Prevention and control of Viral Hepatitis the Russian Federation: lessons learnt and the way forward
Moscow, 25-26 October 2018

Hepatitis C in Russia: surveillance and epidemiology

Pimenov N., Komarova S., Karandashova I., Chulanov V.

Central Research Institute of Epidemiology
Reference Center for Viral Hepatitis
The prevalence of CHC in the world in 2015

The estimated number of patients with chronic hepatitis C in the world - 71 million
About 700 000 people in the world die each year from chronic hepatitis C outcomes

1. http://www.who.int/mediacentre/factsheets/fs164/ru/
Incidence of hepatitis C in Russia: 2001-2017

Per 100,000 population

Years

Acute HepC
Chronic HepC


29.5 30.7 33.1 34 31.8 35.8 37 39.1 40.9 40.2 39.92 39.1 39.2 39.8 38.06 36.1 34.6
16.7 7.1 5.2 4.8 4.5 4.1 3.4 2.8 2.24 2.13 1.83 1.52 1.46 1.44 1.2 1.2

50,798
The incidence of CHC in Russian regions in 2016

52,908 New cases
36.1 per 100,000 population
The incidence of CHC in different age groups of the population of Russia

Per 100,000 population

<1 yo: 3.82, 3.89, 3.01, 2.19, 7.41, 64.04, 92.62, 76.91, 61.38, 34.75, 35.09, 22.52, 23.52
1-6: 3.08, 3.03, 3.01, 2.19, 7.41, 31.87, 44.88, 44.68, 34.75, 35.09, 22.52, 23.52
7-14: 1.11, 1.11, 1.11, 2.19, 7.41, 31.87, 44.88, 44.68, 34.75, 35.09, 22.52, 23.52
15-19: 7.41, 31.87, 44.88, 44.68, 34.75, 35.09, 22.52, 23.52
20-29: 64.04, 31.87, 44.88, 44.68, 34.75, 35.09, 22.52, 23.52
30-39: 92.62, 44.88, 44.68, 34.75, 35.09, 22.52, 23.52
40-49: 76.91, 44.88, 44.68, 34.75, 35.09, 22.52, 23.52
50-59: 61.38, 34.75, 35.09, 22.52, 23.52
60+: 34.75, 35.09, 22.52, 23.52
The prevalence of HCV in different age groups of the population of Russia in 2017
The number of patients with CHC under medical observation in Russia

Number of patients

Year
2010
2011
2012
2013
2014
2015
2016
2017

Number of patients
362,191
514,774
514,774
514,774
614,195
614,195
614,195
614,195
Liver cirrhosis* in Russia in 2011-2015

* Fibrosis and cirrhosis of the liver (K74, ICD-10).

(Alcoholic liver cirrhosis refers to K70.2 and K70.3 of ICD-10)
Causes of liver cirrhosis in Russia

All factors
- Viruses: 45.2%
- Alcohol: 14.6%
- Other: 44.2%

Viral etiology
- HBV: 58.2%
- HDV: 7.1%
- HCV: 28.4%
- Mixt: 6.3%

Liver cirrhosis* in Russia in 2011-2015

* Fibrosis and cirrhosis of the liver (K74, ICD-10).

(Alcoholic liver cirrhosis refers to K70.2 and K70.3 of ICD-10)
Causes of Malignant liver tumors in Russia

Cholangiocarcinoma 32%
Hepatocellular carcinoma 55%
Hepatoblatoma 4%
Hemangiosarcoma 1%
Malignant neoplasm 8%
Unknown 16%
Metabolic syndrome 17%
Alcohol 9%
HBV 28%
HCV 30%

Malignant liver tumors in Russia: 2011-2015

- New cases
- Total number of registered patients
- Mortality from malignant liver tumors

- 2011: 6525 (New cases), 6670 (Total), 6525 (Mortality)
- 2012: 6287 (New cases), 6645 (Total), 6525 (Mortality)
- 2013: 6789 (New cases), 6710 (Total), 6525 (Mortality)
- 2014: 7252 (New cases), 7151 (Total), 6525 (Mortality)
- 2015: 8083 (New cases), 7360 (Total), 5449 (HCC), 1635 (HCV)

Bars for 2015 indicate 5449 cases of HCC and 1635 cases of HCV
Malignant liver tumors in different age groups of the population of Russia in 2015

Per 100,000 population

Incidence

Mortality

Age groups

0-9 10-19 20-29 30-39 40-49 50-59 60-69 70-79 >80

0.3 0.1 0.1 0.2 0.2 0.5 0.6 2.1 2.4 7.2 8.4 16.1 19.4 24.2 31.0 27.1 36.3
Malignant liver tumors in Russia: diagnosis and survival in 2013

<table>
<thead>
<tr>
<th>Stage of the disease</th>
<th>One year mortality</th>
<th>Five year survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>1.3</td>
<td>26.7</td>
</tr>
<tr>
<td>II</td>
<td>6.4</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>22.2</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>57.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70</td>
<td></td>
</tr>
</tbody>
</table>
Cohorts testing for anti-HCV in Russia

1. Blood, organ and tissue donors
2. Pregnant women
3. The staff of medical institutions
4. Patients in centers and departments of hemodialysis, kidney transplant, cardiovascular and pulmonary surgery, hematology
5. Patients before admission to planned surgery, before chemotherapy
6. Patients with chronic diseases, including liver damage
7. Patients with HBV, HIV, TB, STI
8. Persons at risk for hepatitis C infection (PWID, prisoners, sex workers)
Testing algorithm for viral hepatitis C in Russia

1. **Anti-HCV**
   - **Negative**
     - Not infected
   - **Positive**
     - **HCV RNA**
       - **Negative**
         - No current infection
           - Anti-HCV IgG
           - PHK HCV
           - In 6 months
       - **Positive**
         - Current infection
         - Monitoring, treatment

*Russian recommendations for the diagnosis and treatment of adult patients with hepatitis C (2014)*
Confirmation of the diagnosis of hepatitis C in Russia

![Diagram showing the percentage of anti-HCV and anti-HCV + RNA HCV over the years 2013 to 2017. The number of patients detected with each test is shown for each year. The percentage of patients with both tests increases over time.]

- 2013: 45.3% anti-HCV, 54.7% anti-HCV + RNA HCV
- 2014: 46.4% anti-HCV, 53.6% anti-HCV + RNA HCV
- 2015: 50.1% anti-HCV, 49.9% anti-HCV + RNA HCV
- 2016: 55.7% anti-HCV, 44.3% anti-HCV + RNA HCV
- 2017: 60% anti-HCV, 40% anti-HCV + RNA HCV
Recommendations for laboratory examination of persons with anti-HCV (Tillmann H.)

- Anti-HCV positive
  - HCV core antigen test
    - Positive
      - Replication confirmed
        - Consider further testing
          - HCV genotype
          - Liver biopsy, state of disease
          - Treatment indication
    - Negative
      - HCV RNA testing (sensitivity 100 IU/mL)
        - Positive
        - Negative
          - No active HCV replication
            - Consider exploring anti-HCV confirmatory test

Tillmann HL. Hepatitis C virus core antigen testing: role in diagnosis, disease monitoring and treatment. World J Gastroenterol. 2014; 20(22):6701-6
Comparison of the cost-effectiveness of different hepatitis C screening strategies in high-prevalence settings

The cost of testing 100,000 people (x1000$)

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Cost (x1000$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB&gt;RNA I</td>
<td>1990</td>
</tr>
<tr>
<td>AB&gt;AG II</td>
<td>1716</td>
</tr>
<tr>
<td>AB&gt;AG&gt;RNA III</td>
<td>1874</td>
</tr>
<tr>
<td>AG III</td>
<td>3804</td>
</tr>
</tbody>
</table>

The number of identified cases of infection

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB&gt;RNA I</td>
<td>5404</td>
</tr>
<tr>
<td>AB&gt;AG II</td>
<td>5294</td>
</tr>
<tr>
<td>AB&gt;AG&gt;RNA III</td>
<td>5409</td>
</tr>
<tr>
<td>AG III</td>
<td>5531</td>
</tr>
</tbody>
</table>

Conclusion

- In recent years, the incidence of hepatitis C in Russia has been declining;
- Estimated number of patients with chronic hepatitis C in Russia reaches 4.9 million;
- Chronic hepatitis C is the main cause of liver cirrhosis (except alcohol etiology) and hepatocellular carcinoma in Russia;
- There is a tendency to an increase in mortality and mortality from liver cirrhosis and hepatocellular carcinoma;
- To reduce the burden of hepatitis C in Russia, it is necessary to provide all patients with chronic hepatitis C with diagnosis and treatment.