TRANSFUSION SERVICE IN THE CZECH REPUBLIC

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Thomayer Hospital, Prague

Czech Society for Transfusion Medicine
78,864 km²
10.5 million inhabitants
14 regions
Health Service – Czech Republic

- 188 hospitals
  - incl. 20 regional / teaching
  - 58,800 hospital beds
  - 148 blood banks (xmatch)

- Health care is covered with health insurance
  (incl. blood components + plasma derivates)

- Transfusion Medicine + Haematology = one medical specialization
Czech Republic - Transfusion Service

- Decentralised … „hospital-based“
- 53 fully equipped centers (processing + testing)
- 19 WB collection centers
- 148 blood banks (x matching)

... RBC, P, Plt for patients

... P for fractionation (201t L → P derivates for patients)

- Since 2008 – commercial PF centers (12)

... P for fractionation (421t L → EU plasma pool)
Czech Republic - Transfusion Service

- EU law (Blood Directives) – 100% adoption
- SUKL - State Drug Control Agency
  - license blood/BC donations, processing, testing, distribution …
  - inspection division – audit every two years
  - haemovigilance division – reports of serious AR + AE

- Czech Society for TM collects all AR + AE
Blood/Blood Components Donation

• Voluntary, unpaid
• Benefits for donors: time off, refreshments, fare
• Remuneration – compensation (optional)
  – Plasma donation 300 – 500 Kč (11 – 18 €) – C-PF centers
  – Platelets donation 900 Kč (33 €)
• Tax deduction for non-remunerated donors
  – 150 Kč (5,5 €/donation)
• Benefits from health insurance companies
## Donations in the Czech Republic
(2014, 2013 in thousands)

<table>
<thead>
<tr>
<th></th>
<th>Hospital TS</th>
<th>PC-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>WB</td>
<td>402,2</td>
<td>-</td>
</tr>
<tr>
<td>remuneration</td>
<td>0 %</td>
<td></td>
</tr>
<tr>
<td>Plasma</td>
<td>190,6</td>
<td>496,1</td>
</tr>
<tr>
<td>remuneration</td>
<td>1,8 % (13)</td>
<td>100 % (13)</td>
</tr>
<tr>
<td>Apheresis (Plt, RC, MCD)</td>
<td>18,2</td>
<td>-</td>
</tr>
<tr>
<td>remuneration</td>
<td>59,4 % (13)</td>
<td></td>
</tr>
<tr>
<td>Autologous</td>
<td>11,2 (13)</td>
<td>-</td>
</tr>
</tbody>
</table>

Testing of donors

• **Mandatory tests**
  – anti-HIV + p24 Ag (combo test)
  – anti-HCV
  – HBsAg
  – syphilis (Ab)

• **Optional tests**
  – HCV Ag (combo test)
  – NAT testing (2 centers)
  – anti-HBc
Clinical use of BC and PD

- RBC – 380 t TU
- Plasma – 47 t L (quarantine 6 moths)
- Platelets – 36,4 t T.D.

- Albumin … 1221 kg
- F VIII … 51,8 m IU, F IX … 4,8 m IU
- Fibrinogen … 8965 g, PT complex … 5,9 m IU
- AT … 4,3 m IU
- Ig … 292 kg i.v., 67 kg s.c.+ i.m.
- Anti-D Ig … 30,9 t IU

Reports of MoH, UZIS, P.Turek: Production of BTS 2014
RBC (thousands of TU)

- whole blood
- packed RBC
- buffy-coat depleted RBC
- leuko-depleted RBC

+ 6-8 % bed-side filtration

Turek P.: NTK – zpráva o činnosti TS ČR 2013, MZ, květen 2014
Epidemiological situation of the Czech Republic
Czech Republic: New HIV cases
(as to date 31 December 2014; 10,5 mil. inhabitants)
Czech Republic: Regional occurrence of new HIV cases (as to date 31 Dec 2014; cases/1 mil. inhabitants)
Ways of HIV Transmission
1985 – 2014

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
HIV Transmission

2014

- Homo/bisexual: 162, 69.8%
- Heterosexual: 44, 19.0%
- Unspecified: 10, 4.3%
- From mother to child: 1, 0.4%
- Needle sharing: 9, 3.9%
- HIV-infected drug users: 6, 2.6%

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
HIV testing of pregnant women

1990 – 2014

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
HIV testing of donors

1987 – 2014

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Hepatitis A, B, C, E - cases/100,000 inhabitants 2004-2013

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Acute HBV, cases/100 000 inhabitants
1976 - 2012,

Start of vaccination
- risk population

Start of vaccination
- children 1 + 12 years

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Acute HBV, morbidity/age groups, 1982-2012

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Acute HBV

Sum of cases, IDU cases, IDU (%)

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Acute HBV, number of cases

Age group 0 – 20 years

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Hepatitis C, ČR, 1993 - 2012, nemocnost počet případů/100 000 obyvatel HCV, cases/100 000 inhabitants 1993 - 2013
Hepatitis C, IDU (%)

1997 - 2012

V. Nemecek, National Institute of Public Health, National Reference Lab 2014
Testing of blood/BC donors
## HBV testing of blood/BC donors

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>First time donors</td>
<td>37</td>
<td>28</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>No. of FT donors</td>
<td>57054</td>
<td>50142</td>
<td>52599</td>
<td>51767</td>
</tr>
<tr>
<td>Repeat donors</td>
<td>10</td>
<td>17</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>No. of R donors</td>
<td>238600</td>
<td>238895</td>
<td>269757</td>
<td>244142</td>
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</table>
## HCV testing of blood/BC donors

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>First time donors</td>
<td>80</td>
<td>106</td>
<td>94</td>
<td>114</td>
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<tr>
<td>No. of FT donors</td>
<td>57054</td>
<td>50142</td>
<td>52599</td>
<td>51767</td>
</tr>
<tr>
<td>Repeat donors</td>
<td>23</td>
<td>28</td>
<td>23</td>
<td>30</td>
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<tr>
<td>No. of R donors</td>
<td>238600</td>
<td>238895</td>
<td>269757</td>
<td>244142</td>
</tr>
</tbody>
</table>
## HCV 2013: Comparison of Hospital TS and C-PF Donors

<table>
<thead>
<tr>
<th></th>
<th>H-TS</th>
<th>C-PF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First time donors HCV+</strong></td>
<td>16</td>
<td>98</td>
</tr>
<tr>
<td>No. of FT donors</td>
<td>27300</td>
<td>21500</td>
</tr>
<tr>
<td>pos./10,000 donors</td>
<td>5,9</td>
<td>45,6</td>
</tr>
<tr>
<td><strong>Repeat donors HCV+</strong></td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>No. of repeat donors / donations</td>
<td>181,800 / 574,200</td>
<td>35,000 / 465,400</td>
</tr>
<tr>
<td>positive/100,000 donors / donations</td>
<td>3,3 / 1,0</td>
<td>68,6 / 5,2</td>
</tr>
</tbody>
</table>
Adverse reactions, adverse events I

Serious – mandatory to report to SUKL – SDCA

2013: 24 reports

Inputability 2 or 3: 12 cases

<table>
<thead>
<tr>
<th>2013</th>
<th>RC</th>
<th>Plasma</th>
<th>Platelets</th>
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</thead>
<tbody>
<tr>
<td>anaphylaxis</td>
<td>4</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>AB0 incompatibility</td>
<td>1</td>
<td>-</td>
<td>-</td>
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<tr>
<td>TACO</td>
<td>1</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

Serious + mild … voluntary reported to Czech Society for Transfusion Medicine (annually)
# Adverse reaction, adverse events, CSTM Report 2013

<table>
<thead>
<tr>
<th>Reaction Type</th>
<th>Count</th>
<th>Description</th>
<th>P/PA</th>
<th>KRYO</th>
<th>KP</th>
<th>GPK</th>
<th>GA</th>
<th>JINE</th>
<th>JINE SPECIFIKUJTE</th>
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</thead>
<tbody>
<tr>
<td>Febriní nemolytická (FNHTR)</td>
<td>131/2</td>
<td></td>
<td>15/0</td>
<td>3</td>
<td>3/0</td>
<td>190/2</td>
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<tr>
<td>Hemolýza časná imunitní ABO</td>
<td>1/0</td>
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<td></td>
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<tr>
<td>Hemolýza časná imunitní non-ABO</td>
<td>1/0*</td>
<td></td>
<td>0/1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Hemolýza časná neimunitní</td>
<td>1/0</td>
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<tr>
<td>Hemolýza pozdní imunitní</td>
<td>55/4</td>
<td></td>
<td>150/3</td>
<td>7/1</td>
<td>264/8</td>
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<tr>
<td>Anafylaxie</td>
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<td>2/2</td>
<td>0/1</td>
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<tr>
<td>TRALI</td>
<td>1/0</td>
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<tr>
<td>Potransfuzní purpura</td>
<td>33/0</td>
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<tr>
<td>Potransfuzní imunizace Ery</td>
<td>1/0</td>
<td></td>
<td>6/0</td>
<td>1/0</td>
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<tr>
<td>Potransfuzní imunizace leuko, troblo</td>
<td>1/0</td>
<td></td>
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<tr>
<td>Potransfuzní GVHD</td>
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<td>Imunomodulace s komplikacemi</td>
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<td>Potransfuzní sepsie</td>
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<tr>
<td>Přenos infekce: specifikujte</td>
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<tr>
<td>Oběhové přetížení</td>
<td>12/2</td>
<td></td>
<td>2/0</td>
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<tr>
<td>Hypotermie</td>
<td>1/0</td>
<td></td>
<td>1/1</td>
<td></td>
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<tr>
<td>Citrátová reakce</td>
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<tr>
<td>Ionot. dysbalance (K⁺, NH₄⁺, PO₄⁻)</td>
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<td></td>
<td></td>
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<tr>
<td>Jiná: dušnost</td>
<td>3/0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Jiná:</td>
<td>10/0</td>
<td></td>
<td>1/0</td>
<td>1/0</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Jiná: hypotenze</td>
<td>1/0</td>
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<tr>
<td>Jiná: zánětlivá</td>
<td>2/0</td>
<td></td>
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</tr>
</tbody>
</table>

*Inkompatibility v Le/b/
*Uváděte jen reakce se stupněm příspěvovatelnosti 2 a 3.
*Zápis: lehká/težká
Conclusions

• Fragmented transfusion service
• 100% selfsufficiency
  • all blood products (RBC, P, Plt)
  • plasma derivates except of anti-D
• Support of EU with plasma (> 420 t L/annually)
• Safe blood therapy
• Future?
Thank you for your attention