Understanding your epidemic: WHO tools for hepatitis surveillance

World Health Organization

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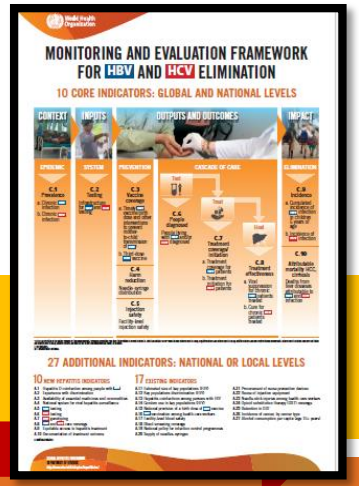
25 October 2018, Moscow, Russian Federation, VHPB Country Meeting

Monitoring and evaluation (M&E) framework for HBV and HCV



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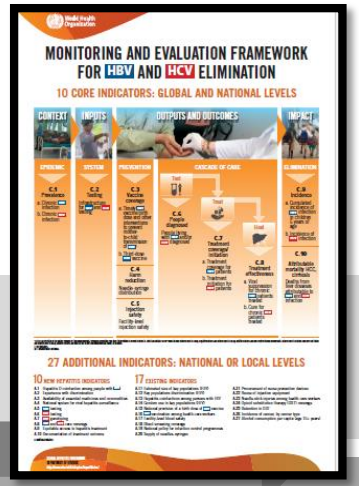
Context → **Inputs** → **Output & outcomes** → **Impact**

Cascade of care: **Prevent** → **Test** → **Treat** → **Heal**

Context	Inputs	Prevent	Test	Treat	Heal	Impact
Epidemic	System					Elimination
C1. Prevalence	**C2. Testing facilities**	**C3. Vaccine coverage** **C4. Needle syringe for PWID** **C5. Injection safety**	**C.6 People diagnosed**	**C.7 Treatment coverage / initiation**	**C.8 Viral supression (HBV) or cure (HCV)**	**C.9 Incidence** **C.10 Mortality from HCC, cirrhosis**

Components of the M&E framework that require surveillance data



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Epidemic

C1. Prevalence

System

C2. Testing facilities

Cascade of care

Prevent	Test	Treat	Heal
C3. Vaccine coverage	**C.6 People diagnosed**	**C.7 Treatment coverage / initiation**	**C.8 Viral supression (HBV) or cure (HCV)**
C4. Needle syringe for PWID			
C5. Injection safety			

Elimination

C.9 Incidence

C.10 Mortality from HCC, cirrhosis

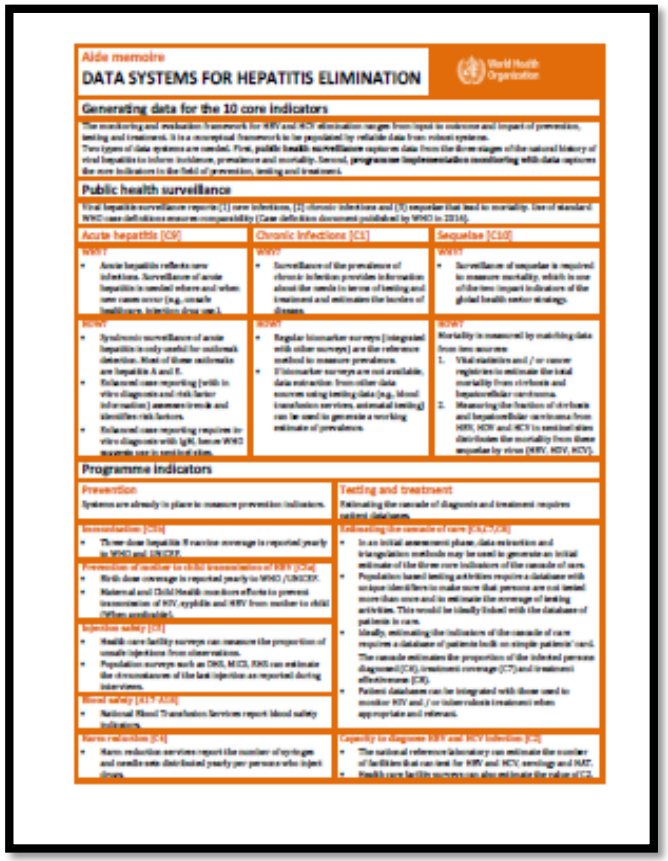
Data systems for hepatitis elimination

Hepatitis surveillance

1. Acute hepatitis that reflect new infections
2. Chronic infections
3. Sequelae

Programme data

- Prevention indicators
- Patient databases for the cascade of care and cure


Aide memoire

DATA SYSTEMS FOR HEPATITIS ELIMINATION

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Generating data for the 10 core indicators

Public health surveillance

Acute hepatitis [C9]

Chronic infections [C5]

Sequelae [C10]

Programme indicators

Prevention

Testing and treatment

The specificity of viral hepatitis surveillance

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Large time lag between incidence, prevalence and mortality

Classical communicable disease surveillance

- Acute infections
- Deaths from acute infections, rapidly after initial infection
- Need to capture incidence of acute cases, including case fatality
- Cases definitions limited to acute cases

Viral hepatitis surveillance

- Acute, then chronic infections
- Deaths many years later from sequelae of chronic infections
- Need to capture incidence, prevalence and mortality. Time lag incidence / deaths.
- Cases definitions for acute cases, chronic cases and sequelae

The 3 legs of viral hepatitis surveillance

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1. Detect outbreaks, monitor trends in incidence and identify risk factors for new, incident infections	**2.** Estimate the prevalence of chronic infections and monitor trends in sentinel groups	**3.** Estimate the burden of sequelae
Surveillance for acute hepatitis	**Surveillance for chronic infections**	**Surveillance for cirrhosis and HCC**
Impact monitoring	**Initial assessment**	**Impact monitoring**

The 3 legs of viral hepatitis surveillance

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1. Detect outbreaks, monitor trends in incidence and identify risk factors for new, incident infections

2. Estimate the prevalence of chronic infections and monitor trends in sentinel groups

3. Estimate the burden of sequelae

Surveillance for acute hepatitis

Impact monitoring

Surveillance for chronic infections

Initial assessment

Surveillance for cirrhosis and HCC

Impact monitoring

Acute hepatitis surveillance: enhanced case reporting for trends, risk factors

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	Syndromic surveillance: Usually there	Enhanced case reporting: Needed
Case definitions	Clinical	Type specific – IgM diagnosis
Data collection	Basic demographics	Risk factors
Objectives	Outbreak detection	Trends, risk factors
Scale	Nationwide	Mostly sentinel

HAV HEV HBV HCV

Case definitions for acute hepatitis

Level	Acute hepatitis			
Suspect case: Clinical criteria	Discrete onset of an acute illness with signs or symptoms of (a) acute viral illness and (b) hepatic injury (liver enzymes)			
Confirmed case: Clinical criteria AND epidemiological criteria or biomarker criteria	**HAV**	**HEV**	**HBV**	**HCV**
	IgM anti-HAV + OR	IgM anti-HEV + OR	IgM anti-HBc +	Anti HCV + AND All IgM – for HAV, HEV, and anti-HBc OR
	Epidemiological link with a confirmed case	Epidemiological link with a confirmed case		RNA +/ Anti-HCV – OR
				Sero-conversion Anti-HCV

Acute hepatitis less common than chronic hepatitis: Definitions must be as specific as possible

The 3 legs of viral hepatitis surveillance

World Health Organization

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Surveillance for acute hepatitis	**Surveillance for chronic infections**	**Surveillance for cirrhosis and HCC**
Impact monitoring	**Initial assessment**	**Impact monitoring**

Integrations are key to reduce cost of biomarker surveys

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Viral hepatitis

- Add adults to surveys to estimate impact of hepatitis B vaccine
  - Children: Estimate impact among those vaccinated
  - Adults: Estimate size of infected population

HIV surveys

- Demographic and health surveys [DHS] (Left over specimens)
- AIDS indicator surveys

Immunization

- Coverage surveys
- Population surveys of measles /rubella immunity

Context analysis

Lots of guidance available

- Immunization manual
  - General
  - Sampling methods
- HIV
  - WHO / UNAIDS guide

Protocol writing remains a road block

- Writing is time consuming
- Technical issues needs attention

8 questions for stakeholders to address

1. What hepatitis viruses require estimates?
2. For what population(s) are (the) estimate(s) needed?
3. For what sub-groups are estimates needed? e.g., age groups
4. Are synergies envisaged for the survey?
5. How will participants be sampled from the population?
6. What techniques will be used for specimen collection?
7. What kind of in vitro-diagnosis will be used?
8. What strategy will be used to return results?

The 3 legs of viral hepatitis surveillance

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Sequelae surveillance protocol: Introduction

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Justification

- Most countries lack a system to estimate the proportion of cirrhosis/HCC attributable to hepatitis viruses versus other causes
- Sentinel surveillance in sites of excellence can generate data on the attributable fraction

Objectives

- Recruit a sample of patients with cirrhosis and HCC
- Assess the HBV and HCV status of cirrhosis and HCC patients
- Estimate the proportion of cirrhosis and HCC with HBV/HCV infection
- Provide input to national mortality systems so that they can estimate the fraction of cirrhosis / HCC mortality that comes from hepatitis

Sequelae surveillance protocol: Overview

1. **Population under surveillance:**
   Patients with cirrhosis or hepatocellular carcinoma in hepatology/gastroenterology centres
2. **Investigators:**
   Clinicians functioning as investigators
3. **Case definitions:**
   ICD-10 codes
4. **Data collection:**
   Interview and review of patients' records (case report form).
   - Part of normal clinical practice
   - Data on outcome (Cirrhosis / HCC)
   - Data on exposure (hepatitis and other causes of chronic liver diseases)

Analysis plan: Example using global data

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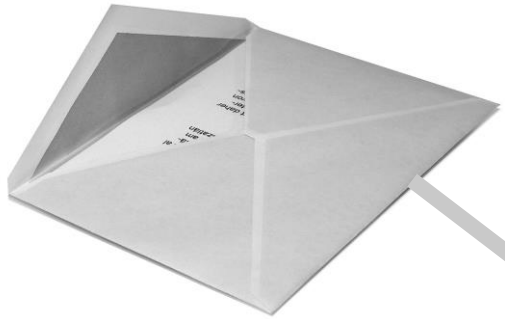
1. NATIONAL MORTALITY STATISTICS

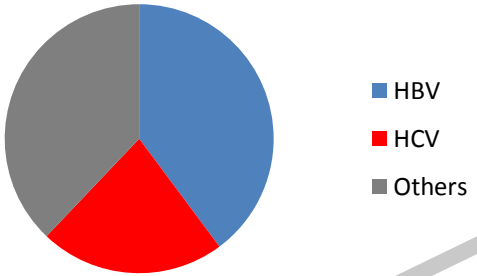
1.16M deaths from cirrhosis
0.79M deaths from HCC

Mortality envelope

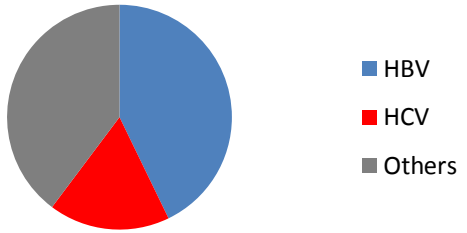


2. ATTRIBUTABLE FRACTION IN CENTRES OF EXCELLENCE IN HEPATOLOGY

40% cirrhosis from HBV
22% cirrhosis from HCV



43% HCC from HBV
17% HCC from HCV



1.19 million deaths from chronic HBV and HCV infections in 2015

2015 GLOBAL HEALTH ESTIMATES FROM WHO

Expected outcomes

- Improved national mortality estimates
- Capacity built for surveillance of cirrhosis and HCC
- Lessons learned for extension of the project
- Community of practice created

Future perspectives

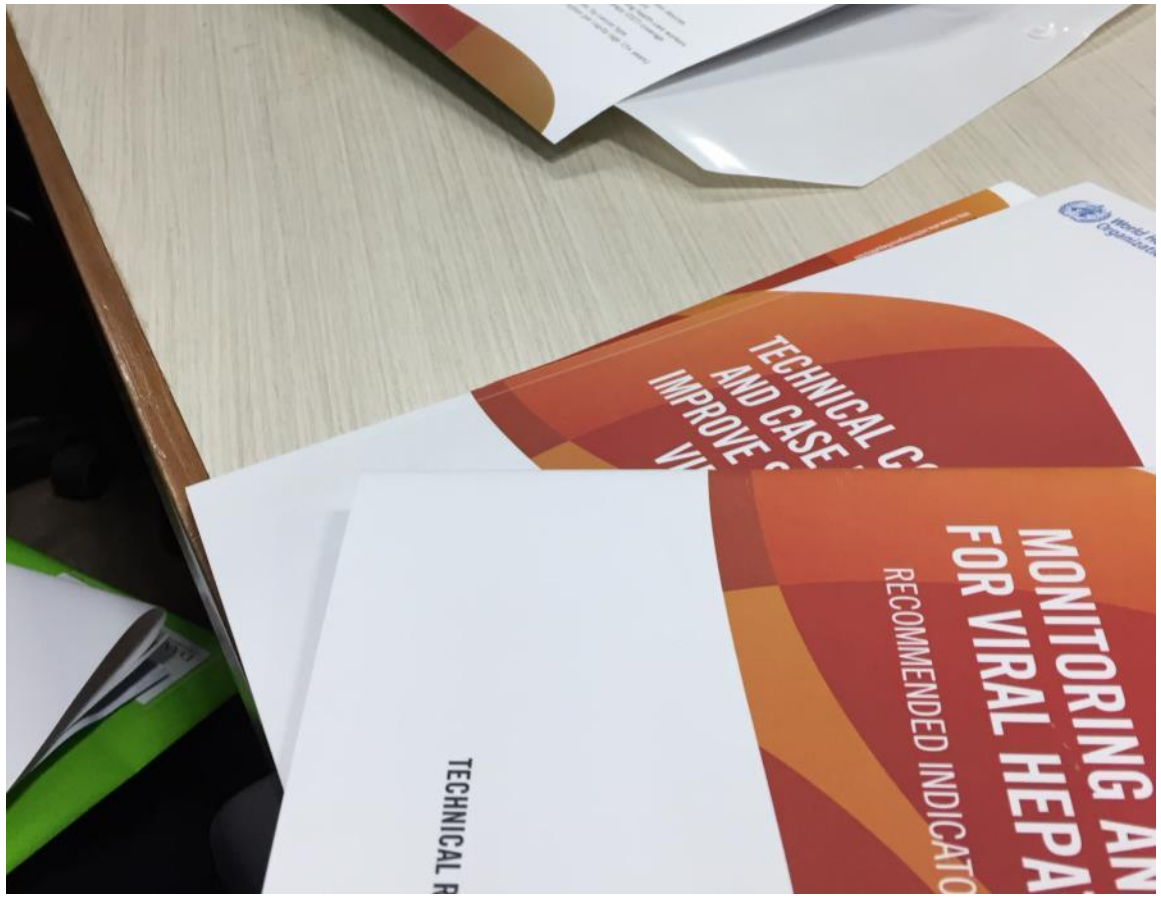
1. Initial pilot projects
2. Scaling up in more centres
3. Engage centres of clinical excellence as resource partners for be testing and treatment activities

Viral hepatitis surveillance: Summary

The three parts of viral hepatitis surveillance capture key information along the three components of the viral hepatitis epidemic

- If **incidence** of new infections is a problem, monitor acute hepatitis that reflect new infections through enhanced case reporting
- The **prevalence** of chronic infections is best estimated through population based biomarker surveys. In the absence of surveys, data extraction can lead to working estimates
- Surveillance of the fraction of cirrhosis and HCC that come from HBV and HCV infection can be used to carve out the proportion of cirrhosis and HCC deaths that are attributable to HBV and HCV infections and estimate **mortality**

Thank you



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