Hepatitis C in women in Eastern Europe and the Russian Federation: epidemiological patterns and prevention

Professor Sergey Mukomolov
St. Petersburg Pasteur Institute
Main questions for discussion

- Hepatitis C statistics in Europe with focus on the Eastern part and Russia
- Trends in Hepatitis C incidence
- Risk factors for HCV infection
- Specific risk groups and risk factors related to women
  - HCV&HIV mix infection
  - Commercial sex
  - Multiple occasional sex partners
  - Pregnancy
  - Mother to child transmission
- HCV prevention
Eastern Europe on definition of United Nations

Russia, Poland, Czech Republic, Slovak Republic, Hungary, Belorussia, Ukraine, Rumania, Bulgaria, Moldova, Azerbaijan and Kazakhstan
The overall trend in reported hepatitis C cases appears to be increasing over time, and hepatitis C is thought to be the most common form of viral hepatitis in the EU. **However, this observation remains tentative, as many Member States’ surveillance systems do not distinguish between acute and chronic infection.** In addition, the differences between diagnostic practices and surveillance systems in Member States, for both infections, increase the variations in rates reported between countries, and make the comparability of information for these diseases at country level particularly difficult.
Average annual incidence of HCV infection in countries of the WHO European region between 1997 and 2004. Source: Calculated from WHO Health for All data

Adapted from Muhlderger N. et al. BMC Public Health. 2009; 9:34
Prevalence of HCV infection in countries of the WHO European region.
Source: WHO 1999

Adapted from Muhlberger N. et al. BMC Public Health. 2009; 9:34
Death rates for HCV-related liver cirrhosis in countries of the WHO European region in 2002. Source: Calculated from WHO GBD data

Adapted from Muhlberger N. et al. BMC Public Health. 2009; 9:34
Figure 2.2.8. Trend and number of reported confirmed hepatitis C cases by month, in EU and EEA/EFTA countries, 2006–09

Source: Country reports: Austria, Cyprus, Czech Republic, Denmark, Finland, Germany, Greece, Hungary, Iceland, Ireland, Malta, Netherlands, Norway, Portugal, Slovakia, Sweden, United Kingdom.

Adapted from ECDC Surveillance report. 2011
Figure 2.2.9. Rates of reported confirmed hepatitis C cases, by age and gender, in EU and EEA/EFTA countries, 2009

Source: Country reports: Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Sweden, United Kingdom.

Figure 2.2.7. Rates of reported confirmed hepatitis B cases, by age and gender, in EU and EEA/EFTA countries, 2009

Source: Country reports: Austria, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.
Incidence of reported hepatitis C cases in some Eastern European countries – members of EC in 1995-2005 (as ECDC, 2007)
Acute hepatitis C incidence in different federal regions of Russia in 1997-2011
Chronic hepatitis C incidence in different federal regions of Russia in 1999-2011

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Contact with blood of an infected person, primarily through:
• Sharing of contaminated needles, syringes, or other injection drug equipment
Less commonly through:
• Sexual contact with an infected person
• Birth to an infected mother
• Needlestick or other sharp instrument injuries

Persons at Risk
• Current or former injection drug users
• Recipients of clotting factor concentrates before 1987
• Recipients of blood transfusions or donated organs before July 1992
• Long-term hemodialysis patients
• Persons with known exposures to HCV (e.g., healthcare workers after needlesticks, recipients of blood or organs from a donor who later tested positive for HCV)
• HIV-infected persons
• Infants born to infected mothers

Adapted from Centers for Disease Control and Prevention
Sources of Infection for Persons With Hepatitis C

- Injecting drug use: 60%
- Sexual: 15%
- Transfusion (before screening): 10%
- Occupational: 4%
- Other*: 1%
- Unknown: 10%

* Nosocomial; iatrogenic; perinatal

Source: Centers for Disease Control and Prevention
Risk factors and HCV transmission in the regions of Russia in 1997 and 2008
Risk factors and HCV transmission in the regions of Russia in 1997 and 2008

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Risk factors and HCV transmission in the regions of Russia in 1997 and 2008
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Risk factors and HCV transmission in the regions of Russia in 1997 and 2008
Possible routes of HCV transmission in patients with acute hepatitis C in the Russian Federation in 2011 in according to the national surveillance system (n=2613)


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Risk factors of HIV transmission in Russia in 1987-2011

Adapted from the Bul.36 (2011) of the National AIDS Center
HCV incidence in Poland in 2001-2009

Adapted from Przegl Epidemiol. 2002-2011
Distribution of known and probable primary risk factors (one per person according to the hierarchy) stratified by age and gender (Poland, 2006)

Adapted from Chlabicz S. et al. World J. Gastroenterol. 2006., 12(1): 141-145
Prevalence of HCV infection in according to gender and age in Romania

Adapted from Gheorge L. et al. J.Gastrointestin Liver Dis 2010, V.19, P.373-379
Prevalence of HCV infection in according to marital status in Romania

Adapted from Gheorge L. et al. J.Gastrointestin Liver Dis 2010, V.19, P.373-379
Anti-HCV rates in commercial sex workers in different countries of former Soviet Union

Adapted from WHO EURO report. 2011
The frequency of anti-HCV in pregnant women and blood donors in selected countries of Eastern Europe and former USSR republics.

Adapted from WHO EURO report. 2011
Anti-HCV rates in injecting drug users in the selected countries of Eastern Europe and former USSR republics

Adapted from WHO EURO report. 2011
Proportion of HCV positive persons in the cohorts of HIV+ pregnant women in selected cities of Russia

Adapted from Study of HIV in the Russian Federation, Smolskaya T. et al., 2007
Risk factors to be infected by HIV and HCV in pregnant women in selected cities of Russia

Adapted from Study of HIV in the Russian Federation, Smolskaya T. et al., 2007
Risky sexual behavior in HIV&HCV positive women in selected cities of Russia

Adapted from Study of HIV in the Russian Federation, Smolskaya T. et al., 2007
Risky sexual behavior in HIV&HCV positive women in selected cities of Russia (using of condom in case of sex with occasional partner)

Adapted from Study of HIV in the Russian Federation, Smolskaya T. et al., 2007
INTRAFAMILIAL SPREADING OF HEPATITIS C?

**MOTHER**
H-a, 37, Stomatologist
Registration 08.07.99
anti-HCV +; HCV RNA +
Splenomegaly +
Hepatomegaly +3
ALT - 174 IU

**FATHER**
G-v, 31, Worker
Registration 08.07.99
anti-HCV +; HCV RNA +
Splenomegaly
Hepatomegaly +2
ALT - 142 IU

**SON (AHCV)**
H-v, 12, Pupil
Hospitalized 06.05.99
anti-HCV +; HCV RNA +

**DAUGHTER**
H-a, 17, Student
Registration 08.07.99
anti-HCV +; HCV RNA +
ALT - 25 IU (normal)

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2 INTRAFAMILIAL SPREADING OF HEPATITIS C?

MOTHER
H-a, 37 years old
anti-HCV +
HCV RNA +
Genotype HCV 1b
Source ??

FATHER
G-v, 31 years old
anti-HCV +
HCV RNA +
Genotype HCV 1a
Source ??

DAUGHTER
H-a, 17 years old
anti-HCV +
HCV RNA +
Genotype HCV 3a

SON
H-v, 12 years old
anti-HCV +
HCV RNA +
Genotype HCV 3a

Source ???
INTRAfAMILIAL SPREADING OF HEPATITIS C?

SON
H-v, 12
anti-HCV +
HCV RNA +
Genotype **HCV 3a**

DAUGHTER
H-a, 17
anti-HCV +
HCV RNA +
Genotype **HCV 3a**
**Prevention (as stated by WHO)**

**Primary prevention**

There is no vaccine for hepatitis C. The risk of infection can be reduced by avoiding:

- unnecessary and unsafe injections;
- unsafe blood products;
- unsafe sharps waste collection and disposal;
- use of illicit drugs and sharing of injection equipment;
- unprotected sex with hepatitis C-infected people;
- sharing of sharp personal items that may be contaminated with infected blood;
- tattoos, piercings and acupuncture performed with contaminated equipment.

**Secondary and tertiary prevention**

For people infected with the hepatitis C virus, WHO recommends:

- education and counseling on options for care and treatment;
- immunization with the hepatitis A and B vaccines to prevent co-infection from these hepatitis viruses to protect their liver;
- early and appropriate medical management including antiviral therapy if appropriate; and
- regular monitoring for early diagnosis of chronic liver disease.
Changing in risky behavior in HIV&HCV infected women after educational intervention in St. Petersburg, Russia

Adapted from Study of HIV in the Russian Federation, Smolskaya T. et al., 2007
Conclusion

- Hepatitis C is one of the major health care problem in most of the Eastern European countries and the Russian Federation.

- HCV transmission is closely connected with certain risk factors and risk groups of population. In modern time the most important risk factors are: injecting drug using and multiple sex contacts with HCV sources.

- In general population women are less infected by HCV than men. But number of HCV infected women seems to be huge.

- Risk factors related to HCV infection in women from risk groups (HIV infected) are: injecting drug using, multiple occasional sex partners including commercial sex partners, unsafe sex behavior.

- There is need in improvement of HCV surveillance system with focus on gender due to necessity to use specific targeted prevention.