THE REPUBLIC OF UGANDA

MINISTRY OF HEALTH

UGANDA GUIDELINES FOR PREVENTION, TESTING, CARE AND TREATMENT OF HEPATITIS B AND C VIRUS INFECTION

NOVEMBER 2019

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FOREWARD

Uganda currently has strategies for prevention of transmission of hepatitis B and C virus infection. These include early childhood vaccination against hepatitis B which was incorporated into the national expanded program on Immunization in the year 2002, safe injection practices, screening donor transfusions for Transfusion Transmitted Infections (TTIs) and Hepatitis B vaccination for health workers, adults and adolescents. In spite of these interventions, there is still a large cohort of people who are infected with Hepatitis B and C viruses.

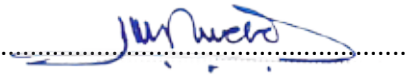
Increasing the number of people accessing clinical management is imperative in reducing the burden of Chronic Hepatitis B and Hepatitis C. While the goal of hepatit**is** B treatment is to suppress viral replication, reduce the risk of progression to advanced liver disease and reduce the development of complications such as liver failure or liver cancer, that of Hepatitis C is to achieve cure. An increased understanding of hepatitis B and Cinfection and support for those who are infected, at personal and community level will help reduce the burden associated with chronic infection therefore improving health outcomes

A first step to reducing the burden of hepatitis and C infection is to improve the level of awareness among primary healthcare workers. People requiring management often experience complex social and psychological challenges. A patient with a good understanding of the impact of chronic infection, the purpose of treatment and the clinical process of treatment is more likely to adhere to treatment and respond effectively to the advice of their treating doctor.

The burden of Chronic Hepatitis B and Hepatitis C on specialist liver services is increasing and existing services have lengthy waiting periods for new referrals. This situation necessitates the development of a model of care for delivering hepatitis B and C care through a range of services (including the primary health care level) and identifying mechanisms for appropriate resourceand service delivery.

These guidelines provide simplified framework for all actors including health care workers, district health teams, implementing partners, training institutions, researchers, civil society organizations and the community for providing the requisite service to the clients with Hepatitis B and C.

I therefore, call upon all stakeholders from Government, Civil Society organizations, Private sector and Development Partners to combine efforts in supporting the implementation of the guidelines.



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ABBREVIATIONS

ACP	AIDS Control Program
ANC	Antenatal Care
ALT	Alanine Transferase
AST	Aspartate Aminotransferase
ART	Antiretroviral Therapy
ATR/r	Atazanavir
Anti-HBe	Antibody to hepatitis B e antigen
Anti-HBs	Antibody to hepatitis B surface antigen
Anti-HBc IgG	Antibody to hepatitis B core antigen of IgG type
Anti-HBc IgM	Antibody to hepatitis B core antigen of IgM type
Anti-HCV	Antibody to hepatitis C Virus
APRI	Aspartate aminotransferase Platelets Ratio Index
CHB	Chronic Hepatitis B
CHC	Chronic Hepatitis C
DAAs	Direct Acting Antivirals
DBS	Dried Blood Spot
EFV	Efavirenz
HBV	Hepatitis B Virus
HCV	Hepatitis C Virus
HCVcAg	Hapatitis C Virus core Antigen
HBeAg	Hepatitis B e antigen
HBIG	Hepatitis B Immunoglobulin
HBsAg	Hepatitis B surface antigen
IEC	Information, Education, Communication
GF	Global Fund
JMS	Joint Medical Store
HIV	Human Immunodeficiency Virus
MCT	Mother to Child Transmission
MARPs	Most at risk persons
NAT	Nucleic Acid Testing
NMS	National Medical Stores

PEP	Pre-Exposure Prophylaxis
PFP	Private For Profit
PMTCT	Prevention of Mother To Child Transmission
RDT	Rapid Diagnostic Test
RFTs	Renal Function Tests
SVR	Sustained Virological Response
TDF	Tenofovir
3TC	Lamivudine
TTI	Transfusion-Transmissible Infections
TWG	Technical Working Group
UNEPI	Uganda National Expanded Program on Immunization
UNHLS	Uganda National Health Laboratory Services
UBTS	Uganda Blood Transfusion Services
UCC	Uganda Cancer institute

DEFINITIONS

Acute Hepatitis B: New-onset hepatitis B infection that may or may not be symptomatic. Diagnosis is based on detection of hepatitis B surface antigen (HBsAg) and IgM antibodies to hepatitis B core antigen (anti-HBc). Recovery is accompanied by clearance of HBsAg with sero-conversion to anti-HBs (antibodies to hepatitis B surface antigen), usually within 6 months.

Chronic Hepatitis B: Persistence of hepatitis B surface antigen (HBsAg) for six months or more after acute infection. Note that this definition does not refer to liver disease but HBV infection. This means chronic HBV infection does not mean chronic liver disease. This guideline is mainly discussing chronic HBV infection.

Liver Fibrosis: Scarring of the liver

Liver Cirrhosis: Cirrhosis is a chronic disease with necrosis of the liver cells followed by irreversible fibrosis and nodule formulation.

Decompensated Liver cirrhosis: Liver cirrhosis with complications such as ascites, variceal bleeding, hepatic encephalopathy

Compensated Liver cirrhosis: Liver cirrhosis without complications

CHAPTER ONE

1 INTRODUCTION

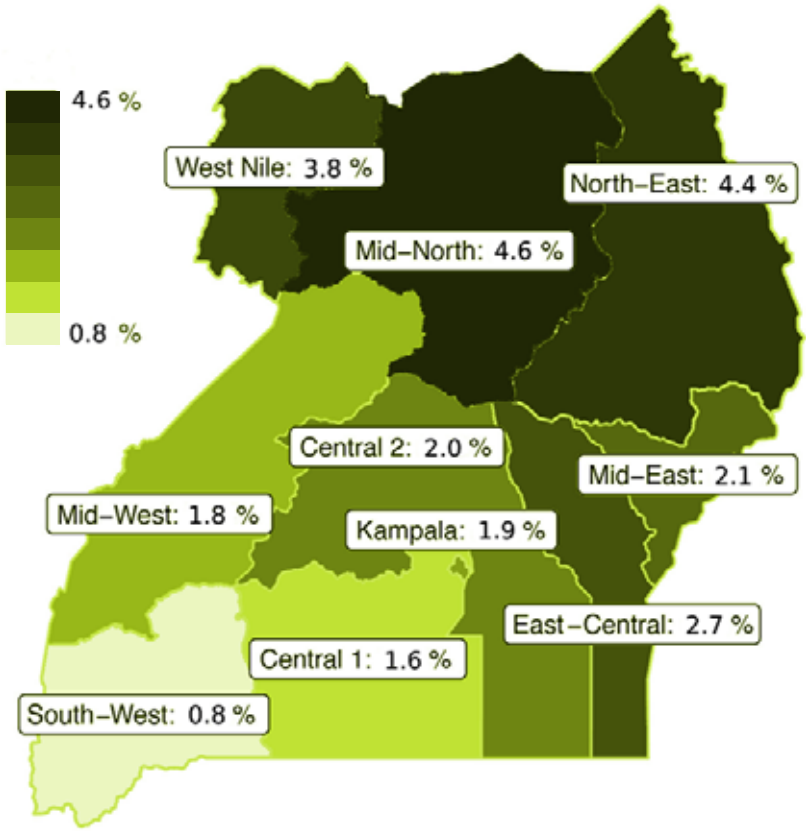
1.1 CONTEXT

Hepatitis is the inflammation of the liver. Hepatitis can be caused by infections by viruses, bacteria and non-infectious agents such as toxins, drugs, alcohol. Viral hepatitis is inflammation of the liver caused by viruses. The commonest causes of viral hepatitis include one of the five hetero types; A,B,C,D and E. Other viruses that can cause inflammation of the liver are; cytomegalovirus (CMV), Herpes Simplex, Epstein-Barr, Adenovirus and Yellow-fever virus among others. Hepatitis A and E viruses usually cause acute infections which are self-limiting. Hepatitis B (HBV) and hepatitis C (HCV) infections may progress to chronic infection with long term complications such as: liver cirrhosis, liver failure and Hepatocellular Carcinoma (HCC). Hepatitis D only exist in the presence of (HBV)

Worldwide, over 2 billion persons have been exposed to HBV infection and the majority of these live in sub-Saharan Africa and Southeast Asia. Globally 257 million persons are living with chronic hepatitis B and that 71 million persons are living with chronic HCV infection globally (global prevalence 1%). In Uganda, it is estimated that 4.1% of the population aged 15-64 years has chronic hepatitis B infection, (UPHIA,2016). The disease prevalence however varies from region to region being highest in the North and lowest in Southwest.

The prevalence of HCV in Uganda is unknown. Data among the blood donors indicates the sero-prevalence of HCV is close to 1.5%. Hepatitis C is curable and with the development of several new medicines also now called direct acting antiviral agents (DAA) treatment outcomes have been improved.

Figure 1: The distribution of chronic hepatitis B infection in the country as shown below (UPHIA, 2016)



1.2 Objectives

Health workers in the community are working under very strenuous conditions with very limited information on hepatitis B and hepatitis C. This is a simplified version of the World Health Organization guidelines published in 2015, tailored to the Ugandan setting. The objectives of these guidelines are:

1. To provide a standardized and simplified guide for offering HBV and HCV testing services.
2. To provide a standardized and simplified guide on treatment of children and adults with chronic hepatitis B and chronic hepatitis C.
3. To provide a standardized and simplified guide on prevention of HBV and HCV infection.
4. To provide guidance on service delivery issues with the aim of increasing access to HBV and HCV testing, care and treatment services

1.3 Target Audience

This guide targets specialist and non-specialist health workers including: clinicians, nurses, laboratory staff who are in the community facing a number of patients infected with chronic HBV.

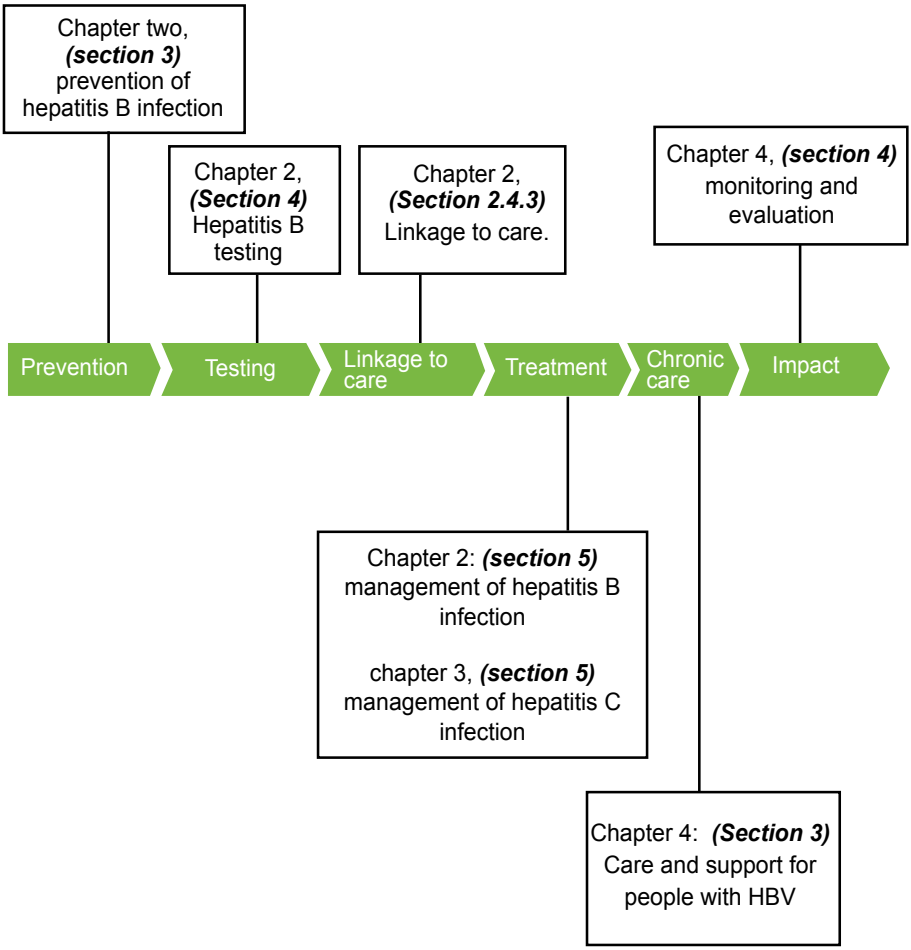
1.4 Guidelines Development

The guideline development team was comprised of members of the Hepatitis Working Group, with representation from the academia, civil society, researches, professional societies and public health specialists. Several meetings were held among the different subcommittees of the TWG to harmonize the different components of the guidelines. Guideline approval was also sought from the senior and Top management of the Ministry of Health.

1.5 Structure Of The Guidelines

The guidelines have been divided into four chapters. The first two chapters are structured along the continuum of care for Hepatitis B; prevention, testing, treatment and care. Chapter three is structured along the continuum of care for Hepatitis C; testing, treatment and care.

Figure 2: Shows the different elements of the guidelines along each continuum of care



CHAPTER TWO

HEPATITIS B VIRUS INFECTION

2.1 Hepatitis B Virus Transmission

Hepatitis B spreads by percutaneous or mucosal exposure to infected blood or other body fluids such as vaginal and seminal fluids. In highly endemic areas, HBV is mostly spread from mother to child at birth (perinatal transmission) or through horizontal transmission (exposure to infected blood) from an infected close contact to an uninfected child during the first five years of life. It can also be spread through sharing of sharps such as needles, instruments used for tattooing and body piercing, razor blades, contaminated surgical instruments (including instruments used for tribal markings), sexual intercourse and blood transfusion (if blood is either not screened or is screened negative during the window period of HBV infection).

Hepatitis B does not spread through greeting, sharing food, utensils, water, clothes, or witchcraft. Persons who are infected should not be isolated on the basis of this infection. They should therefore not be discriminated in schools, water sources or places of employment.

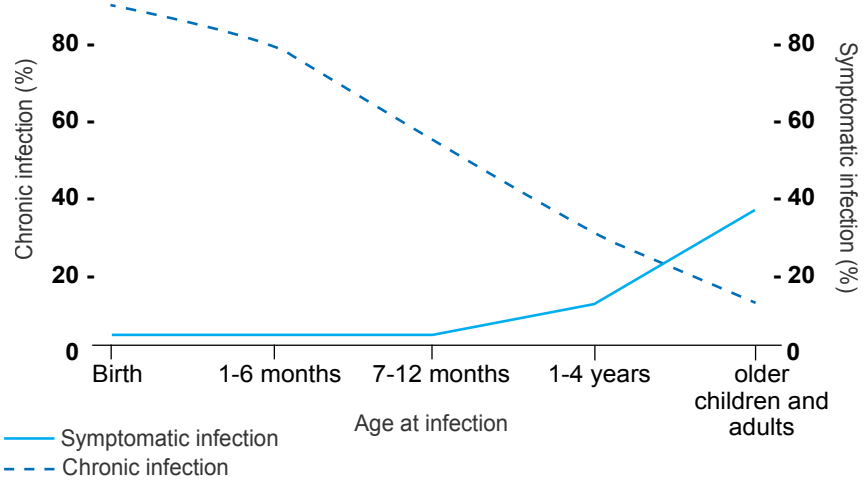
2.2 Natural History And Consequences Of Hepatitis B Infection

Depending on the age of exposure, HBV can be eliminated by natural immunity. Infection that is acquired in the neonatal period leads to chronicity in more than 90% of the exposed. This rate drops to 30%-50% for infections acquired before 6 years of age. Infection acquired above 5 years of age will spontaneously be eliminated in over 90% of the infected individuals within 6 months. Those that fail to eliminate the infection enter the chronic phase of disease that has different outcomes: the majority will remain asymptomatic; a few will progress to liver cirrhosis

that remains stable (compensated) and a small percentage may decompensate and suffer complications such as ascites, hepatic encephalopathy, haematemesis (variceal bleeding), infections, malnutrition, kidney failure and liver cancer that increase the risk of death.

These complications manifest years after the exposure to infection and will occur in about 30% (3 out of 10) of those with chronic infection. Close to 70% (7 out of 10) will have inactive disease and therefore may not require treatment.

Figure 3: Extracts from WHO Hepatitis B Guidelines 2015 illustrating HBV disease progression by age



2.3 Prevention Of Hepatitis B Infection

The following are interventions that can be put into place to prevent HBV infections:

1) Vaccination

HBV vaccination is the main stay for prevention. However, it is important to note that vaccination is only beneficial to individuals who have never been infected with hepatitis B virus. Vaccination against hepatitis B is recommended in the following categories;

- All newborn infants – as per the current UNEPI guidelines using the pentavalent vaccine given at 6, 10 and 14 weeks. In future, Uganda is considering introduction of a birth dose for all newborns.
- Adult vaccination may also be offered as long as there is no evidence of chronic infection (HBsAg negative and anti-HBc negative). This vaccine should be given at 0, 1 and 6 months intervals.

All persons at a high risk HBV should be vaccinated against this disease. (**refer to page 19**)

2) Screening of donor blood - all blood and blood products should be screened for HBV before transfusion. This is currently implemented by the Uganda Blood Transfusion Services through its blood banks.
3) Safe and appropriate use of injections (injection safety).
4) Universal precautions of infection prevention and control measures- all health facilities should adhere.
5) Risk behavioral change through health education and community sensitization on how the disease is transmitted and how it can be prevented (see annex 5).

2.4 HEPATITIS B TESTING

2.4.1 HBV testing service approaches

Effective integration into the existing health facility structures should be utilized in order to realize the desired outcomes in the various areas including identification of the HBV infected persons, linkages to prevention for those who test negative, care and antiviral services, retention in care, viral load testing and monitoring as well as reduction in morbidity due to complications. The structures include; Outpatients clinics, HIV clinics, antenatal (ANC) clinics and hub system in transportation of blood samples. These will play a key role in task shifting, leveraging on the already well established HIV services (counseling, testing, care and treatment) and ANC services.

2.4.2 HBV diagnosis

Hepatitis B surface Antigen testing is the entry point to prevention, care, and treatment services. The presence of this antigen means that the person is infected.

2.4.3 Laboratory Strategy for Hepatitis B Testing

This section of the guidelines will focus on the following;

a) Initial tests for HBV infection
b) Counselling (Pre and post-test counselling)
c) Linkage from HBV testing to HBV prevention, care and treatment
d) Tests to evaluate hepatitis surface antigen (HBsAg) positive patients before deciding to treat
e) Baseline tests before initiation of antiviral treatment
f) Tests for monitoring patients on treatment
g) Tests for monitoring patients who are not on treatment
h) Summary algorithm for testing approach in CHB infection
i) Access to hepatitis testing services
j) Validation of kits

NOTE: ***Nolaboratory should perform a test without a request from either a Nurse, Midwife, Clinical Officer or Medical doctor.***

Who performs the test

- Trained laboratory personnel or any otherqualified health worker

Who to test

- Preference is given to those born before the year 2002
- All the people born 2002 onwards but never completed the routine Uganda National Expanded Programme on Immunization (UNEPI) vaccination schedules (c*atch up vaccination).*

NOTE: In 2002, UNEPI introduced the pentavalent vaccine which includes the hepatitis B vaccine therefore persons born after 2002 are presumed to be protected if they were fully vaccinated.

- All persons in Uganda should be screened, however the following categories are at a higher risk and should be given priority.
  - Health workers/students undertaking health-related course
  - Pregnant women
  - People living with HIV or other sexually transmitted infections
  - Household contacts of an infected person
  - Sexual contacts of people with CHB
  - Armed forces: police and army
  - Prisoners
  - Sicklers or other patients who frequently receive blood/blood products
  - Blood and organ donors or recipients
  - Multiple sexual partners
  - Sex workers
  - People who inject drugs
  - Men who have Sex with Men (MSM)
  - All persons deemed at risk

What tests to perform?

TheHBsAg test is used for initial testing to detect those who are infected with the HBV.

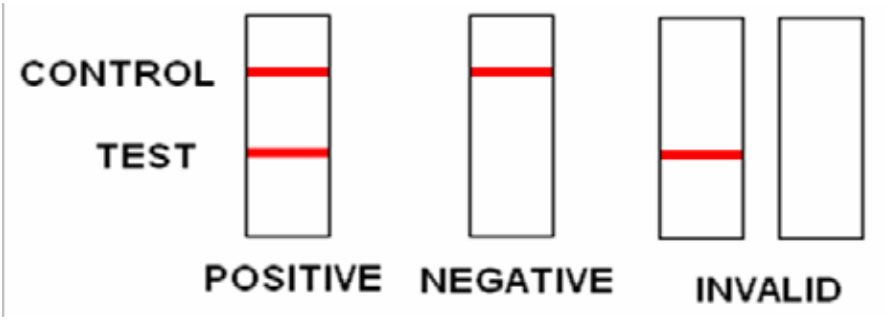
Detection of HBsAg can be done using;

- Rapid Diagnostic Test (RDTs) strips- which are the WHO recommended screening assay for low resource settings. Other tests e.g ELIS A (*Enzyme Linked Immunosobent Assay*), ELIFA (Enzyme Linked Immunoflorescent Assay) and Chemiluminiscence can also be used.

Samples for initial HBsAg testing

- Plasma
- Serum

Figure 4: Interpretation of the HBsAg test results



FOR POSITIVE TEST RESULTS: The intensity of the red color in the test line region (T) will vary depending on the concentration of HBsAg present in the specimen. Therefore, any shade of red in the test region (T) should be considered a positive test result.
INVALID TEST RESULTS ARE DUE TO: Insufficient specimen volume or incorrect procedural techniques. Repeat the test with a new test strip or use another method
Note: All the testing should follow a standard operating procedures developed as per the manufacturing guidelines

Reporting results of HBsAg testing

- If 2 bands (control and test) positive report as: HBsAg POSITIVE
- If only the control band is positive report as: HBsAg NEGATIVE
- If only the test band is positive report as: **INVALID**

2.4.3b Counselling

This is the process of providing professional assistance to a person with a challenge in order to help them take corrective action with their active involvement. It involves providing the person with correct and objective information about their challenge so that they take an appropriate course of action.

Pre-test counselling

Before the initial screening test (HBsAg) is conducted, it is important for a counsellor or other trained health worker to provide correct and simplified information in a language easily understood by the patient.

This should include the following;

- What HBV is, its cause and mode of transmission
- Why the test is important
- How the test will be done
- A blood sample will be taken
- How long the results will take to be ready
- The possible outcome of the test (negative or positive)
- The implications of the results

Post-test counselling

After the results are out, the counsellor takes the patient through another counselling process before giving the results.

This session involves the following steps:

1. Establishing the client knowledge about HBV, its cause and mode of transmission
- Ask the client what he/she knows about the disease and correct any misconceptions
2. Assessing the client understanding of the possible test results
- Ask the client to name the possible outcome of the test
3. What actions the client may take after the results
- Ask the client to state the actions they will take after the results are given.
4. Providing the results in a simple straight forward non-judgemental tone
- Give the results without “beating about the bush”.
5. Allowing the client some time to take in the results
- Let the client digest the results of the test without interruption

6. Discussing with the client the implications of the result to their life
- Inform the client what is the implication of the test result
- Discuss whether they need to inform any persons in their life
- Discuss the changes that may be required in their lifestyle and why these changes are necessary
7. Thanking the client for taking the test and commitment to take the actions agreed upon

2.4.3c Linkage from HBV testing to HBV prevention, care and treatment

Linkage refers to the process of connecting individuals who have tested HBsAg positive from one service point to another. For all patients who test HBsAg positive, linkage is considered successful when the patient is enrolled in care and treatment.

Handling of HBsAg positive individuals

If the initial testing is done at the health facility, refer the patients and test results to the requesting clinician for counselling and management.

If the testing is done at community level or outreach the healthcare worker involved in the outreach should counsel the patient and refer him/her to the nearest health centre IV or a higher facility for management.

Table 1: Steps into linkage into care for a patient with positive HBsAg test

Step	Action
Post - test counseling	• Disclose results • Discuss importance of referring household contacts/ spouses for screening • Identify and address any barriers to linkage into care • Fill in the patient counseling card
Patient to clinician	• Fill in care and treatment patient card • Take detailed history, examination • Request for baseline tests • Assess for eligibility for treatment • Discuss the next steps whether eligible or not eligible for treatment • Discuss benefits of initiating treatment if eligible • Emphasize importance of monitoring if not eligible for treatment • Discuss complications of HBV • Discuss treatment accessibility and availability
Enrolling for treatment	• Open a hepatitis B treatment card/file for patient • Offer anti-viral preparatory counseling • Initiate treatment • Coordinate integrated care if required (HIV/HBV/HCV) • Discuss and make appointment for follow up

Handling of HBsAg negative individuals

All individuals tested negative may be vaccinated against HBV for as long as they have never been infected with this virus.

Note: The hepatitis B core antibody test may be done to evaluate for past exposure to the virus. Individuals who test positive for the core antibody should not be vaccinated.

2.4.3d Tests to evaluate hepatitis B surface antigen patients before deciding to treat

The tests used to evaluate HBsAg positive patients for treatment eligibility include:

- Complete Blood Count (CBC): platelet count
- Liver Function Tests (LFTs): ALT (Alanine aminotransferase) and AST (Aspartate aminotransferase)
- HIV serology
- HBV viral load (if available)
- Abdominal ultrasound scan (if available)

The paragraph below provides information on how to utilize the results of the above tests:

CBC- The targeted parameter here is the platelet count in units of (10^9/L)

Liver enzymes- Liver injury can be assessed using various liver enzymes and other parameters. The AST and ALT are the most important liver enzymes in HBV management.

HBV viral load- This test is used to measure the amount of HBV in blood. All HBsAg positive patients who do not have clinically defined cirrhosis or cirrhosis based on APRI score of >2 may have a viral load test.The HBV viral load test is currently performed the Uganda National Health Laboratory Services (UNHLS) at Butabika, Kampala. The samples (Dried blood Spot, DBS or plasma) are transported through the National sample transport system to UNHLS for this test. All the samples should be accompanied by a properly filled HBV lab request form for this test(see annex 1).

2.4.3e Baseline tests before initiation of treatment

- Renal function tests: serum creatinine, urea& electrolytes
- Urinalysis: urine dipsticks to exclude proteinuria & glycosuria (if renal function tests are not available)
- HBeAgmay also be done. The results should be interpreted as follows:

- If positive at time zero, this test result implies significant ongoing replication. It can be used for monitoring response to treatment. If the HBeAg turns negative and is replaced by the antibody, the clinician may consider stopping treatment after 12 more months of treatment.
- If negative at time zero, the result may mean either "no significant active replication" or a mutant virus that cannot secrete this antigen.

Note: *This guideline does not include the HBeAg among the parameters that form a basis for a decision to treatment.*

- **AFP (Alpha-fetoprotein)**

  Patients with CHB with or without clinical evidence of liver disease, should be screened for hepatocellular carcinoma (HCC). If results show high level of the AFP, refer the patient to a Regional or National Referral Hospital for cancer evaluation.

  Patients with CHB with or without clinical evidence of liver disease, should be screened for HCC. If results show high level of the AFP, refer patient to a Regional or National referral hospital for cancer evaluation

2.4.3f Tests for monitoring patients when on treatment

The table below shows tests to perform when an HBV positive patient is on treatment.

Table 2: Tests for monitoring patients on treatment

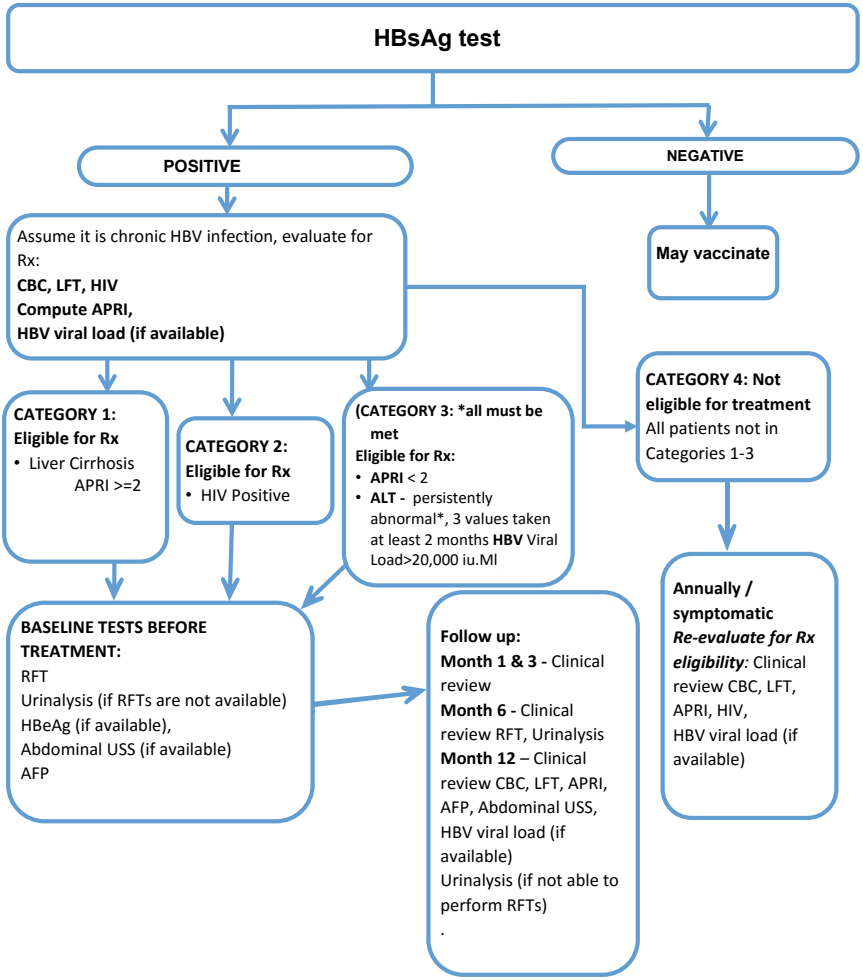
Lab test for diagnosis and monitoring	Baseline entry into care	If HBsAg test is positive but before deciding to treat	Baseline tests before initiation of treatment	At end of one month of treatment	At end of 3 months of treatment	Every 6 months	Every year	Per need
HBsAg	✓						✓	✓
Clinical evaluation		✓	✓	✓	✓	✓	✓	✓
CBC: Platelet count		✓				✓	✓	✓
LFT: AST & ALT		✓	✓			✓		✓
HBV DNA Viral load (if available)		✓					✓	✓
HBeAg (if available)			✓			(**if positive** at treatment initiation)	(**if positive** at treatment initiation)	
RFT & Urinalysis			✓			✓	✓	✓
HIV diagnostic testing		✓					(if initially HIV negative)	✓
Abdominal US – Liver (if available)			✓			✓	✓	✓
Alfa-feto protein (if available)			✓			✓	✓	✓

2.4.3g Tests for monitoring patients who are not on treatment

Annually, or when symptomatic, repeat all the tests used in the evaluation of the HBsAg positive patients for treatment eligibility, i.e: CBC, LFTs, HIV serology (if initially HIV negative), HBV viral load (if available).

2.4.3h Summary algorithm for testing in CHB infection

Figure 5: Algorithm for Chronic Hepatitis B testing



*Abnormal ALT refers to ALT values that are atleast 2 times the upper limit of normal

2.4.3i Access to hepatitis testing services

Tests available at the designated level shall be done locally at that level. For tests not available locally, the samples shall be shipped to nearest functional hub facility. For HBV viral load testing, specimens shall be processed at the UNHLS. The referral of hepatitis specimens shall utilise the existing National sample transport network (Hub system) to reference labs or Hub facility as indicated in table 3 below:

Table 3: Tests available at different facility levels

No	Type of test	Facility level	Purpose
1	HBsAg	Health facility (HCI-I,III,IV,GH and RRH or community outreach	Initial testing
2	CBC, LFTs, HIV HBV viral load	Local lab facility (HCIII,IV,GH and RRH) to UNHLS Hub facility to UNHLS	Evaluating HBsAg positives patients before deciding to treat
3	RFT,urinalysis, abdominal Ultrasound scan HBeAg, AFP	Local lab facility (HCIII, IV, GH and RRH) hub facility to UNHLS hub facility to UNHLS	Baseline tests before antivirals Monitoring renal function during treatment Screening for liver cancer

.4.3j Validation of testing kits.

The performance of imported HBV testing kits shall be validated locally by competent and reputable research institutions before recommendation by National Drug Authority, NDA for use in Uganda.

2.4.3k Safety management system

- All individuals who are involved in HBV testing and management shall be required to be fully vaccinated against hepatitis B if susceptible. Those that are infected shall be linked into care.
- All infectious waste shall be managed with caution following the National infection prevention and control guidelines.
- All individuals handling HBV samples must comply with standard infection prevention and control procedures.

2.4.3l Quality management system

Both internal and external quality assurance systems shall be implemented in public and private laboratories performing HBV testing services.

2.5 MANAGEMENT OF HEPATITIS B INFECTION

All patients with positive HBsAg test results should be referred to the nearest health center IV or higher facility for assessment to determine who to treat. Like HIV, HBV currently has no cure. The overall goal of HBV treatment is to prevent or reverse liver related complications and death.

Specific goals are:

Biochemical: normalization of the liver enzyme (ALT) levels
Virological: suppression of HBV viral load and
Histological: improvement in liver histology(fibrosis) findings

2.5.1 Approach to a patient with a positive HBsAg test result

1. Register all patients in the ART clinic at the regional/ general hospital and lower health facility or at a designated hepatitis/ gastroenterology clinic at the national referral level.
2. Take a comprehensive medical history of the patient (note: ask for hepatitis B immunization records and take note of their

completeness) and conduct a physical examination to look for signsof liver disease (yellow discoloration of the eyes, limb edema, ascites, collateral veins on the abdomen, big spleenetc).

3. Request for the following tests: HIV, complete blood count and liver function test.
4. Refer to the next section below for guidance on who to treat
5. Ask the patient to refer his/ her household contacts, sex partners and children for HBV testing.
6. For patients not eligible for treatment, review them at least once a year or at any time when they are unwell.

2.5.2 WHO TO TREAT

Assessing for treatment eligibility

This involves performing a clinical evaluation of the patient for features of cirrhosis and evidence of decompensation. The APRI score should be computed to assess for liver cirrhosis and adult patients with a score >2 are considered to have cirrhosis. APRI is a non-invasive marker of fibrosis and replaces liver biopsy for determining absence or presence of significant fibrosis/cirrhosis in adult patients. It is based on liver function tests (AST) and complete blood count (Platelets).

$$\frac{\boldsymbol{AST\ level(IU/L)/AST(upper\ limit\ of\ normal)(IU/L)}}{\boldsymbol{Platelets\ count\ 10^9/L}}\ \boldsymbol{x100}$$

Category 1:

All children, adolescents and adults with CHB (HBsAg positive) who have clinical evidence of cirrhosis (all or some of the following: history of vomiting blood, swollen limbs, ascites, dilated veins on the abdomen, big spleen,) OR adult patients with APRI score > 2. **These should be treated regardless of the Hepatitis B viral load level**.

Category 2:

Patients who are co-infected with HBV and HIV

These should be treated regardless of CD4 cell count, WHO disease stage, HIV viral load or HBV viral load

Category 3:

I. All patients who do not have clinical evidence of cirrhosis and have APRI score <2 but have;

II. Persistent elevation of ALT (measured on three occasions atleast every three months over a period of 6-12 months and this enzyme has remained high) after excluding other causes of liver enzyme (ALT) elevation such as alcohol intake, drugs or herbal use etc. If present, these conditions should be dealt with during the follow up period.

III. Hepatitis B viral load more than 20,000 IU/mL All these three conditions MUST be fulfilled for treatment decision. If these are fulfilled, then these persons should be treated

Note

Before treatment, all patients should have Renal Function Tests or urinalysis if RFTS are not available. This is done to ensure that the proposed anti-viral medications are not contraindicated.

2.5.3 Who Should Not Be Treated But Monitored

The following should not be treated for HBV but monitored for the using the following parameters;

1. Clinical evidence of cirrhosis (based on clinical findings or APRI <2)
2. Persistently normal liver enzymes (ALT)

2.5.4 Monitoring Patients With Chronic Hepatitis B Infection

The aim of monitoring these individuals is to identify a change in clinical status i.e. development of clinical features of cirrhosis which may indicate progression to active disease for patients that are not on treatment or to evaluate the effectiveness of treatment, adherence or adverse effects of treatment.

2.5.4a Patients who do not require treatment

These patients should have a general medical checkup at least once a year. They should also be seen any time when they have symptoms and signs of liver disease. During these visits, they should undergo the following tests ; ***(refer to table 2)***

2.5.4b Monitoring patients that are on antiviral treatment

i. Patients on treatment should be reviewed one month after initiating treatment and at three months to check if they are adhering to the medicine and if they have any side effects.
ii. At 6 months these patients should have a urinalysis or a renal function tests to assess for drug toxicity.
iii. Annual tests should be done to assess for response to treatment ***(refer to table 2)***

2.5.4c Monitoring for hepatocellular carcinoma

Routine screening for HCC with abdominal ultra sound and alpha-feto protein testing is recommended every six months for the following categories of patients;

i. Persons with cirrhosis, regardless of age or other risk factors
ii. Family history of HCC
iii. Persons aged over 40 years
iv. All persons at risk of HCC

2.5.5 DRUGS AVAILABLE FOR HEPATITIS B TREATMENT IN UGANDA

Tenofovir and Entecavir are the anti-viral drugs recommended for treatment of hepatitis B in Uganda

1. Children aged 2-11 years (who weigh at least 10 Kg) should be given Entecavirat a dose of 0.02mg/ kg, the medication is available in 0.5 and 1 mg strength.
2. Adolescents (above 12 years) and adults weighing at least 35 kg, administer Tenofovir 300mg once daily.
3. For HBV/HIV co-infected adolescents (weighing ≥ 30kg and

adults, a regimen containing Tenofovir is preferred i.e Tenofovir + Lamivudine + Efavirenz (TDF + 3TC + EFV) or Tenofovir + Lamivudine + Dolutegravir (TDF + 3TC + DTG) as a fixed dose combination when initiating ART.

Note:

- Renal function tests or at least a urinalysis is required at initiations of medications, at 6months and then annually.
- In case of elevated creatinine, all those who were initially on tenofovir should be switched to entecavir. (If seen at a lower health facility, a patient requiring switching of medications should be referred to a general hospital or higher for further evaluation of their renal disease).

2.5.6 DISCONTINUATION OF TREATMENT

HBV infection has no cure. This means when treatment is indicated for this disease, it should be administered for a long time and sometimes lifelong to avoid reactivation of the disease.However, in specific scenarios treatment can be stopped if a clinician is sure the patient will be closely followed up every 6-12 months while off treatment to detect recurrences.

Below are the scenarios when treatment can be discontinued;

1. For patients who start treatment when HBeAg is positive and they are not cirrhotic (baseline APRI score <2) treatment is administered until sero-conversion (loss of HBeAg and its replacement with anti-HBeAb), undetectable HBV viral loads, persistently normal ALT. When this seroconversion occurs, treatment should be continued for another 12 months after which it can be stopped. These individuals should also be monitored since recurrence can occur.
2. Regardless of prior HBeAg status, treatment can be stopped

one year after HBsAg becomes negative (functional cure). This seroconversion is a rare occurrence!

NOTE: Whenever off treatment the patient should still be monitored because of re-occurrence of disease or complications due to the disease.

2.5.7 HEPATITIS B AND SPECIAL POPULATIONS

2.5.7a Hepatitis B/HIV co-infection

Integration of HBV services into existing programs and avoiding stand-alone hepatitis programs is the recommended approach by WHO. The Ministry of Health will integrate hepatitis services into those of the already existing AIDS Control Program (ACP) at the regional, district and lower health facility level. At the national level, this service will be integrated into the existing specialized gastroenterology/hepatology clinics.

At facility level, services will be delivered using an integrated model of HBV/HIV service delivery, that is, services will be provided by the same health worker under the same roof (one stop shop model of HBV/HIV/TB services).

All patients with HBV should be screened for HIV and vice versa. Consequently, if a patient has HIV and HBV co-infection, antiretroviral therapy (ART) should be initiated as per the most recently approved national HIV guidelines. At least 2 drugs active against both HIV and HBV i.e. tenofovir + lamivudine should be included in the ART combination. The recommended regimens for adults are;

a) First line :Tenofovir + lamivudine + efavirenz (TDF+3TC+EFV) or Tenofovir+lamivudine + Dolutegravir TDF+3TC+DTG

b) Secondline:TDF+3TC+ATV/r
If for any reason if a patient is supposed to switch ART to another

combination, the drugs active against HBV should not be removed from the regimen as worse HBV outcomes may be experienced by the patient.

2.5.7b Children and adolescents

CHB is usually benign and asymptomatic in children, as they are generally in the immune-tolerant phase. In addition, there are low curative response rates with both nucleos(t)ide analogues (necessitating long-term therapy) and concerns over long-term safety and risks of drug resistance. For these reasons, a conservative approach to treatment is generally indicated, except in the presence of liver cirrhosis and/ or severe necro-inflammatory liver disease. These should be referred to a liver specialist for further management.

2.5.7c HBV and pregnancy

Mothers with HBV infection constitute a special group of high risk for care.In Africa, mother to child transmission is one of the most common routes through which newborn babies are infected with hepatitis B infection. Infection may occur during delivery or after delivery mainly in the puerperium than in infancy. Also infection occurs though horizontal routes possibly through sharing of sharp objects. Pregnant women will therefore need to be screened for HBV during ANC as part of the triple elimination of mother to child transmission.

Risk factors of mother to child transmission (MCT) of HBV include:

1 HBsAg positive mother or mother known to have chronic HBV infection
2 Positive test for hepatitis B e antigen in the mother
3 Mother with high HBV titres ≥ 200,000 IU
4 Unvaccinated babies born to HBsAg positive mothers
5 Invasive procedures such as amniocentesis

Problems associated with infection in pregnancy

Because HBV is endemic in Uganda all babies are at risk of infection with HBV especially if they are not vaccinated. Acute HBV infection can occur in a pregnant woman, though it is less common. Acute HBV infection can be life threatening both to the mother and the unborn child. Chronic HBV infection is more frequent than acute disease in the setting of pregnancy. Pregnant women with chronic hepatitis B virus (CHBV) have the same risk of complications (chronic hepatitis, liver fibrosis/ cirrhosis and all its complications, and HCC) as non-pregnant women with CHBV. However pregnant women with CHBV are more likely to transmit HBV to their babies if no ***post exposure prophylaxis*** is given.

The objectives of care of pregnant mothers at risk of HBV infection include

1. Early detection of CHBV through routine screening and diagnosis
2. Provide appropriate information, communication, and education to mothers and their families in regard to HBV.
3. Undertake timely appropriate investigations in the HBsAg mothers to determine eligibility for treatment and ensure proper follow up of HBV infected pregnant mothers
4. Provide appropriate post exposure for babies of HBV infected mothers

Testing (HBV screening/diagnosis)

Screening should be done by trained laboratory personnel or any other qualified health worker. This is best done in the first trimester.

The following tests should be done; HBsAg, HIV, VDRL or RPR,TPHA,CBC. Upon diagnosis, all mothers who test positive for HBsAg should be referred to a medical doctor at a HCIV, or general hospital or for further care and treatment.

Care of HBV negative mother

1. Information, Education and Communication, IEC about hepatitis B including; transmission, prevention, signs and symptoms

Care of HBV positive mother

1 IEC by trained health care workers including midwives

2 Investigations

- LFTS, RFTS, abdominal ultra sound scan, anti-HCV
- CBC
- HBV DNA at baseline (first trimester and/or 28 weeks) or at any time of presentation

3 Assessment of liver injury, liver fibrosis, and cirrhosis

4 Treatment of mothers that are eligible

5 Prevention of MTC through appropriate post exposure prophylaxis (PEP)

Treatment of a pregnant mother with chronic HBV

Note: *that for a pregnant mother with hepatitis B there are 2 forms of treatment:*

1. Assess if mother is eligible for treatment as per treatment categories in general population (Refer to page 26)
2. Treatment of mother to prevent mother to child transmission of HBV

If mother doesn't meet the eligibility criteria for treatment based on categories in the general population **(Refer to page 30-31)**, she should then be assessed for eligibility for a short course of antiviral medication with the aim to prevent mother to child transmission (PMTCT) of HBV **(Refer to figure 6)**

PMCT care should be provided in all mothers who are HBeAg positiv

PMCT care should be provided in all mothers who are HBeAg positive and/or viral load> 200,000 IU/mL. In this case tenofovir is provided preferably at 24 weeks of gestation or at the earliest contact and continued for three months post-delivery. Mother should then

be monitored at 4, 8, 12, 24 weeks and then annually with liver function tests. HBV viral load should also be tested at 6 and then 12 months for evidence of HBV reactivation. **(For monitoring beyond 12 months, refer to table 2**)

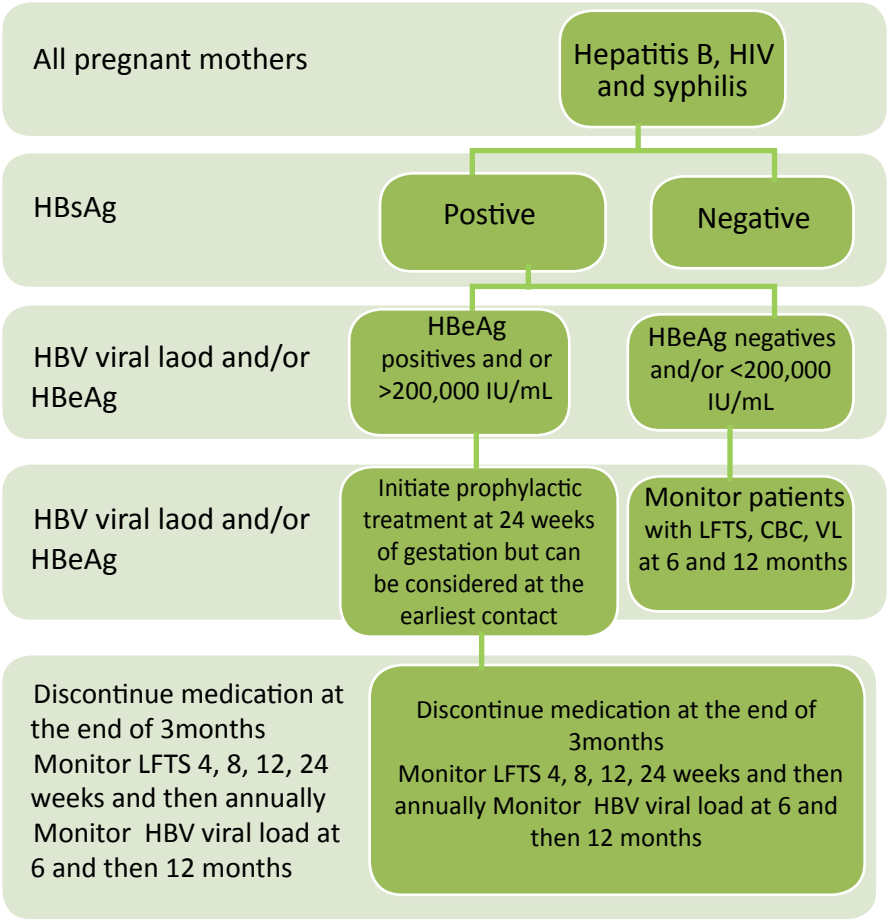
Care of neonate borne to a mother with Chronic HBV infection (Post exposure prophylaxis)

The goal is to prevent MCT and is focused on the baby;
Active immunization Birth dose (should receive the monovalent HBV vaccine preferably within 24hours as it works best during this period but can be considered at the first contact before 6 weeks), then usual childhood vaccine schedule (routine national Expanded Program on immunization complete the pentavalent vaccine schedule at 6, 10, 14 weeks) Passive immunization–Hepatitis B Immunoglobulin – if available should be given to all babies born to HBV positive mothers. The Hepatitis B Immunoglobulin (HBIG) is given soon after delivery but preferably not more than 72 hours (if available) after birth.

Note:

- HBIG and Birth dose HBV vaccination should not be delivered on the same thigh but opposite thighs
- All HIV positive mothers should have PMCT care done as for other HIV infected mothers plus HBV vaccination and HBIG for the babies and continuation of treatment with at least 2 drugs active against both HBV and HIV as part the ART regimen. (Refer to the general guideline for treatment of HBV/HIV coinfection)

Figure 6: Algorithm for management of HBsAg positive in pregnancy with the aim of (PMTCT)



CHAPTER THREE

HEPATITIS C VIRUS INFECTION

3.1 HEPATITIS C VIRUS TRANSMISSION

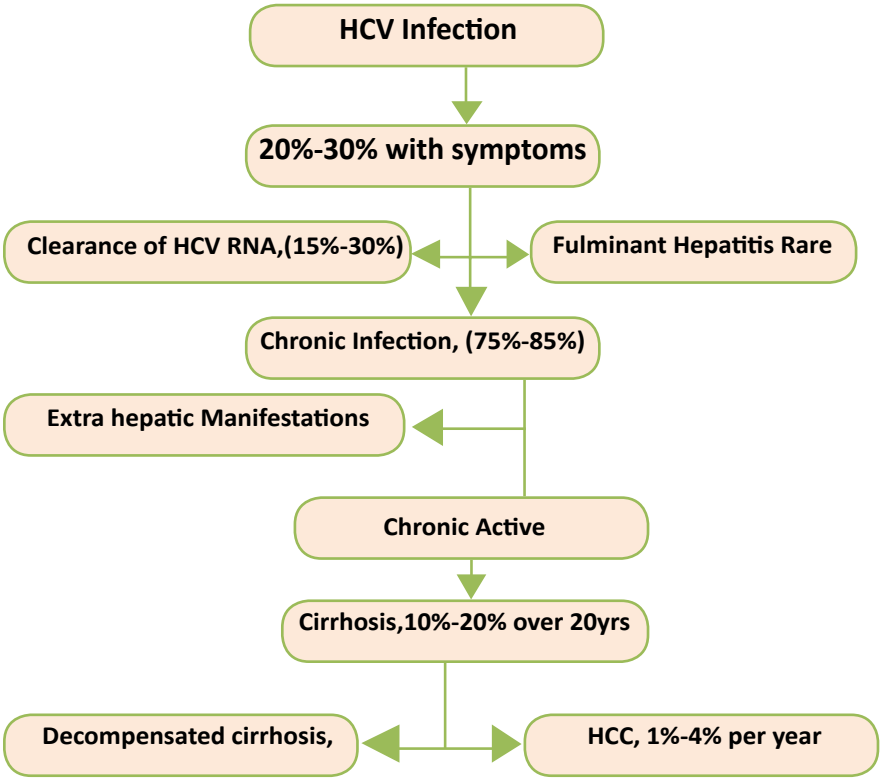
The exact mode of HCV transmission in Uganda has not been well characterized. As opposed to most developed countries where HCV transmission is primarily through injection drug use, the use of unsterile equipment for tribal markings, unsafe injections practices and other procedures especially where infection control measures are insufficient, and use of unscreened blood for transfusions are probably the main predisposing factors in developing countries.

3.2 NATURAL HISTORY AND CONSEQUENCES OF HEPATITIS C INFECTION

Hepatitis C causes both acute and chronic infection. Approximately 15%-45% of people infected with HCV spontaneously clear the infection within six months of the infection. The remaining 55%-85% progress to chronic infection and may present with complications such as liver fibrosis, liver failure and hepatocellular carcinoma. The risk of liver cirrhosis ranges from 15%-30% after 20 years of infection with HCV. The risk of progression to cirrhosis and HCC depends on the person's characteristics and behaviours such as alcohol use, HBV or HIV coinfection and immunosuppression caused by other disease conditions.

HCV infection can lead to extrahepatic manifestations. These include; depression, diabetes mellitus and chronic renal disease and are usually independent of the degree of liver fibrosis.

Figure 7: Diagram showing the natural history of HCV



3.4 HCV TESTING

3.4.1 Initial screening for hepatitis B virus infection

3.4.1a RDT test

This is an HCV antibody test. It tests for serological evidence of past and present HCV infection. Unlike HBV testing where a positive HBsAg test indicates infection, a positive HCV screening test (Anti-HCV) does not necessarily mean active infection. Therefore this is the initial step in diagnosis of HCV and a single RDT is recommended for initial detection of antibodies. These will be validated for wider use by NDA.

3.4.1b Laboratory-based immunoassay

Laboratory-based immunoassays such as;
ELISA, chemoluminescence immunoassay can also be used to detect antibodies to HCV. If available, they may also be used to test for antibodies to HCV.

3.4.1c Confirmation

Following a reactive HCV antibody serological test, a quantitative or qualitative Nucleic Acid Test (NAT) for detection of HCV RNA is recommended to diagnose HCV infection. Detection of core HCV antigen where the assy has comparable clinical sensitivity to NAT technologies may be considered as an alternative.

3.4.1d HCV treatment response

During assessment of HCV treatment response, a quantitative or qualitative NAT for detection of HCV RNA should be used as a test of cure at 12 or 24 weeks (sustained virological response, SVR12 or SVR24) after completion of antiviral treatment.

3.4.1e HCV RNA Genotyping

There are six HCV genotypes (1-6). When available, genotyping for HCV should be carried out to determine optimal treatment. However with the introduction of pan-genotypic directly acting antiviral, DAA regimens which provide high efficacy across all genotypes and a high safety profile, genotyping may not be necessary.

3.4.2 Where to test from;

1. Anti- HCV RDT test

- Health facility (from HCII to the highest level)
- Community outreaches.
- Blood banks

2. Nucleic Acid Testing, NAT

The Nucleic Acid Testingfor HCV RNA will be performed only on anti-HCV positive samples. This test will be performed from the Uganda National Health Laboratory Services (UNHLS) at Butabika,

Kampala. The samples (Dried blood Spot, DBS or plasma) will be transported through the National sample transport system to UNHLS for this test. All the samples should be accompanied by a properly filled HCV laboratory request form for this test. Upon completion of testing, the results will be sent back to the health facilities.

3.4.3 Samples for initial HBsAg testing

- Whole blood (dried blood spot)
- Plasma
- Serum

3.4.4 Who to screen?

- Liver enzyme elevations, liver fibrosis, liver cirrhosis
- Kidney disease, vasculitis, diabetes, depression, sickle cell disease, patients on hemodialysis, chronic fatigue syndrome, and gastroesophageal reflux disease, B cell Lymphoma
- History of unsafe injection practices, multiple blood transfusions or use of blood products
- People who inject drugs

3.5 MANAGEMENT OF HEPATITIS C

3.5.1 Introduction

Hepatitis C virus can be cured. Several new medicines also now called direct acting antiviral agents (DAA) have induced cure and improved treatment outcomes. In non-cirrhotic patients cure takes 12 weeks on this oral medication taken once a day. For cirrhotic treatment will take 24 weeks and in some cases with inclusion of ribavirin.

3.5.2 Types of response

End of treatment response (EOT): Inability to detect virus (HCV RNA) Td of treatment in a person who had undetected HCV RNA 12 weeks after end of treatment in one who had undetectable virus at end of treatment. This is also defined as **"CURE".**

The goals of treatment are therefore aimed at;

1. Achieving a sustained virologic response (SVR) or to cure the infection
2. Prevent disease progression to complications
3. To prevent transmission of HCV infection
4. Improve quality of life

3.5.3 Drugs available for Hepatitis C treatment

Pan-genotypic DAAs regimes are recommended as they are highly efficacious and provide high efficacy across all genotypes with a high safety profile. These include; sofosbuvir/daclatasvir, sofosbuvir/velpatasvir.

Pangenotypic regimens currently available for use in adults 18 years of age or older For adults without cirrhosis, the following pangenotypic regimens can be used:

- Sofosbuvir/velpatasvir 12 weeks
- Sofosbuvir/daclatasvir 12 weeks

For adults with compensated cirrhosis, the following pangenotypic regimens can be used:

- Sofosbuvir/velpatasvir 12 weeks
- Sofosbuvir/daclatasvir 24 weeks

In adolescents aged 12–17 years or weighing at least 35 kg with chronic HCV infection, use:

- sofosbuvir/ledipasvir for 12 weeks in genotypes 1, 4, 5 and 6
- sofosbuvir/ribavirin for 12 weeks in genotype 2
- Sofosbuvir/ribavirin for 24 weeks in genotype 3.

In children aged less than 12 years with chronic hepatitis C deferring treatment until 12 years of age in those without cirrhosis or with only compensated cirrhosis is recommended.

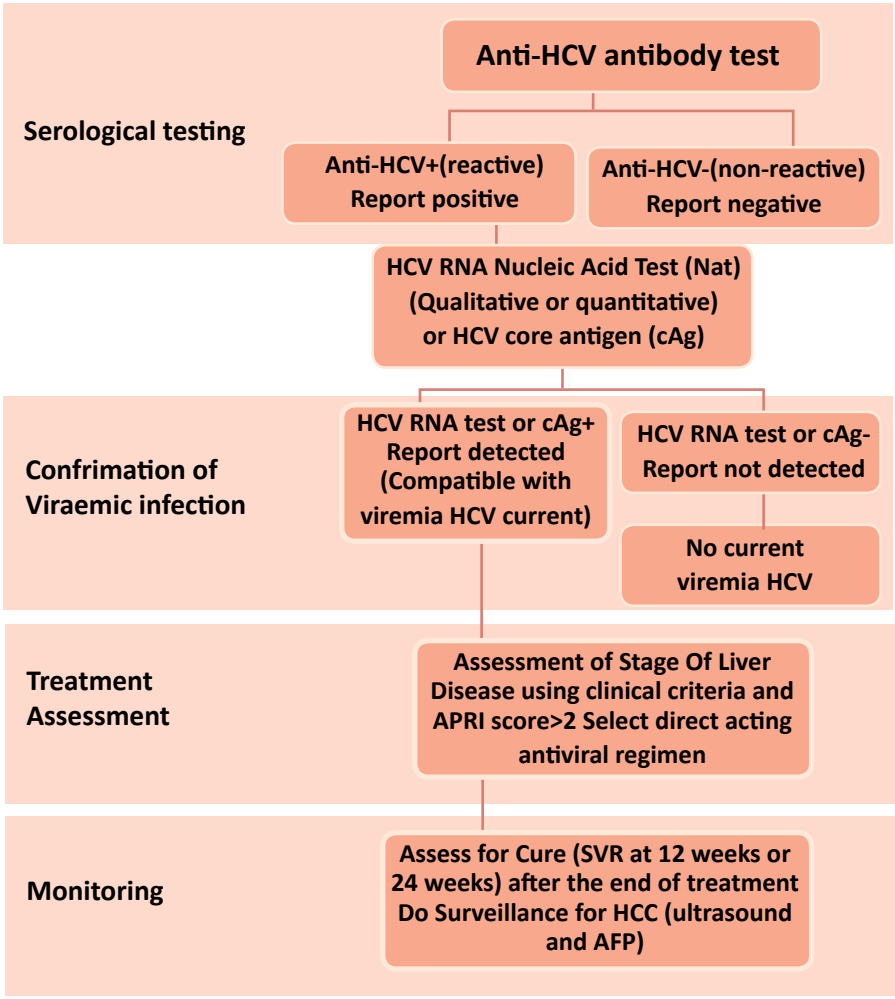
3.5.4 Where should patients be treated and by whom?

Specialist centers under the care of specialists because of need for long term follow up, complexity of drug interactions, presence of liver cirrhosis/ co-morbidities such as diabetes, depression, B lymphoma

3.5.4 Who to treat?

- All persons with active HCV infection i.e. detectable RNA are candidates for treatment if there are no contraindications.
- However in case of prioritization, treat:
- Persons with moderate to severe fibrosis including decompensated cirrhosis
- High risk of HCV transmission e.g. IVD users, Men having sex with men (MSM),
- Women in their reproductive ages
- Persons with extrahepatic manifestations
- Patients with HIV co-infection
- Patients with HBV coinfection

Figure 8: Summary algorithm of approach to a patient who is HCV antibody positive



CHAPTER FOUR

4.1 SURVEILLANCE

Definition

Surveillance is ongoing systematic identification, collection, collation, analysis and interpretation of disease occurrenceto take timely and robust action. Surveillance is essential for planning, implementation, monitoring and evaluation

4.1.1 Surveillance goals:

1) To detect disease outbreak
2) To estimate burden of disease
3) To identify population /areas at high risk therefore targeting prevention and control measures
4) To measure the impact of control measures
5) To measure impact of treatment on mortality reduction

4.1.2 Standard case definition

Acute Viral Hepatitis

a. Suspected case: Any person with acute illness typically including acute jaundice, fever, fatigue, malaise, anorexia, nausea dark coloured urine and right upper quadrant tenderness and/or raised alanine aminotransferance (ALT) levels more than ten times the upper normal limit.
b. Confirmed case: A suspected case that is laboratory confirmed by virus specific biomarkers (HBsAg, IgM anti-HBc (IgG) positive)

Chronic hepatitis B

- Persistence of hepatitis B surface antigen (HBsAg) for six months or more after acute infection
- HBsAg is present with positive anti-HBc-IgG

Chronic hepatitis C

- Hepatitis c virus RNA present in a paerson with antibodies against hepatitis C (Anti-HCV positive)
- HCV RNA positive or HCV core antigen positive
  Antibody detection (i.e HCV Ab positive) cannot differentiate between acute, chronic infection and past infection.

4.1.3 Types of surveillance for HBV and HCV

I. Surveillance of acute infection- this is done to identify sources of new infections. It is usually performed at health care settings. The timely identification of persons recently infected with HBV provides the opportunity to counsel the infected individual and to identify susceptible contacts requiring post-exposure prophylaxis early enough to prevent further transmission. By monitoring the exposures of recently infected persons, surveillance for acute disease also provides the information critical for identifying outbreaks of HBV that, while uncommon, do occur.

II. Surveillance of chronic infection- this is done to estimate the number of persons with Chronic HBV/HCV. It is done by screening the general population, high risk populations like health care workers, prisoners among others.

III. Surveillance of sequel of Chronic HBV/HCV infection- this is done to measure the impact of treatment and mortality reduction.
All blood screened for HBV and HCV at the regional blood banks and Uganda Blood Bank Transfusion Services, UBTS should be captured. Persons diagnosed with HBV/HCV, HBV/HCV-related HCC and deaths due to HBV related diseases should be captured in a registry at either the Uganda Cancer Institute, hospitals or HCIVs. This data should then be summarized and entered monthly into District Health Information System 2, (DHIS2).

4.2 ADHERENCE MONITORING

4.2.1 Introduction

Adherence to treatment is a critical requirement for achievement of positive treatment outcomes. It is important to engage the patients in a friendly manner, understand their challenges and address them concretely so they can adhere to their treatment. Adherence, describes the degree to which a patient correctly follows medical advice. Most commonly, it refers to medication or drug compliance, but it can also apply to other situations such as medical device use, self-care, self-directed exercises, or therapy sessions.

Adherence to antiviral therapy is critical if patients are to achieve and maintain undetectable viral loads and prevent liver complications. Drug adherence is a key part of antiviral therapy. It refers to the whole process from choosing, starting, managing to maintaining a given therapeutic medication regimen to control HBV viral multiplication and improve function of the immune system. The significance of adherence to treatment has become recognized in optimizing the patient's response to therapy.

Non-adherence is the discontinuity or cessation of part or all of the treatment such as dose missing, under dosing, or overdosing, and drug holiday and can lead to treatment failure, a rise in plasma viral load, and the development of drug-resistant HBV strains.
It is therefore important for the Health worker to emphasize adherence to treatment during the initiation of treatment process.

4.2.2 Adherence preparation

Before initiating therapy, adherence must be made part of the patient's continuous care. Learn as much as possible about the patient's health and treatment history, level of literacy, beliefs and attitudes about HBV, social support, socio-economic status,

alcohol and drug use, mental health and any other issues which may be potential barriers to adherence.

Lack of family support contributes significantly to patient's failure to adhere to treatment.

Patients with mental illness may not fully comprehend the treatment advice provided by the health workers. The health worker therefore needs to take due cognizance of all the above factors while initiating the patient on treatment.

4.2.3 Assessment of adherence

The patients may express their failure to adhere in a subtle and unclear way. The Health workers and care takers need to be sensitive and supportive to the patient and provide guidance to maintain their medication.

4.2.4 How to assess adherence

- Ask the patients which medicines he is taking, how often and when;
- Ask the patients if they have maintained taking their medication as advised and why they

could have missed (please do not threaten but gently probe);

- Ask the patient when they last picked their medication (establish whether this is in line with their prescribed dates, whether they got what they needed;)
- Ask the patient how they feel taking the medication (probe for disclosure);

4.2.5 Strategies for improving adherence

- Establishing trust between patient and the healthcare team
- Assure the patient of your support and confidentiality
- Communicate with the patient humanely
- Educate, inform patients and serve as a source of information
- If transport is an issue, provide medications that last longer before next refill

- Anticipate and treat side effects. Inform the patient early enough about some of the side effects that they may experience
- Demonstrate reflective listening
- Determine the level of adherence
- Check the last refill date and how long it has taken the patient to return
- Inquire about remaining medication

4.2.6 How to help patients who have failed to adhere to their medication

- Establish the reasons for failure to adhere
- Take proper detailed medication history
- Explain to the patient and care givers the complications that could occur for non-adherence including; resistance to the medication, possible infection of close contacts and liver complication

4.3 CARE AND SUPPORT

4.3.1 Introduction

Care and support, in the context of CHB and CHC infection, means catering to the needs for people infected with hepatitis B and hepatitis C and providing appropriate support for them, their families and care givers. Care and support adds to the holistic facility-based multidisciplinary and patient focused care for persons infected.

4.3.2 Nutritional support

People with CHB and CHC infection will thrive best on a balanced diet.

4.3.3 Life style and behavioral change

Behavioral changes that should be encouraged to reduce risk of progression to chronic liver disease and transmission of HBV and HCV include:

- Cessation of alcohol abuse
- Avoid herbal medicines
- Avoid indiscriminate use of over the counter medicine

They should be counseled on how the virus is transmitted and how this transmission can be prevented.

4.3.4 Ongoing psychosocial care and support

- Counselling aspects after diagnosis
- Marriage issues, discordancy, e.t.c

4.4 MONITORING AND EVALUATION

4.4.1 Introduction

A comprehensive and well-functioning monitoring and evaluation (M&E) framework is essential to ensure that the hepatitis program is effective and efficient. This section gives a guidance on the key indicators to be monitored monthly and evaluated annually.

The following are the key HBV and HCV indicators to be monitored (annex 3)

- Prevalence of Chronic HBV, HCV infection
- Infrastructure for HBV and HCV testing
- Vaccine coverage; Third-dose hepatitis B vaccine for infants, first-dose hepatitis B vaccine among adolescents and adults, third-dose hepatitis B vaccine among adolescents and adults
- Facility level injection safety
- Number of people living withHBV and HCV diagnosed
- Treatment coverage; initiation for HBV /HCV patients
- Viral suppression for CHB patients treated/ HCV patients treated
- Cumulative incidence of HBV in children under 5 years of age/ Incidence of HCV infections
- Deaths from HCC, cirrhosis and liver diseases due to HBV/HCV infection

4.4.2 Reporting

Health facilities should submit timely reports of aggregated patient data on a monthly basis. The monthly reports shall then be entered into DHIS-2. The different reports and frequency of submission are as stated below.

Table 4: Routine reports and their frequency

Report	Description	Source documents	Frequency	Source
HMIS 105: Health Unit Outpatient Monthly Report	Reports the monthly attendance figures for OPD, OPD diagnoses, MCH, HIV/AIDS service data, laboratory data, stock-out of essential drugs and supplies	Hepatitis B and C care and treatment register Hepatitis B vaccination register Laboratory daily activity registers	Monthly	DHIS-2
HMIS 108: Health Unit Inpatient monthly report	Reports on monthly admissions figures, cases and deaths	Inpatient register	Monthly	DHIS-2
HMIS 033B: Health Unit Weekly Epidemiological Surveillance Report	Reports cases of notifiable diseases after the first few cases have been notified.	Hepatitis Band C care and treatment register Hepatitis B vaccination register Laboratory daily activity registers	Weekly	DHIS-2

4.4.3 Routine supervision and data auditing

Supervision of all HBV and HCV control activities shall be done on a quartely basis by the Ministry of Health at the health facilities, district and regional referral hospitals. This will be done to ensure adherence to stardards and data quality.

4.4.4 Data use

The information generated from the M&E system shall be disseminated promptly and shall guide decision making.

4.5 Research

The Hepatitis B unit under Clinical Services Department at MOH in collaboration with the academia, the UGS and other programs such as ACP will periodically conduct research studies to inform the disease burden ofCHB and CHC and studies to evaluate the impact of HBV and HCV control activities.

4.6 Capacity building

The Ministry of Health shall develop a standardized training curriculum and manuals for both the facilitators and health care providers involved in care of patients with HBV and HCV infection. These cadres will include; medical doctors, clinical officers, nurses, laboratory staff and counsellors. Training sessions for health workers and stakeholders will be organized at national, regional and district levels.

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8. CDC(2013) 'Interpretation of Results of Tests for Hepatitis C Virus (HCV) Infection and Further Actions'

ANNEX 1: HBV/HCV LABORATORY REQUEST FORM

MINISTRY OF HEALTH	MINISTRY OF HEALTH UGANDA NATIONAL HEALTH LABORATORY SERVICES P.O.Box 7272, Plot 1062-106 Butabika Road, Luzira Toll free line 0800-221100 Email: customercare@cphl.go.ug	S No.

Laboratory Request form for Hepatitis B and C Nucleic Acid Testing

To be completed by Health Facility Clinician in duplicate:

Facility details

Facility Name:_____District:_____HUB: _____

Requesting Clinician's Name:_____Tel:_____

Patient details:

☐ Hepatitis B viral load test ☐ Hepatitis C qualitative PCR ☐ Hepatitis C viral load test

Hepatitis clinic number_____Gender: ☐ Male ☐ Female Phone Number +256_____

Other ID:_____ Age in Years:._____

Indication for Hepatitis Testing:

☐ Routine Monitoring ☐ Treatment Initiation ☐ HCV confirmation

If Routine Monitoring: Last Viral Load Value: _____ Last Viral Load Date:__DD/MM/YYYY_____

Disease status/Co-Infections

HB e Ag status: ☐ Positive: ☐ Negative: HIV status: ☐ Positive: ☐ Negative:

Hepatitis B Treatment information:

Regimen: ☐ Tenofovir ☐ Entecavir Date of Treatment Initiation: __DD/MM/YYYY__ ☐ Not on treatment

Indication for Treatment initiation: ☐ Cirrhosis/APRI>2 ☐ Viral Load >20,000 IU/ML ☐ ALT/AST persistently abnormal ☐ HIV Co-Infection

ART regimen if HBV/HIV co infected:_____

Is patient pregnant? ☐ Yes ☐ No Is patient Breastfeeding? ☐ Yes ☐ No

Hepatitis C treatment information

Regimen_____

Date of treatment initiation: ___DD/MM/YYYY_____ Date treatment was stopped:___DD/MM/YYYY_____

If Routine Monitoring for Hep C: ☐ Hep C Viral Load at 12 weeks ☐ Hep C Viral Load at 24 weeks

If monitoring Hepatitis C Viral Load at 24 weeks, result of 12 weeks VL_____Date:_____

Sample identification information: To be completed by Health Facility Laboratory Staff

Sample Details

Date and time of Sample Collection:_____Date and time of Sample centrifugation:_____sample type: ☐ Plasma

Name of Lab person:_____ Phone: +256_____

BIOSPECIMEN STORES BROAD CONSENT: To be completed by Clinician

ACCEPT or DECLINE National Birepository to Store and use my left-over biospecimen for future ethically approved research

Signature/Thumprint:_____Date:_____

ANNEX 2: INTERPRETATION OF HEPATITIS B MARKERS

anti-HBc, hepatitis B core antibody; anti-HBs, hepatitis B surface antibody; HBsAg, hepatitis B surface antigen; HBV, hepatitis B virus; IgM, immunoglobulin M, HBeAg, anti-HBeAb, HBV viral loads (HBV DNA)

HBsAg	Anti HBcAb (Total)	Anti HBcAb (IgM)	Anti HBsAb	HBeAg	Anti HBeAb	HBV DNA (Reported as IU/mL or Copies /mL. 1 IU/mL= 5.3 copies/mL)	Interpretation
+	+	-	-	+	-	Detectable or undetectable	Chronic infection with HBeAg positive virus, vaccination not required. Treatment may be needed, depending on other parameters
+	-	+	-	+	-	Detectable	Acute HBV infection. No vaccination, no treatment required
-	+	-	+	-	-	----------	Resolved infection. No vaccination required
+	+	-	-	-	+	+	Chronic infection, with negative HBeAg No vaccination required
-	-	-	-	-	-	----------	No need to perform DNA test. Not exposed, vaccination may be required

ANNEX 3: INTERPRETATION OF TEST RESULTS FOR HCV INFECTION AND FURTHER ACTION

	detected	• If recent HCV exposure un person tested is suspected, test for HCV RNA˚.
HCV antibody reactive	**Presumptive HCV infection**	• A repeatedly reactive result is consistent with current HCV infection, or past HCV Infection that has resolved, or biologic false positivity for HCV antibody. Test for HCV RNA to identify current infection
HCV antibody reactive, HCV RNA detected	**Current HCV infection**	• Provide person tested with appropriate counseling and link person tested to medical care and treatment[I]
HCV antibody reactive, HCV RNA not detected	**No current HCV Infection**	• No further action required in most cases. • If distinction between true positivity and biologic false positivity for HCV antibody is desired, and if sample is repeatedly reactive in initial test, test with another HCV antibody assay. • In certain situations follow up with HCV RNA testing and appropriate counseling

˚If HCV RNA testing is not feasible and person tested is not immunocompromised, do follow-up testing for HCV antibody to demonstrate seroconversion. If the person tested is immunocompromised, consider testing for HCV RNA.

[I] It is recommended before initiating antiviral therapy to retest for HCV RNA in a subsequent blood sample to confirm HCV RNA positivity.

˜If the person tested is suspected of having HCV exposure within the past 6 months, or has clinical evidence of HCV disease, or if there is concern regarding the handling or storage of the test specimen.

ANNEX 4: KEY HBV AND HCV INDICATORS

No	INDICATOR	NUMERATOR	DATA SOURCE-NUMERATOR	DENOMINATOR	DATA SOURCE-DENOMINATOR	REPORTING FREQUENCY
1	Prevalence of chronic HBV infection Prevalence of chronic HCV infection	Number of people tested HBsAg positive	Prevalence of infection in blood donors, pregnant women or other groups (HIV infected, recent Population based surveys	Estimated national population	Recent country population surveys	Monthly
2	Infrastructure for HBV testingand HCV testing	Number of health care facilities performing screening for Hepatitis B	Data from the national reference laboratory, Health care surveys, interviews with stakeholders, program manager, data from UNHL	Total Number of health facilities	MFL/DHIS2	Monthly
3	Coverage of first-dose hepatitis B vaccine among adolescents and adults	Number of adolescents and adults(>16years) who have received first dose of Hepatitis B vaccine	Reports from health centers III, IV, General hospitals	Total Number of those tested negative	DHIS2	Monthly
4	Coverage of third-dose hepatitis B vaccine among adolescents and adults	Number of adolescents and adults(>16years) who have completed the third dose of Hepatitis B vaccine	Reports from health facilities	Total Number of clients who received the first dose	DHIS2	Monthly
5	Coverage of third-dose hepatitis B vaccine among infants		Reports from health facilities	-	Recent immunization coverage surveys	Quarterly
6	Treatment coverage for hepatitis B / C patients	Number of Hepatitis B/C patients who have been initiated on treatment	Aggregated reports from treatment centers	National prevalence estimates	Recent population based biomarker surveys	Monthly
7	Viral suppression for chronic hepatitis B / cure for chronic hepatitis C patients treated	Number pf patients with viral suppression/cured	Aggregated report from treatment centers	Number of Hepatitis B/C patients who have been initiated on treatment	Reports from treatment centers	Monthly

8	Deaths from HCC, cirrhosis and liver diseases with Hepatitis B/hepatitis C	Number of patients with mortality from HCC / cirrhosis	National vital statistics data National cancer registries	National prevalence estimates	Death registry	Monthly
9	Proportion of facility-level injection safety	Number of safe health care injections	Health care facility surveys (inspection of injection practices)	-	-	
10	Cumulated incidence of HBV infection in children 5 years of age/ **Incidence of HCV infection**	Number of children under 5 years of positive for HBsAg	Recent population based surveys Estimate modelled on the basis of multiple biomarker surveys	-	-	

ANNEX 5: SAMPLE KEY MESSAGES TO THE GENERAL PUBLIC

Hepatitis B Fact Sheet for General Public

Introduction; Hepatitis is ravaging quite many communities in Uganda and has caused a lot of suffering among various populations. This is mainly due to limited awareness of the cause of the disease, how it is spread and how it is treated. The Ministry of Health with various partners have developed this fact sheet to provide basic information about this disease. It is intended to provide basic information only. Further information should be sought from a trained Health worker.

What is Hepatitis B?

Hepatitis B is a disease that affects the liver and is caused by Hepatitis B virus

Mode of transmission/spread Hepatitis B spreads through:

- Transmission from an infected mother to the newborn baby
- Unprotected sexual contact
- Sharing sharp objects like needles, including instruments used for tribal markings
- Unsafe blood transfusion

Treatment

- Treatment for Hepatitis B is available but not everyone with Hepatitis B requires treatment, a patient must talk to their doctors to decide whether to start treatment. Treatment can be found in all referral hospitals across the country. Treatment for Hepatitis B does not kill the virus and it is taken for a long time and sometimes for life.

Prevention/Control

- Ministry of Health incorporated the HEP B vaccine to its routine vaccination to all children at the age of 6, 10, and 14 weeks. Parents are advised to take their children for immunization. Adult vaccination is currently going on in phase based approach. Three doses of the Hepatitis B vaccine must be administered on the arm. And all the 3 doses should be administered to achieve full protection at 0, 1 & 6 months. The vaccine protects for life. Avoid sharing sharp instruments, be faithful to your partners and encourage people to test for Hepatitis B to know their status.

Note:

- **Hepatitis B is not spread through food and water, sharing eating utensils, breast feeding, hugging, kissing, shaking hands, coughing, sneezing, sweat or witchcraft.**

Complications associated to hepatitis B

- Hepatitis B may cause life threatening complications like liver cancer, scarring of the liver, liver failure and eventually death.

For further information: ***Contact the nearest Health worker or District Health Officer***