# National hepatitis C virus (HCV) screening pilot using rapid HCV antibody tests in Kazakhstan

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## Introduction

Hepatitis C virus (HCV) infection continues to pose a major public health challenge in Kazakhstan, affecting an estimated 398,000 individuals. Despite the availability of free testing and treatment, fewer than 10% of cases were diagnosed by 2021. Current screening programs target only high-risk groups, such as pregnant women and surgical patients, leaving many undiagnosed. This gap undermines Kazakhstan's progress toward the World Health Organization's (WHO) 2030 elimination target.

## Aim

This pilot project evaluated the effectiveness of large-scale general adult population screening in urban and rural polyclinics. The findings aimed to inform the development of a national program to improve diagnosis, treatment, and public health outcomes to meet WHO elimination goals.

## Method

- **Study Population:** Adults attending 106 polyclinics in *East Kazakhstan, Abay, Turkistan, Karaganda,* and *Shymkent City*
- **Sampling Method:** Convenience sampling
- **Screening:** 99,223 individuals tested for anti-HCV antibodies using rapid diagnostic tests
- **Data Management:** Results recorded in an electronic registry
- **Prevalence Stratification:** Age, sex, birth region, and clinic region
- **Analysis Method:** Prevalence adjusted for age and sex, with Poisson regression used to identify significant predictors of HCV prevalence variability

## Results

- Overall HCV Prevalence (Figure 1):
  - Adjusted for age and sex: 0.59% (0.55 – 0.65%)
- Prevalence by Sex (Figure 1):
  - Males: 1.22% (1.10 – 1.34%)
  - Females: 0.30% (0.26 – 0.34%)
- Prevalence by Age (Figure 3):
  - Peak prevalence at 0.99% in individuals aged 45 – 49
- Prevalence by region of birth (Figure 2):
  - Aktobe: Highest statistically significant prevalence at 4.68% (0.82 – 14.2%)
- Prevalence by clinic region (Figure 4):
  - Shymkent: Lowest statistically significant prevalence at 0.43% (0.31– 0.61%)

Figure 1. HCV Prevalence by Sex - All Cases

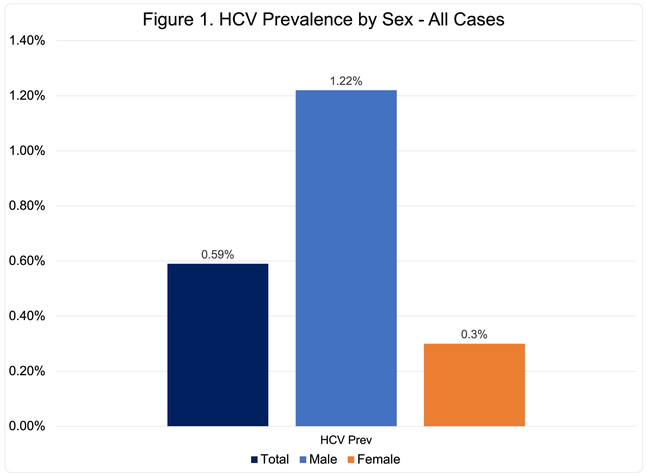



Figure 2. HCV Prevalence by Place of Birth

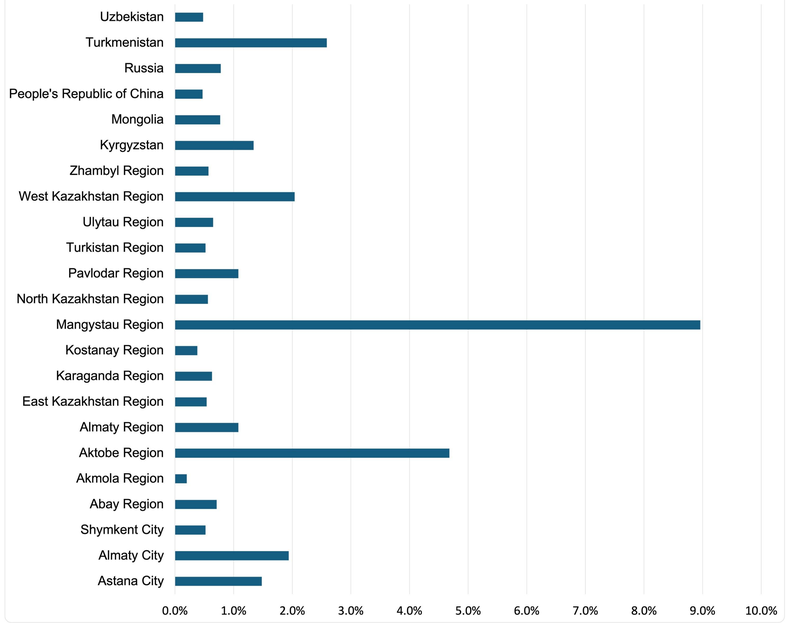



Figure 3. HCV Prevalence by Age and Sex

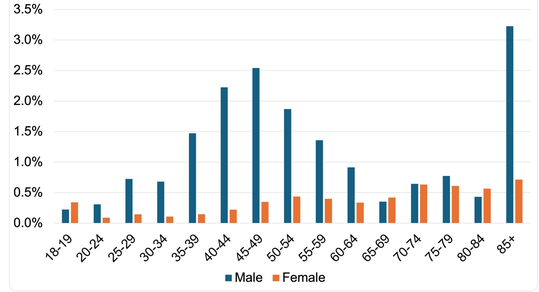
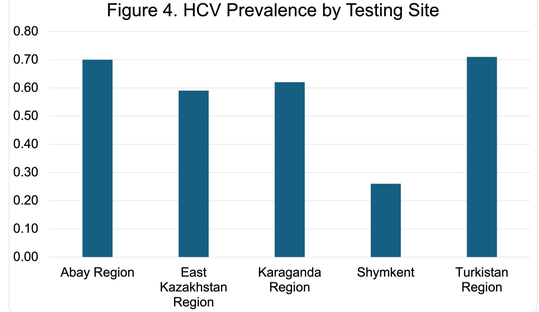



Figure 4. HCV Prevalence by Testing Site




- Regression Analyses:
  - Higher HCV rates found in individuals born in Aktobe and Mangystau ($p < 0.01$)
  - Younger age groups had significantly lower rates compared to those aged 35 – 39 ($p < 0.01$)

## Conclusions

This pilot program demonstrated the feasibility of large-scale HCV screening and identified significant variability in prevalence by age, sex, and geography. Males, individuals aged 45-49, and those from the Aktobe region showed elevated prevalence, highlighting the need for targeted interventions. However, expanding the program to populous regions like Almaty, in addition to high-risk groups, is critical for a comprehensive assessment of HCV prevalence. Development of a national screening strategy will be essential for Kazakhstan to meet WHO elimination targets and reduce the public health burden of HCV.

## Contact Information

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