts resulting in stronger national plans
- To scale up hepatitis testing, prevention, treatment and care services, and move faster towards achieving the targets to eliminate hepatitis by 2030.

The proposed advocacy is achieved through holding high profile national events (such commemoration of world hepatitis day), engagement of national stakeholders and health professionals, engaging the media and dissemination of hepatitis information products.

4 PREVENTING TRANSMISION OF VIRAL HEPATITIS

Implementing scientifically proven, culturally acceptable and affordable preventive methods are essential in eliminating new viral hepatitis infections and containing viral hepatitis as a public health problem. Priority interventions for preventing viral hepatitis in South Sudan include use of safe and effective vaccines, improving blood safety, enhancing infection prevention and control in health care settings, preventing mother-to-child transmission of viral hepatitis, promoting safer sex and ensuring access to safe food and water.

4.1 Providing safe and effective vaccines

Effective vaccines exist for preventing viral hepatitis A, B and E infections. Hepatitis B virus immunization is a critical intervention for the elimination of hepatitis B virus epidemics.

Key Activities:

- Strengthen provision of hepatitis B virus vaccine in national childhood immunization schedules
- Vaccinate newborn with hepatitis B vaccine within 24 hours of birth
- Conduct catch-up hepatitis B virus vaccination for children or adolescents with low coverage
- Offer hepatitis B virus vaccination to people who are at increased risk of acquiring and transmitting the virus such as health care workers, military and commercial sex workers.

4.2 Improving blood safety

The risk of transmission of viral hepatitis B and C through the transfusion of contaminated blood and blood products still occurs as a result of the absence or poor quality of screening in blood transfusion services. The target for South Sudan is to have 95% of blood donations screened in a quality assured manner by 2020.

Key Activities:

- Promote the rational use of blood and blood products to prevent unnecessary blood transfusions and ensure reliable screening of blood for viral hepatitis B and C
- Implement quality control measures for laboratory testing of viral hepatitis B and C to ensure a reliable supply of quality assured assays
- Establish systems of surveillance, haemovigilance and monitoring of the incidence and prevalence of viral hepatitis infection in blood donors and on post-transfusion hepatitis risk

4.3 Enhancing infection prevention and control in health care settings

The Ministry of health in South Sudan has developed guidelines for infection prevention and control that address hand hygiene, handling and disposal of used sharps, management of clinical waste and safe cleaning of equipment. The guidelines also have management of occupational exposure for HBV and HCV among health workers and safe disposal of clinical waste. Consistent implementation of infection control practices including safe injection measures in health care and community settings will reduce transmission of viral hepatitis to both users of health care services as well as health care workers.

Key Activities:

- Strengthen and sustain routine infection prevention and control practices in health care settings, both public and public including laboratories.
- Implement the safe injection policy with the aim of reducing unnecessary injections and promote use of safety-engineered injection devices
- Provide health workers with free immunization against hepatitis B
- Provide post exposure prophylaxis to health workers and other high risk individuals

4.4 Preventing mother-to-child transmission of viral hepatitis

Transmission of hepatitis B virus in highly endemic areas often occurs from infected mothers to their infants during the perinatal period. Elimination of mother to child transmission of hepatitis B virus will require a comprehensive approach that includes prevention of hepatitis B virus infection in young women, hepatitis B virus testing, care of pregnant women with chronic

hepatitis B virus infection, delivery of hepatitis B virus vaccine to the infant within 24 hours of birth and safety delivery practices.

Key Activities:

- Provide timely administration of hepatitis B virus birth-dose vaccine with specific attention given to births occurring outside health care settings
- Update national polices and guidelines on MNH based on evolving WHO guidance on elimination of mother-to-child transmission of viral hepatitis

4.5 Promoting safer sex

Safer sex practices including minimizing the number of sexual partners and consistent and correct use of male and female condoms offer powerful protection against viral hepatitis B and C and a range of other sexually transmitted infections.

Key Activities:

- Promote behavior change to avoid unprotected and multiple sexual activity
- Increase the demand and supply of male and female condoms especially to populations most at risk of hepatitis B and/ or C virus infection through social marketing programmes.
- Ensure that the national hepatitis B virus vaccination policy includes persons at increased risk of acquiring hepatitis B virus infection through sexual contact

4.6 Ensuring access to safe food and water

Assuring access to safe food, drinking water and sanitation systems can dramatically reduce the transmission of viral hepatitis A and E.

Key Activities:

- Achieve universal and equitable access to safe and affordable drinking water to all
- Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women, girls and those in vulnerable situations
- Support and strengthen the participation of local communities in improving water and sanitation management

5 DIAGNOSING HEPATITIS INFECTION

Early diagnosis of hepatitis infection is critical for effective treatment and care. Yet in South Sudan, the number of persons with chronic viral hepatitis aware of their status remains unknown. Awareness is lacking, reliable diagnostics that are appropriate for the setting of intended use and testing services are not sufficiently available, and laboratory capacity is weak.

Increasing early diagnosis requires overcoming those shortcomings, using effective testing approaches, quality-assured diagnostics and linking the results of testing to treatment and care services. This strategy calls for a major increase in diagnosis of chronic viral B and C infections with 30% of people infected knowing their status by 2020.

The Ministry of Health in South Sudan is in the process of developing comprehensive guidelines for the care and treatment of persons with viral hepatitis infection.

Key Activities:

- Integrate viral hepatitis testing into national hepatitis policies and treatment guidelines
- Strengthen the national laboratory system to provide quality diagnosis of acute and chronic hepatitis with timely reporting of results
- Ensure a reliable supply of quality-assured (WHO prequalified) diagnostics
- Establish key linkages between testing and other services to improve referral and access to quality assured treatment and other supportive services

For a detailed account of diagnosing hepatitis, please refer to the treatment guidelines described above.

6 TREATING HEPATITIS AND PROVIDING CHRONIC CARE

6.1 Expanding treatment for viral hepatitis

Effective clinical management of viral hepatitis reduces the individual, social and health burden related to the infection. As indicated above, the Ministry of Health in South Sudan is in the process of developing comprehensive guidelines for the care and treatment of persons with viral hepatitis infection. For HBV and HCV infections, these national guidelines will address the following key activities:

Key Activities:

- Initial clinical assessment including:
    - Assessment of liver disease stage based on clinical criteria or non-invasive tests
    - Assessment to reduce individual risk of disease progression including screening for alcohol use and counseling to reduce alcohol intake
- Assessment for starting antiviral treatment including:
    - Screening and testing for co-morbidities such as renal impairment, high body mass index and smoking in order to inform treatment plans
    - Prioritization for treatment of individuals according to clinical criteria
    - Monitoring of patients for whom treatment has been deferred
- Provision of antiviral treatment including:
    - Optimal first line therapeutic regimen

- Monitoring response to treatment
- Monitoring for and managing adverse effects such as toxicity
- Well defined goals and end points of therapy

6.2 Providing chronic care

In addition to antiviral treatment, chronic care is required for many, including the management of decompensated liver disease and hepatocellular carcinoma. Treatment of advanced liver cirrhosis and hepatocellular carcinoma, including liver transplantation and chemotherapy, is very limited in South Sudan, highlighting the need to provide access to good quality palliative and end-of-life care including access to adequate analgesia.

For a detailed account of treating hepatitis and providing chronic care, please refer to the treatment guidelines described above.

7 MONITORING HEALTH SECTOR RESPONSE TO HEPATITIS

A robust strategic information system is essential for advocating, decision making, funding, planning and implementing more effective viral hepatitis interventions. Relevant data may be derived from a wide variety of sources including national HMIS, program reviews, surveys, surveillance and case studies. These data should be analyzed holistically and strategically to improve the overall functioning of the program.

7.1 Estimate the national burden due to chronic hepatitis

Key Activities:

- Conduct sero-surveys for hepatitis B and C every 5-10 years
- Conduct sentinel surveillance for liver cirrhosis in the 3 Teaching Hospitals (Juba, Wau and Malakal Teaching Hospitals)
- Conduct surveillance for hepatocellular carcinoma due to chronic hepatitis
- Conduct sero-surveys in high risk groups e.g. commercial sex workers

7.2 Monitor trends in chronic hepatitis over time

Key activity:

- Analyse and report annual national surveillance and research data

7.3. Strengthen the capacity of the health sector to monitor the viral hepatitis prevention and treatment program

Building the capacity of the national monitoring and evaluation system is crucial in monitoring the viral hepatitis prevention and treatment program. Setting national targets and indicators for the national program will enable the country to monitor and report the status of the response. The

viral hepatitis indicators need to be built into the routine HMIS operations that generate data and information on a periodic and on-going basis to provide evidence for program decisions.

Key Activities:

- Adapt/develop standard global and national indicators to monitor the viral hepatitis program in the country;
- Include relevant viral hepatitis screening, care & treatment and programmatic/ operational indicators into the national HMIS recording and reporting system;
- Develop comprehensive viral hepatitis M&E framework;
- Develop viral hepatitis monitoring and evaluation tools/instruments for data collection, recording and reporting (paper based and electronic formats);
- Avail monitoring tools at service delivery points;
- Provide training on viral hepatitis monitoring and evaluation tools/instruments at different levels (public and private) for health care providers, HMIS and M&E
- Provide training on quality assurance (internal and external) in all aspects (health service delivery, screening, care and treatment, data collection and analysis)
- Ensure data analysis and utilization at different levels (health facilities, county, state and national level)
- Conduct regular supportive supervision and joint review meetings bi-annually

7.4 Conduct epidemiological and operations research on viral hepatitis

Prioritization and conducting of hepatitis research agenda is important to inform policy decisions and implementation. Investment in information systems involving research and routine data collection and reporting is key to opening opportunity for funding hepatitis interventions in South Sudan.

Key Activities:

- Develop viral hepatitis research agenda
- Conduct operations research in line with the research agenda
- Provide timely dissemination of research results to inform policy and best practice

ANNEX 1: IMPLEMENTATION PLAN OF THE VIRAL HEPATITIS NATIONAL STRATEGY 2018-20

Strategy 1: Reduce the impact of viral hepatitis on people and society								
Goal	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
Raise awareness of viral hepatitis	1.1 Increase the knowledge of the general population and key populations on risks and protection from viral hepatitis	Commemorate world hepatitis day on 28 July Print IEC materials on hepatitis for schools and universities	% Of students who know risk factors and preventive measures		25%	50%	75%	MoH
	1.2 Increase awareness of health care providers in screening high risk populations	Prepare IEC materials for primary level health care workers	% Primary level HCW received information on hepatitis		25%	50%	75%	MoH
		Prepare information material on hepatitis serology for primary level HCW	% Primary level HCW who can interpret serology for referral		50%	70%	90%	MoH
	1.3 Reduce stigma and discrimination associated with hepatitis in the community	Remove barriers that may result in stigma and discrimination such as mandatory tests for employment	Reduced level of stigma and discrimination in the community					MoH

Strategy 2: Preventing transmission of viral hepatitis								
Goal	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
Reduce new viral hepatitis infections	2.1 Provide safe and effective vaccines	Strengthen routine provision of hepatitis B virus vaccine in national childhood immunization schedules	Pentavalent 3 coverage	44%	60%	75%	85%	MoH
		Provide hepatitis B virus vaccine to newborns within 24 hours of birth	% Newborns vaccinated with HBV vaccine	No policy in place			20%	MoH
		Conduct catch-up hepatitis B virus vaccination for children or adolescents with low coverage	# Catch up campaigns conducted	No data				MoH
		Offer hepatitis B virus vaccination to people who are at increased risk of acquiring and transmitting the virus such as health care workers, military and commercial sex workers	% High risk vaccinated	Policy exists but no data			15%	MoH
	2.2 Improve blood safety	Promote the rational use of blood and blood products to prevent unnecessary blood transfusions and ensure reliable screening of blood for viral hepatitis B and C	% Blood screened for HBV and HCV	100%	100%	100%	100%	MoH
		Implement quality control measures for laboratory testing of viral hepatitis B and C to ensure a reliable supply of quality assured assays	Stock out of supplies	0%	0%	0%	0%	MoH
		Establish systems of surveillance, haemovigilance and monitoring of the incidence and prevalence of viral hepatitis infection in blood donors and on post-transfusion hepatitis risk	Prevalence detected in blood donors					MoH

Strategy 2: Preventing transmission of viral hepatitis								
Goal	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
	2.3 Enhance infection prevention and control in health care settings.	Strengthen and sustain routine infection prevention and control practices in health care settings, both public and private including laboratories.	% Facilities adhering to IP standards		50%	60%	70%	MoH
		Implement the safe injection policy with the aim of reducing unnecessary injections and promote use of safety-engineered injection devices	% Facilities with safety injection devices		50%	60%	75%	MoH
		Provide post exposure prophylaxis to health workers and other high risk individuals	% Facilities providing PEP		30%	40%	50%	MoH
	2.4 Prevent mother-to-child transmission of viral hepatitis	Test all pregnant women for hepatitis B	% Pregnant women tested	No policy in place			20%	MoH
		Provide timely administration of hepatitis B virus vaccine to newborns within 24 hours of birth	% Newborns vaccinated with HBV vaccine	No policy in place			20%	MoH
		Update national polices and guidelines on MNH based on evolving WHO guidance on elimination of mother-to-child transmission of viral hepatitis	# Policy guidelines updated					MoH
	2.5 Promote safer sex	Promote behavior change to avoid unprotected and multiple sexual activity.	Reduced prevalence of STIs					MoH
		Increase the demand and supply of male and female condoms especially to populations most at risk of hepatitis B and/ or C virus infection through social marketing programmes	# Male and female condoms distributed					MoH

Strategy 2: Preventing transmission of viral hepatitis								
Goal	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
		Ensure that the national hepatitis B virus vaccination policy includes persons at increased risk of acquiring hepatitis B virus infection through sexual contact	Vaccination policy updated		□	□	□	MoH
	2.6 Ensure access to safe food and water	Achieve universal and equitable access to safe and affordable drinking water to all	% Households with safe water		40%	50%	60%	Ministry of Water, others
		Achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women, girls and those in vulnerable situations	% Households with toilets		40%	50%	60%	Ministry of Water, others
		Support and strengthen the participation of local communities in improving water and sanitation management						

Strategy 3: Diagnosis viral hepatitis infection								
Goals	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
Reduce deaths due to viral hepatitis	Increase proportion of people diagnosed with viral hepatitis	Integrate viral hepatitis testing into national hepatitis polices and treatment guidelines	Treatment guidelines with testing protocol		□	□	□	MoH
		Strengthen the national laboratory system to provide quality diagnosis of acute and chronic hepatitis	% Quality diagnostic tests performed		80%	90%	100%	MoH
		Ensure a reliable supply of quality-assured diagnostics	Zero Stock out of diagnostic supplies	0%	0%	0%	0%	MoH
		Establish key linkages between testing and other services to improve referral	% Patients tested and referred		70%	80%	90%	MoH

Strategy 4: Treating hepatitis and providing chronic care								
Goals	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
Reduce deaths due to viral hepatitis	Ensure adequate follow up and effective management of diagnosed patients	Train clinicians and nurses on new treatment guidelines	% Clinicians and nurses trained	Guidelines not yet developed	20%	30%	50%	MoH
		Conduct initial clinical assessment	% Of people with chronic hepatitis given appropriate counseling		50%	60%	70%	MoH
		Assess to provide antiviral treatment	% Of people with chronic hepatitis assessed for antiviral treatment		50%	60%	70%	MoH
		Provide antiviral treatment	% Of eligible people started on treatment		20%	30%	40%	MoH
		Provide chronic care						

Strategy 5: Monitoring health sector response to hepatitis								
Goals	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
Monitor health sector response to hepatitis	5.1. Estimate the national burden due to chronic hepatitis	Conduct serosurveys for hepatitis B and C every 5-10 years	Prevalence of hepatitis B and C ascertained					MoH
		Conduct sentinel surveillance for liver cirrhosis in the 3 Teaching Hospitals	Prevalence of chronic hepatitis					MoH
		Conduct surveillance for hepatocellular carcinoma due to chronic hepatitis	Prevalence of hepatocellular carcinoma					MoH
		Conduct sero-surveys in high risk groups e.g. commercial sex workers	Incidence of hepatitis infections per year					MoH
	5.2 Monitor trends in chronic hepatitis over time	Analyse and report annual national surveillance and research data	% Reduction in hepatitis B and C prevalence		30%	40%	50%	MoH
	5.3 Strengthen the capacity of the health sector to monitor viral hepatitis	Adapt/develop standard global and national indicators to monitor the viral hepatitis program in the country	National indicators developed					MoH
		Include relevant viral hepatitis screening, care & treatment and programmatic/ operational indicators into the national HMIS recording and reporting system;	Programme indicators integrated in national HMIS					MoH
		Develop comprehensive viral hepatitis M&E framework	M&E framework developed					MoH
		Develop viral hepatitis monitoring and evaluation tools/instruments for data collection, recording and reporting (paper based and electronic formats)	Tools/instruments developed					MoH
		Avail monitoring tools at service delivery points	% Of health facilities with monitoring tools		50%	60%	70%	MoH
		Provide training on viral hepatitis monitoring and evaluation tools/instruments at different levels (public and private) for health care providers, HMIS and M&E	% Providers trained on M&E tools		50%	60%	70%	MoH

Strategy 5: Monitoring health sector response to hepatitis								
Goals	**Objectives**	**Activities**	**Indicator**	**Baseline (2016)**	**Target**			**Leading Agent**
					2018	**2019**	**2020**	
		Provide training on quality assurance (internal and external) in all aspects (health service delivery, screening, care and treatment, data collection and analysis)	# Of trainings conducted					MoH
		Ensure data analysis and utilization at different levels (health facilities, county, state and national level)	Data analysis and utilization reports					MoH
		Conduct regular supportive supervision and joint review meetings bi-annually	Supervision and review meeting reports					MoH
	5.4 Conduct epidemiological and operations research on viral hepatitis	Develop viral hepatitis research agenda	Research agenda developed					MoH
		Conduct operations research in line with research agenda	Operations research conducted					MoH
		Conduct timely dissemination of research results to inform policy and best practice	Meeting reports					MoH

ANNEX 2: LIST OF PEOPLE CONSULTED DURING DEVELOPMENT OF HEPATITIS STRATEGY

S/ NO	NAME	POSITION, DEPARTMENT	ORGANISATION	CONTACT NUMBER	E-Mail
1	Dr. Pinyi Nyimol	DG, Preventive Health Services	MOH	0955604020	pinyiaupur@gmail.com
2	Dr. Richard Laku	DG, Policy and planning	MOH	0955387209	richardlako@yahoo.com
3	Dr. Alex Dimiti	DG, Reproductive Health	MOH	0955449984	Alexander.dimiti@gmail.com
4	Dr. Alex	Director, HIV and AIDS	MOH	0954858144	
5	Dr. Mathew Tut	Director, Hepatitis Focal Person	MOH	0955295257	tut1988@yahoo.com
6	Taban Moses	Director, EPI	MOH		
7	Dr. Zachariah Modi	Environmental Health	MOH	0954615594	
8	Dr. Angelo Ngor	National Public Health Laboratory	MOH	0955939121	
9	Ms. Mary Obat	Health Education	MOH	0954627139	mobat43@gmail.com
10	Dr. Pawil Yanyo	Juba Teaching Hospital	MOH		
11	Dr. Agai	Clinical Mentor	MOH	0956430544	agai_akec@hotmail.com
12	Dr. Elijah Maluk	Juba Teaching Hospital	MOH	0913491846	
13	Dr. Moses Nganda	HIV	WHO	0955045050	ngandam@who.int
14	Dr. David Lukudu	HIV	WHO	0955045045	dlukudu@who.int
15	Dr. Joseph Mogga	HIV	WHO	0955499750	moggaj@who.int
16	Dr. Driwale Alfred	Consultant	WHO	0954758706	driwalealfred@yahoo.co.uk
17	Kofi Boateng	EPI	WHO	0955026052	boatengko@who.int
18	James Chitsva	Blood safety	WHO	0954991637	chitsvaja@who.int
19	John Rwegasha	Consultant	WHO		jrwegasha@gmail.com
20	Kujang Laki	Communication for Development	UNICEF	0955797468	kslaki@unicef.org
21	Dr. Rofas John	Private sector	EB Clinic	0954033395	
22	Dr. Salvador Taja	Private sector	University of Juba	0912979484	

REFERENCES

1. World Health Organization. Prevention and Control of Viral Hepatitis Infection: Framework for Global Action. 1–28 (2012). at <http://www.who.int/csr/disease/hepatitis/GHP_framework.pdf>

2. World Health Organization (WHO). *Global policy report on the prevention and control of viral hepatitis IN WHO MEMBER STATES*. (2013).6.

3. Lazarus, J. V, Safreed-Harmon, K. & Sperle, I. Global policy report on the prevention and control of viral hepatitis: In WHO Member States. *Glob. Alert Response* i–208 (2013). at <http://apps.who.int/iris/bitstream/10665/85397/1/9789241564632_eng.pdf>

4. Hajarizadeh, B., Grebely, J. & Dore, G. J. Epidemiology and natural history of HCV infection. *Nat. Rev. Gastroenterol. Hepatol.*10**,** 553–62 (2013).

5. World Health Organization (WHO). *Manual for the Development and Assessment of National Viral Hepatitis Plans, A Provisional Document.* September 2015

6. World Health Organization (WHO). *Global health sector strategy on viral hepatitis 2016-2021.* June 2016

7. MoH, South Sudan, *draft report on situation analysis of viral hepatitis in South Sudan; 2016*