Blood Service in Central Asian Region

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Pilot sites

- Republican BC
- Tashkent BC
- Republican BC
- Republican BC
- Republican BC
Major project stages:

Stage I
Assessment of blood service status in CAR

Stage II
Provision of technical support:

- Delivery of laboratory equipment
- Setting up methodological centers (Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan)
- Training specialists at all levels:
  a) training courses for laboratory professionals
  b) training managerial staff in the principles of management
Assessment of the status of blood services in Central Asia (CDC/CAR, ICBS) (I)

- Weaknesses of blood donor recruitment:
  - Paid blood donations
- Low capacity of laboratory service of blood banks
  - No comprehensive blood donor screening;
  - Visual interpretation of serological test results
- Insufficient Blood Centers facilities:
  - Application of reusable supplies
  - Incomplete set of equipment
- Nosocomial infections in blood service facilities
Prevalence of HCV infection among Blood Centers personnel, 1999 (n=168)

- Healthy: 62%
- Anti HCV: 8%
- HBs Ag+Anti HBc IgG: 3%
- Anti HBc IgG: 27%
Statistically significant risk factors for HBV infection, 1999

<table>
<thead>
<tr>
<th>Risk factors</th>
<th>(n)</th>
<th>Infected</th>
<th>Non-infected</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure to blood</td>
<td>63</td>
<td>5 (8%)</td>
<td>58</td>
<td>0.01</td>
</tr>
<tr>
<td>No exposure to blood</td>
<td>105</td>
<td>0</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Traumas at working place</td>
<td>24</td>
<td>5 (21%)</td>
<td>19</td>
<td>0.01</td>
</tr>
<tr>
<td>No traumas</td>
<td>39</td>
<td>0</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Repeated use of gloves</td>
<td>15</td>
<td>5 (33%)</td>
<td>10</td>
<td>0.0001</td>
</tr>
<tr>
<td>No repeated use of gloves</td>
<td>63</td>
<td>0</td>
<td>63</td>
<td></td>
</tr>
</tbody>
</table>
Statistically significant risk factors for HCV infection, 1999.

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<th>Risk factors</th>
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<th>Infected</th>
<th>Non- infected</th>
<th>p&lt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donors</td>
<td>77</td>
<td>12 (16%)</td>
<td>65</td>
<td>0.004</td>
</tr>
<tr>
<td>Not donors</td>
<td>91</td>
<td>2</td>
<td>89</td>
<td>0.004</td>
</tr>
<tr>
<td>Plasma donors</td>
<td>46</td>
<td>12 (26%)</td>
<td>32</td>
<td>0.003</td>
</tr>
<tr>
<td>Blood donors</td>
<td>34</td>
<td>0</td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>
Use of reusable bottles for blood collection
Analysis of anti-HCV prevalence among blood donors (CAR, 2003)
Materials and Methods

• In February - August 2003 2500 donors of the Republican Blood Center and 499 pregnant women were screened for HCV markers in one of the Central Asia regions.

• Results of anti-HCV tests of blood serum samples collected from donors (EFA method) in BC laboratory were compared with the data of reference laboratory.

• Questionnaires included demographic data and possible risk factors for donors getting infected with VH.
**Results of laboratory tests of donors for anti-HCV**

<table>
<thead>
<tr>
<th>Blood Center results</th>
<th>(+)</th>
<th>(-)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+)</td>
<td>76</td>
<td>7</td>
<td>83</td>
</tr>
<tr>
<td>(-)</td>
<td>104</td>
<td>2313</td>
<td>2417</td>
</tr>
</tbody>
</table>

**Results of reference laboratories**

<table>
<thead>
<tr>
<th>Blood Center results</th>
<th>(+)</th>
<th>(-)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(+)</td>
<td>180</td>
<td>2320</td>
<td>2500</td>
</tr>
</tbody>
</table>

**Sensitivity** - 42%

**Specificity** – 99%
Anti-HCV prevalence among blood donors

- n=2500
- 8% anti-HCV +
- 4% anti-HCV -

Anti-HCV prevalence among pregnant women

- n=499
- 4% anti-HCV +
- 8% anti-HCV -

RR = 1.93, 95% CI = 1.23 - 3.02, p < 0.004

(CDC logo)
Anti-HCV prevalence among donors (n=2500) and pregnant women (n=499) by sex, RBC, 2003

- Male: 8%
- Female: 7%
- Pregnant women: 4%

RR$_{1,2}$ = 1.19 95% CI = 0.87-1.63 p < 0.3
RR$_{2,3}$ = 1.70 95% CI = 1.02-2.82 p < 0.05
Anti-HCV prevalence among donors by age
RBC, 2003

RR_{1.5}=1.50 \ 95\% \ CI=0.80-2.83 \ P<0.2

n=2500

Age groups

<19  20-29  30-39  40-49  50+
9%   8%   8%   7%   6%
Distribution of donors by occupation, RBC, 2003

- Employee: 525 (21%)
- Worker: 850 (34%)
- Student: 250 (10%)
- Health worker: 75 (3%)
- Farmer: 25 (1%)
- Unemployed: 775 (31%)

n=2500
Anti-HCV prevalence among unemployed and working donors, RBC, 2003

n=2500

RR=1.16 95% CI=0.87-1.54
Anti-HCV prevalence by donation type, RBC, 2003

- Paid donors: 8%
- Relatives: 8%

n=2500  RR=1.19  95% CI=0.87-1.63
Distribution of respondents by the length of donation experience, RBC 2003

- < 1 year: 69%
- 1-5 years: 12%
- 6-10 years: 6%
- 10+ years: 13%

n=2500
Anti-HCV prevalence among respondents by the length of donation experience, RBC 2003

n=2500

Length of donation experience

- <1
- 1-5 years
- 6-10 years
- 10+

Prevalence:
- <1: 8%
- 1-5 years: 6%
- 6-10 years: 7%
- 10+: 7%
Anti-HCV prevalence among plasma and blood donors, RBC, 2003

- Plasma donors: 14%
- Blood donors: 8%

RR = 2.53  95% CI = 1.45-4.41

n=2500
Conclusions (I)

High risk of nosocomial transmission of VHs within Blood Center:

Out of 168 Blood Center staff members:

- 5 (3%) – HBV
- 14 (8%) – HCV

Risk factors with special reference to acquiring VHB:
- Exposure to blood and blood products
- Traumas while working with blood
- Repeated use of gloves

Risk factors with special reference to acquiring VHC:
- Plasma donation (collection of blood into reusable bottles).
Conclusions (II)

- High prevalence rate of anti-HCV (8%) among donors.
- Poor diagnosis quality in the laboratories of Blood Centers (sensitivity 42%).

Within the project framework:
- A training module has been devised.
- Working focus groups have been formed;
- A Guide on the strategy of safe blood use has been developed and published.
- Managers of Blood Centers made a study tour to Jordan National Blood Center.
Recommendations

• Introduce the system of quality assurance and quality control to the laboratories of blood service with the follow-up program monitoring;

• Train Blood Center specialists in major principles of blood safety measures;

• Reduce risk of nosocomial infection in Blood Centers through development and implementation of effective anti-epidemic interventions;

• Blood donations are not recommended for the Blood Center staff.
CDC/CAR Partners

- American Agency for International Development (USAID)
- International Consortium on Blood Safety (ICBS)
- WHO
Blood transfusion is not the only way in which infections are transmitted, but it is the only easily preventable way!