MINISTRY OF INTERNALLY DISPLACED PERSONS
FROM THE OCCUPIED TERRITORIES,LABOUR,
HEALTH AND SOCIAL AFFAIRS OF GEORGIA

LEPL NATIONAL CENTER FOR DISEASE CONTROL
AND PUBLIC HEALTH OF GEORGIA

GOOD PRACTICE:

HCC elimination through viral hepatitis management in the country of Georgia

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EPIDEMIOLOGICAL OVERVIEW OF
Viral Hepatitis in Georgia

Background:

HCV Seroprevalence Survey, 2015

Table 1. 2015 and 2021 National Serosurvey for Hepatitis B and C in Georgia

Characteristics	Adults 2015	Adults 2021	Children 2021
Anti-HCV+	7.7%	6.8%	0%
HCV RNA +	**5.4%**	**1.8%**	0%
Anti-HBc+	25.9%	22.6%	0.7%
HBsAg+	**2.9%**	**2.7%**	0.03%

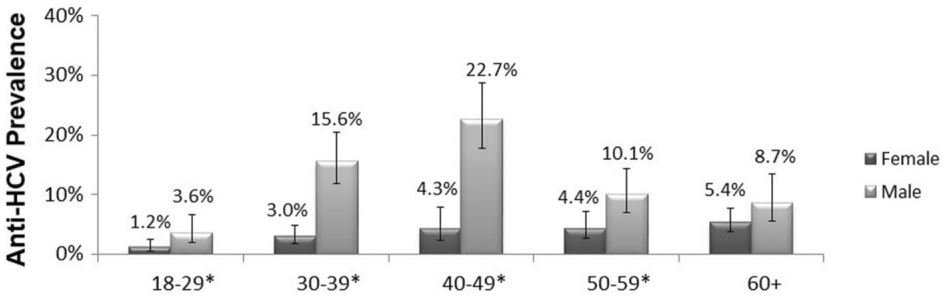
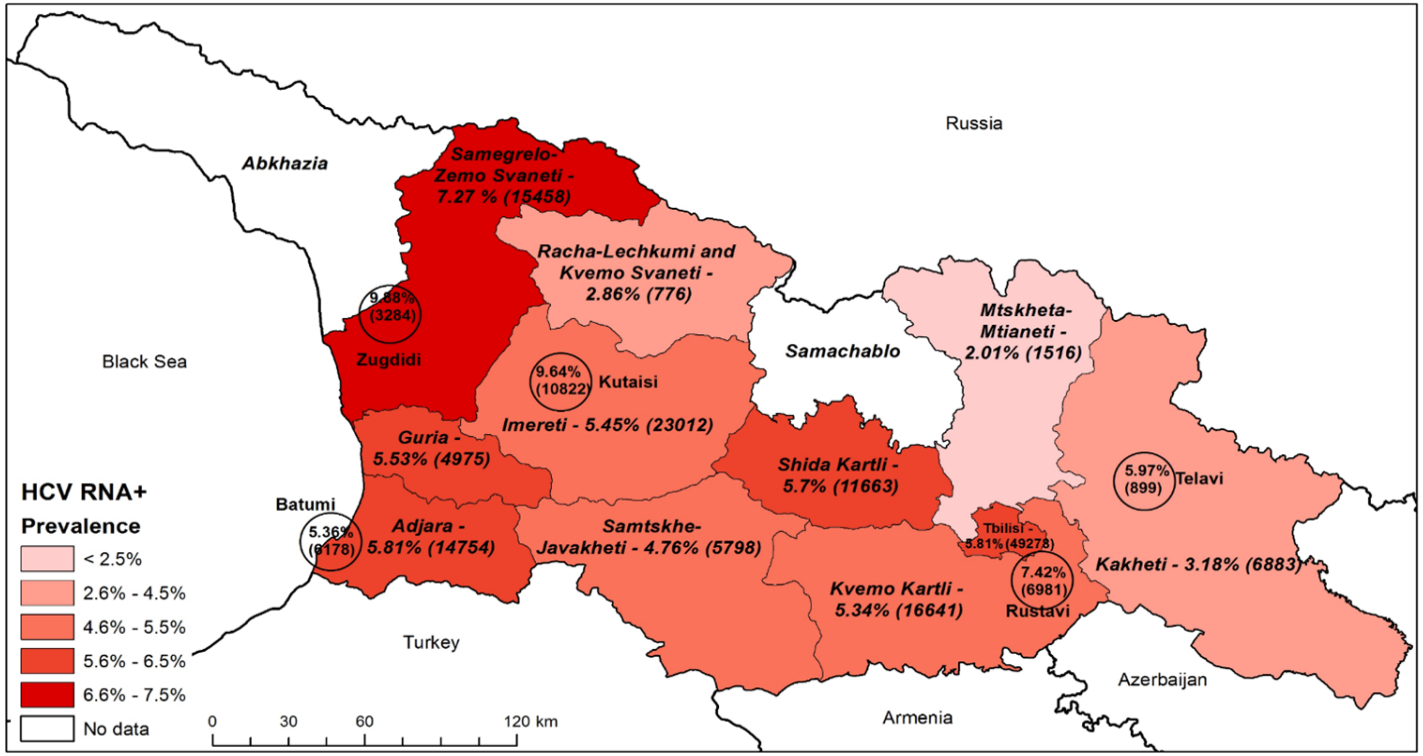


Figure 1. Prevalence and Estimated number of HCV RNA+ individuals by Regions and Cities in Georgia, 2015



Timeline of key activities

under the Hep C Elimination program in Georgia

2015

A 10-year agreement between Gilead and the GOG signed

First National Strategy 2016–2020 approved

2016

Launch of the Elimination Program

Serosurvey: 5.4% adults with chronic HCV

National screening program began

Technical Advisory Group (TAG) established

2017

Diagnostics available and free of charge

Decentralization of HCV Diagnostic, Care, and Treatment Services to PHC and HR services

National screening protocol approved and registry created

2018

Georgia awarded the title of NOhep Visionary for the European Region at the 2017 WHS

A pilot project – Integration of HCV, TB, and HIV Detection at PHC level initiated

2019

Georgia named EILF Center of Excellence in Viral Hepatitis Elimination

All diagnostics free of charge

2020

The linkage-to-care program initiated

NAT testing implemented in Safe Blood Program

2021

Showed by conducted Population-based Serosurvey of Prevalence and Risk Factors for SARS-CoV-2, HCV, and HBV

67% decrease In prevalence

NCDC is designated as the WHO CC on Viral Hepatitis Elimination

National Strategy 2021–2026 updated

2022

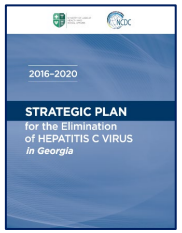
Sentinel surveillance for acute viral hepatitis

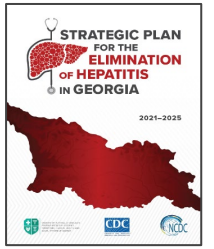
HBV state program drafted

HBV national guidelines revised

2023

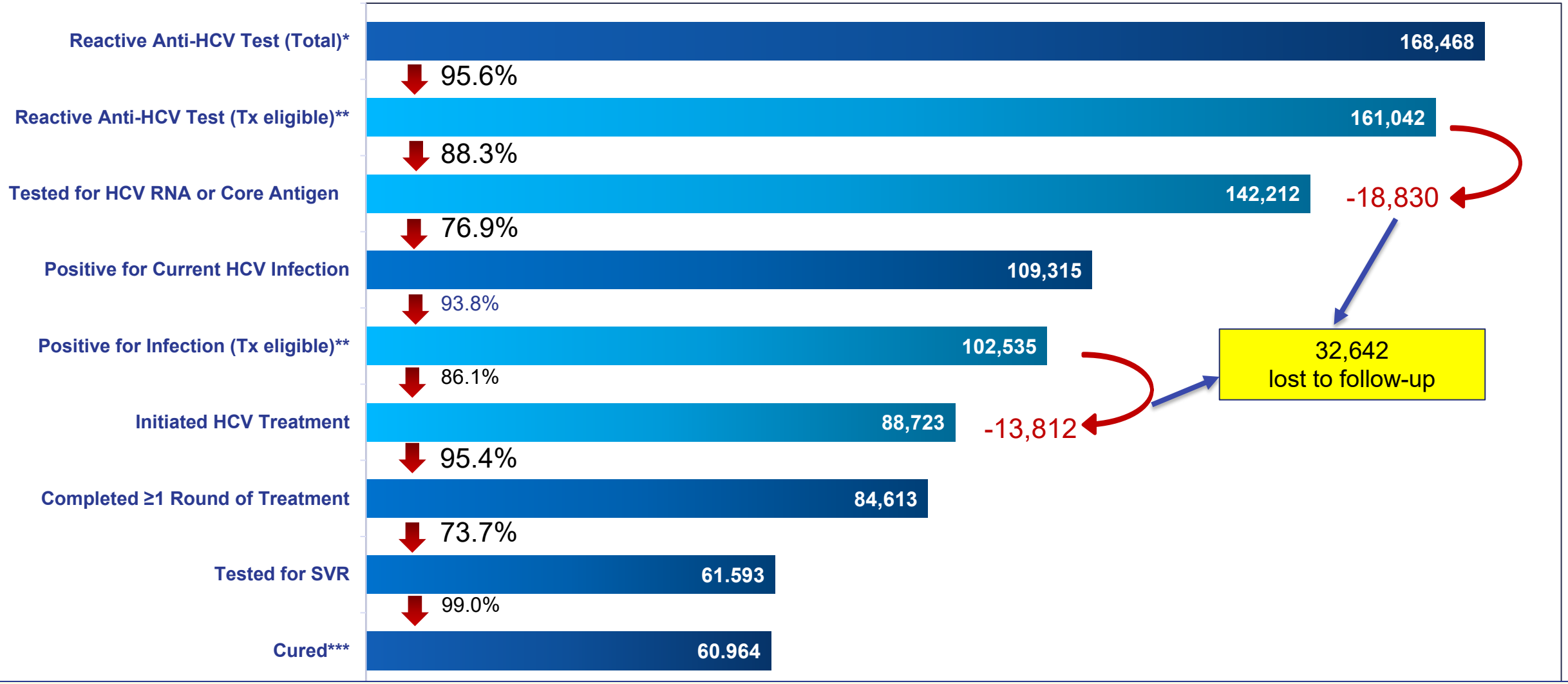
HBV state program approved and launched





2024

Georgia Hepatitis C Elimination Program Care Cascade, 28 April 2015 – 30 September 2024

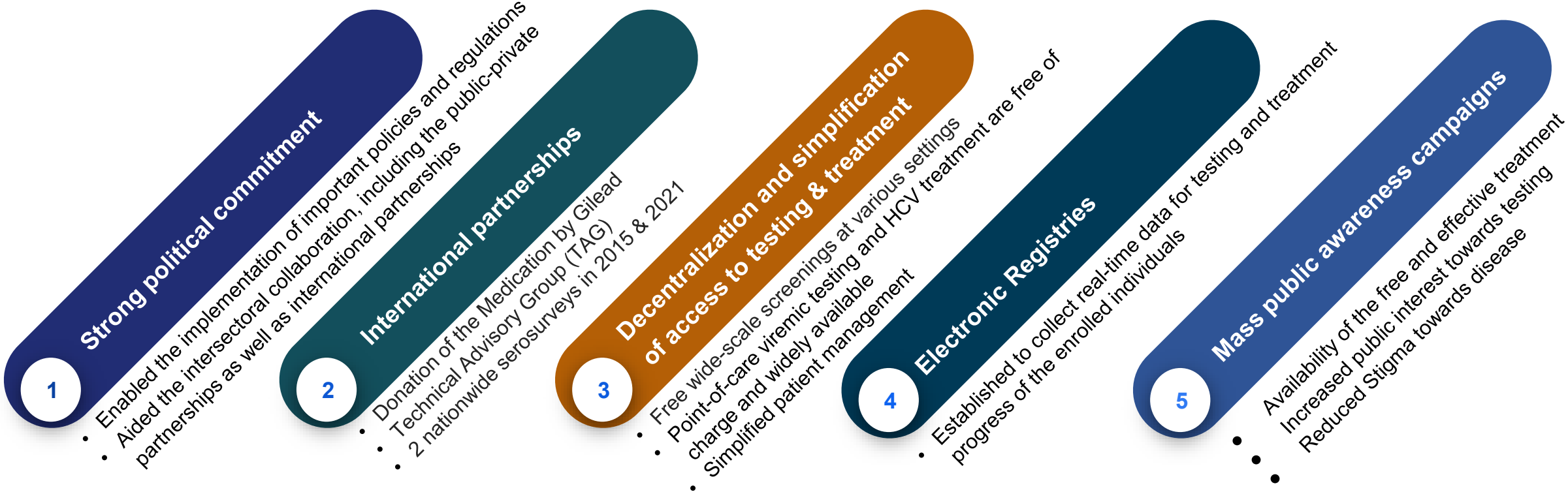


* Among persons with national ID number. An additional 18,586 screened anti-HCV+ using an anonymized 15-digit code. Thus, their representation in the cascade cannot be confirmed; ** Age ≥12 years with no mortality data prior to progressing in cascade

*** Per-protocol, includes retreatments. Among 61,931 persons tested after their **1st round of treatment**, 60,058 (97.0%) achieved SVR (Including 82.4% for **SOF-based regimens**, 98.2% for **SOF/LED regimens**, and 98.5% for **SOF/VEL regimens**). 2,482 persons were **retreated** with a 2nd round of treatment, with 94.3% (1,296/1,375) of those tested achieving SVR. Overall SVR by **Intention-to-Treat analysis:** 71.8%

Best Practices

of the Hepatitis C Elimination Program in Georgia:



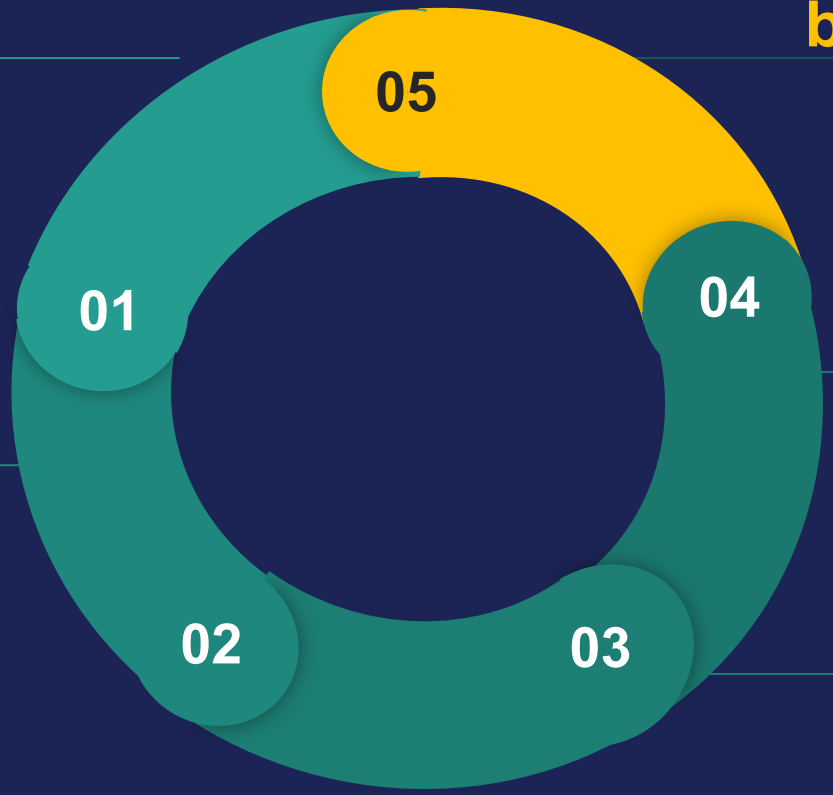
Challenges & Next Steps

1. Strengthen linkage-to-care

- Diagnose remaining 18 830 individuals
- Treat remaining 13 812 individuals

2. Strengthen infection transmission prevention

Both in general and key populations



5. Apply for the Validation of Path to Hepatitis C Elimination by WHO

4. Raising awareness

about **hepatitis B** and **C** infections, treatment availability and National Elimination Program

3. Increase Hep B vaccination coverage

among target and key populations

LIVER CANCER IN GEORGIA:

Brief overview of the surveillance structure, capacity and ongoing activities

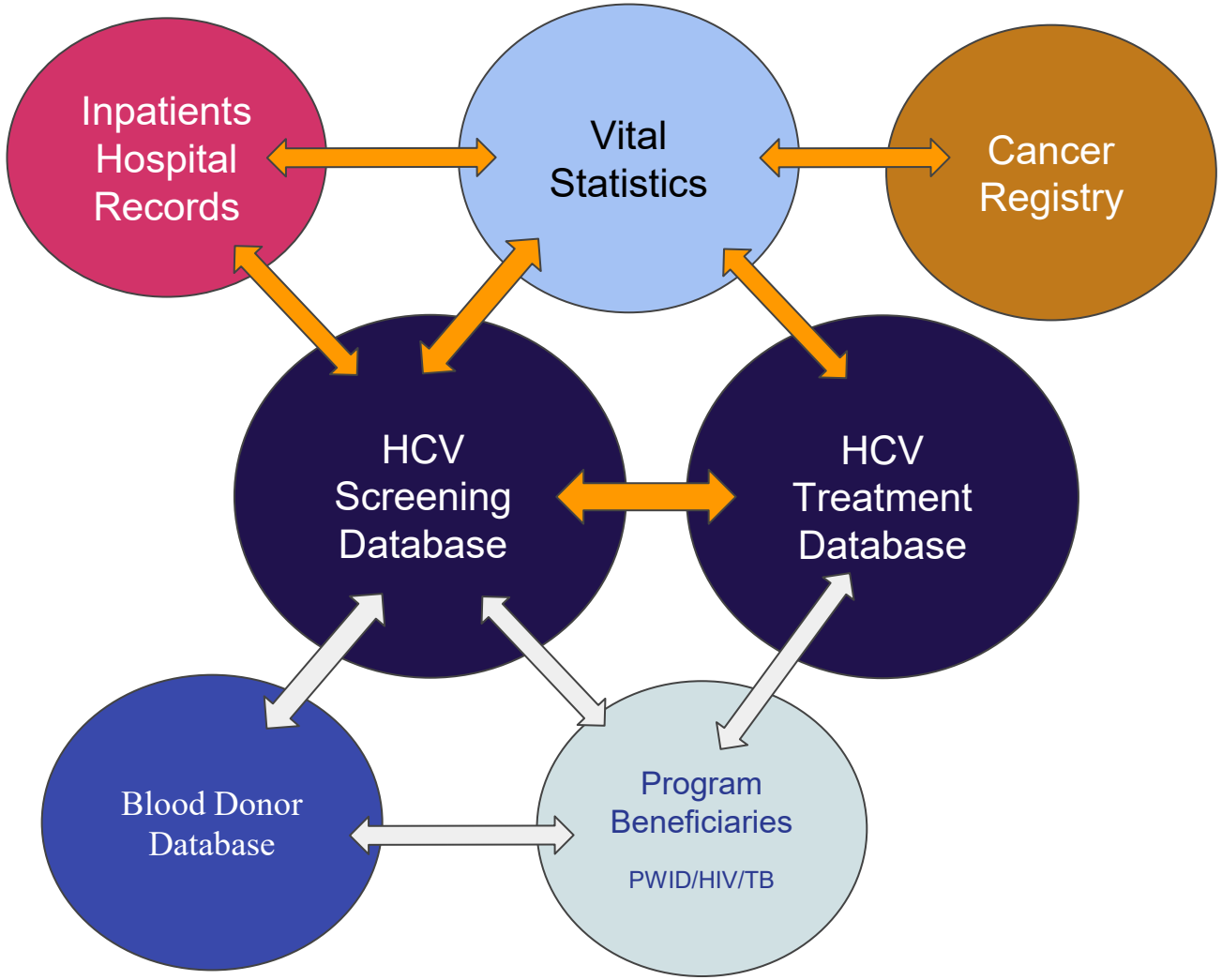
Liver cancer and hepatocellular carcinoma in Georgia:

Technical Advisory Group (TAG) has issued a recommendation **in 2019** to strengthen surveillance on the impact of HCV-attributable diseases, and specifically HCC, in Georgia.

Several studies have been conducted to assess the burden of hepatitis C high infection rates on the incidence of liver cancer and HCC in Georgia.

Apart from those studies, there are no sentinel surveillance to directly monitor complication rates among chronic viral hepatitis patients.

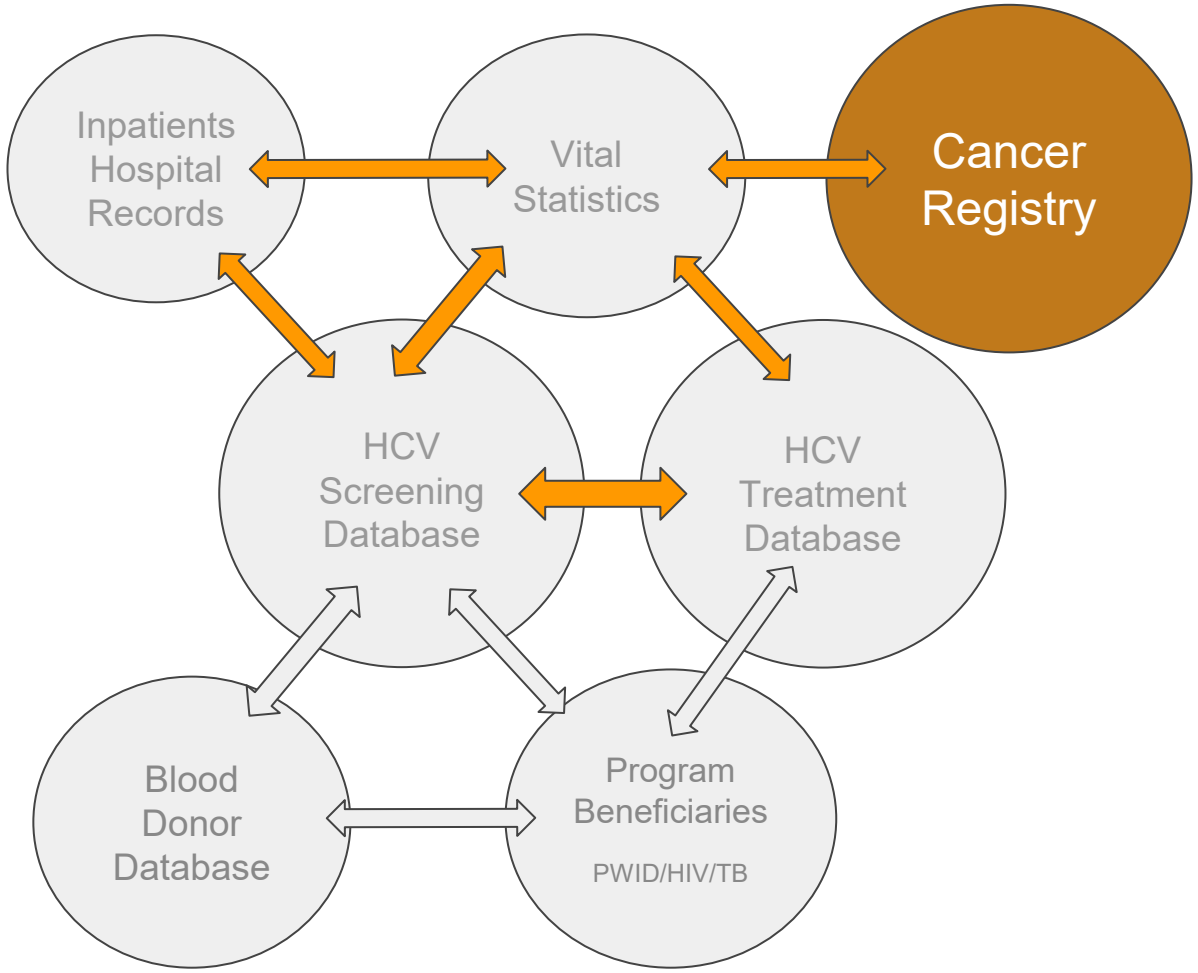
Case-Based Systems in Georgia



Several *interlinked* data collection systems are in place that enables the data collection on the complications of the viral hepatitis in Georgia:

- The data on each case can be traced across the data systems via the unique 11-digit national ID

Georgian Cancer Registry (GCR)

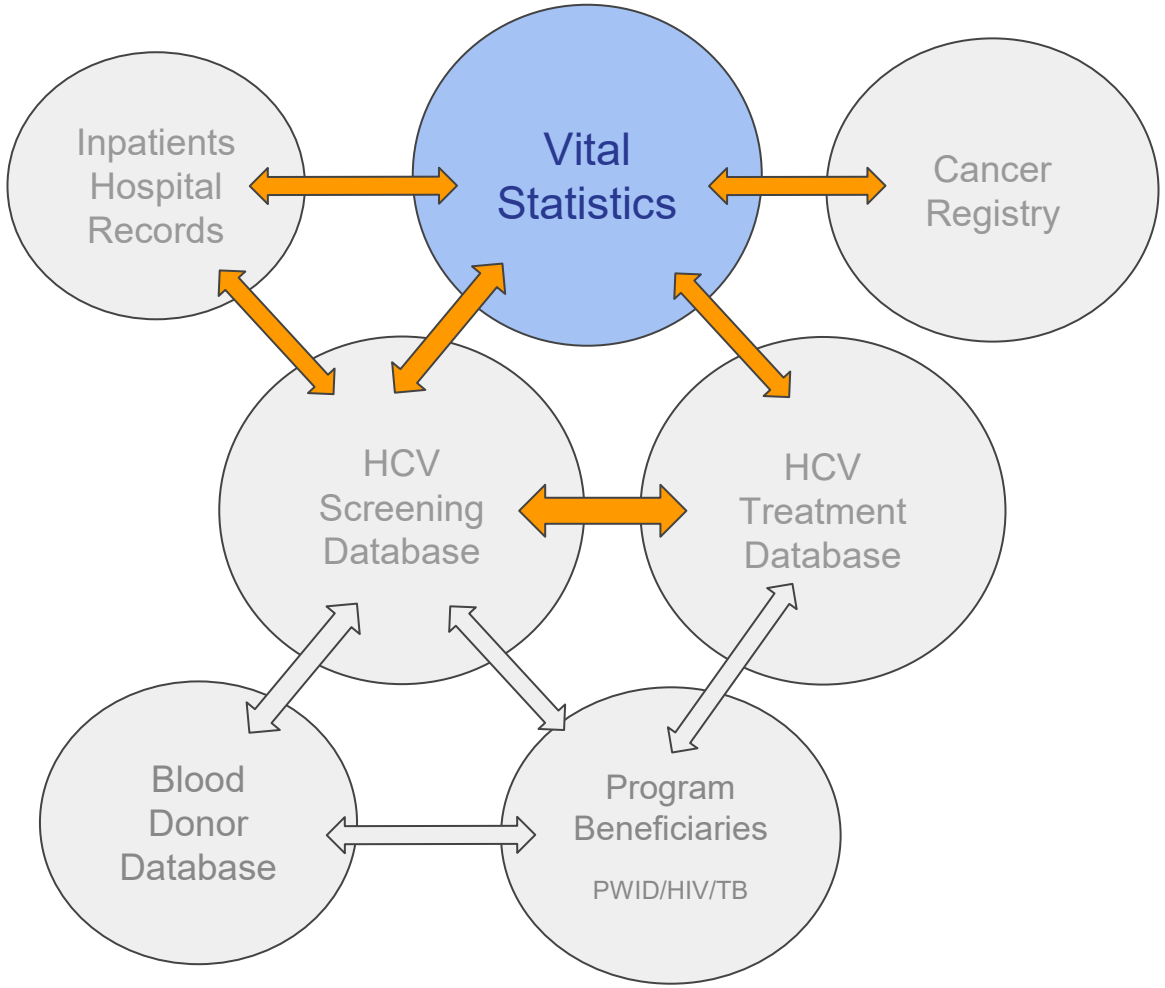


- Developed and launched in 2015
- Serves as the passive surveillance case-based system for the cancer incidence in Georgia.

Contains the following information on the cancer case:

- Demographics - age, sex
- HCV screening data - Link with the screening database
- Bases of diagnosis (morphology, instrumental, tumor markers, clinical, DCO)
- ICD-10 code classification*
- Laboratory investigation results
- TMB, TNF classification, stage & grade
- Treatment type and history
- Vital status & date of death - Link with Vital Statistics database. Updated every 24hs

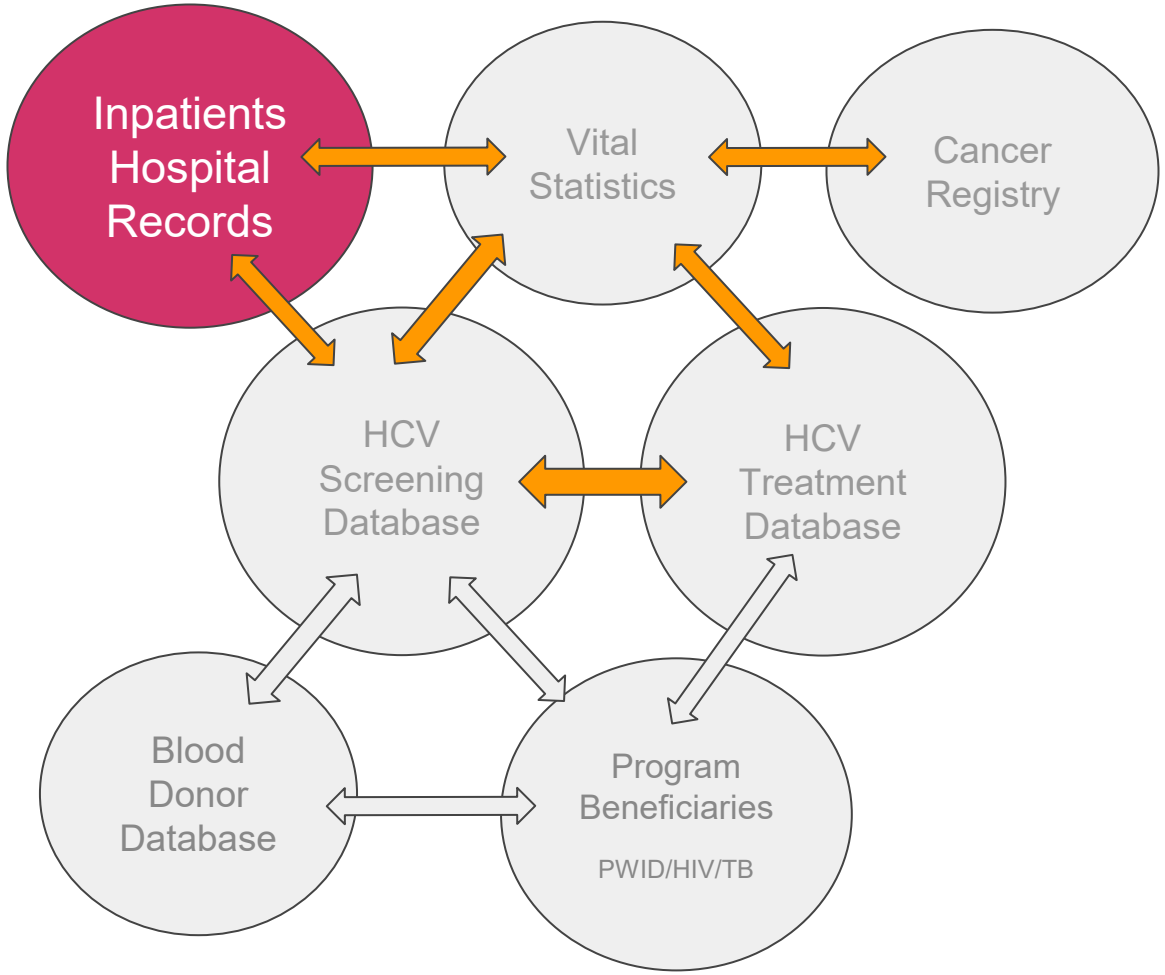
Vital Statistics Database



Is linked to the *Ministry of Justice electronic records system,* enabling to capture the case-based real-time data

- Demographics - age, sex
- Vital status & date of death
- Cause of death
- ect.

Vital Statistics Database



Is used to capture the statistical data among hospitalized patients.

- Demographics
- Patient admission information
- Conducted investigations
- Primary & secondary diagnosis - w/ ICD-10s
- Assigned treatment & outcome
- Complications
- Cause of death
- etc.

The statistics department can indirectly assess the mortality rates among viral hepatitis B and C patients and their complications using the data accumulated in the registries.

The mortality rates can be calculated for cases with registered ***primary cause of death*** of hepatitis B (B18.0, B18.1), hepatitis C (B18.2), fibrosis & cirrhosis (K74) and hepatocellular carcinoma (C22.0)

Challenge is that cases with *other* registered primary causes of death with underlying or past history Hepatitis B and C infections are left outside the statistics. Limited mortality data impacts the ability to fully assess the impact of hepatitis and the success of interventions.

Studies conducted to study HCV-attributable liver cancer in Georgia:

- **HCV-attributable hepatocellular carcinoma among persons with hepatobiliary cancer diagnoses in Georgia: 2015-2016***
  - Cross-sectional medical chart review of registry-bases cases of liver cancer in Georgia
  - Found inconsistencies with ICD-10 codes between the diagnoses found in medical records and the GCR ICD-10 codes
  - Identified gaps in diagnosis of HCC in Georgia

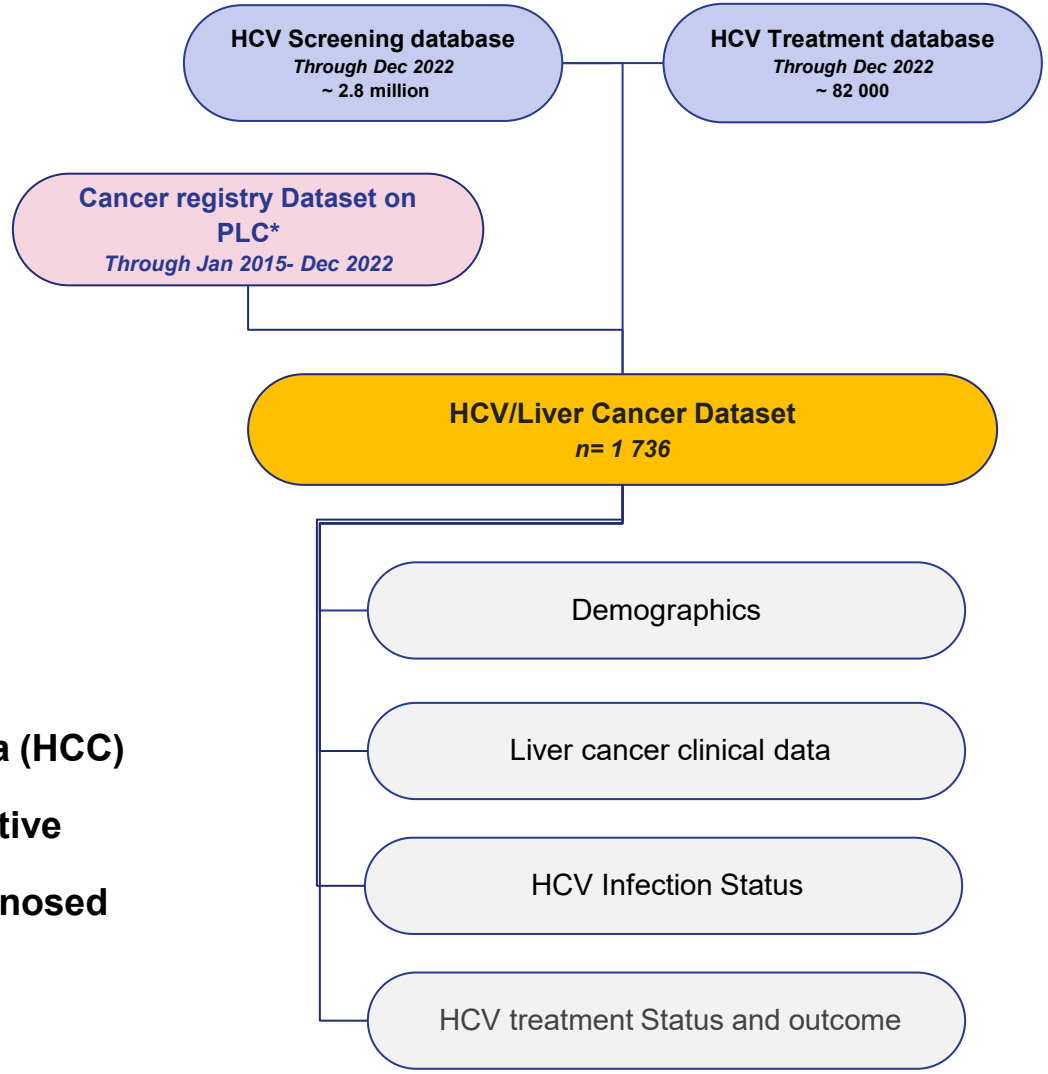
- **Hepatitis C-attributable Primary Liver Cancer in Georgia, 2015-2019****
  - First descriptive study on the GCR data

* Aslanikashvili A. HCV-Attributable Hepatocellular Carcinoma Among Persons With Hepatobiliary Cancer Diagnoses In Georgia: 2015-2016. Presentation presented at 4th Annual Hepatitis C Technical Advisory Group Meeting ; 2018; Tbilisi, Georgia.

** Beckett GA, Armstrong PA, Aslanikashvili A, Surguladze S, Shadaker S, Gvinjilia L, Kuchuloria T, Gamkrelidze A. Hepatitis C virus-attributable primary liver cancer in the country of Georgia [Poster presentation]. Presented at: International Viral Hepatitis Elimination Meeting (IVHEM); 2021 Dec 3–4; Virtual.

Primary liver cancer in Georgia: Seven years' experience following the launch of the HCV Elimination Program, 2015-2022

The study used linked data from the Georgian Cancer Registry (GCR), the national Vital Registration System, and the HCV Elimination Program databases to produce a **descriptive analysis of adult PLC cases** diagnosed between January 2015 and December 2022:



- Majority of cases were **males in their 60s** (IQR 56-70)
- 2/3 of the cases presented with **stage 3-4** liver cancer
- The female PLC cases were significantly older at the time of PLC diagnosis
- **Only 24% of total PLC cases** were classified as **hepatocellular carcinoma (HCC)**
- Screening for **anti-HCV** in PLC cases has increased, with **57% testing positive**
- **72% of treated subjects were treated for HCV ≥1 year before being diagnosed with PLC**

Hepatitis C Virus Attributable Liver Cancer in the Country of Georgia, 2015-2019: A Case-control Study*

This study investigated the link between Hepatitis C Virus (HCV) and liver cancer (specifically HCC) in Georgia from 2015–2019. Using a case-control design, the study analyzed data from 3,874 individuals pulled from GCR and HCV databases (496 liver cancer cases, 3,378 controls) to assess the proportion of liver cancer attributable to HCV.

- Individuals with chronic HCV had 20 times higher odds of developing liver cancer and 16.8 times higher odds of developing HCC compared to HCV-negative individuals.
- The risk varied by age and sex, with older individuals and women having higher odds of developing both liver cancer and HCC.
- In HCV-infected individuals, 95% of liver cancer cases were attributed to HCV, but in the general population, HCV alone could not explain all liver cancer cases.
- Most HCV diagnoses preceded liver cancer
- Despite Georgia's HCV elimination program, liver cancer remains a significant issue, highlighting the need for improved HCC screening and monitoring in at-risk populations.

* Surguladze, S., Armstrong, P.A., Beckett, G.A. et al. Hepatitis C virus attributable liver cancer in the country of Georgia, 2015–2019: a case–control study. BMC Infect Dis 24, 1045 (2024). https://doi.org/10.1186/s12879-024-09916-7

Additional studies conducted to study HCV-attributable liver cancer in Georgia:

- Impact of hepatitis c virus infection and treatment on mortality in the country of Georgia, 2015-2020*
  - Analysis showed the improved survival among treated chronic HCV patients
- Prospective cohort study among cured HCV cirrhotic patients, 2017-2022**
  - 12/615 (2.0%) patients developed HCC along the 5-year follow-up period**
  - 0.4 per 100 person-years incidence
- Prospective study for liver biomarker research in Georgia – 2024 - Ongoing
  - Joint collaborative research with Abbott
  - Cohort includes patients with HCV and HBV cirrhotic patients

*Gvinjilia L, Baliashvili D, Shadaker S, Averhoff F, Kandelaki L, Kereselidze M, et al. Impact of hepatitis c virus infection and treatment on mortality in the country of georgia, 2015–2020. Clinical Infectious Diseases [Internet]. 2023 Aug 14 [cited 2025 Mar 27];77(3):405–13. Available from: https://academic.oup.com/cid/article/77/3/405/7143199

**Unpublished study data. Preliminary results

Path to elimination of HCV as a public health problem

PTE tier	Program targets
	The gold level recognizes where a country has implemented:
Gold tier	• 100% blood safety • 100% injection safety • ≥80% of people living with chronic HCV are diagnosed • ≥70% of people diagnosed with HCV are treated • ≥150 needles/syringes/year in PWID (or OAT coverage for PWID >20% in countries with defined opioid epidemics) • **Establishment of sentinel surveillance programme for hepatitis sequelae**
	The silver level recognizes where a country has implemented:
Silver tier	• 100% blood safety • 100% injection safety • ≥70% of people living with chronic HCV are diagnosed • ≥60% of people diagnosed with HCV are treated • NSP and OAT present in country
	The bronze level recognizes where a country has implemented:
Bronze tier	• ≥95% blood safety • ≥95% injection safety • NSP is present in the country • ≥60% of people living with chronic HCV are diagnosed • ≥50% of people diagnosed with HCV are treated

Conclusions

- Viral hepatitis play significant role in the liver cancer epidemiology in Georgia
- Electronic Registries are major source of information in studying the long-term complications of the HCV infection among Georgian population, including liver cancer
- Taking into account a high prevalence of viral hepatitis in the country, more systematic approach needs to be established to strengthen the surveillance of liver cancer in Georgia

Acknowledgements

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GILEAD

CDC

World Health Organization

The Global Fund To Fight AIDS, Tuberculosis and Malaria

World Hepatitis Alliance

NOhep

EASL INTERNATIONAL LIVER FOUNDATION

JOHN MARTINS FOUNDATION

CDC Foundation

University of BRISTOL

Project ECHO

FIND Because diagnosis matters

Abbott

HCV Elimination Program Providers

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