Brucellosis in Republic of Macedonia

FAO Sub-regional meeting on brucellosis control

12-13 November 2014, Skopje, Republic of Macedonia

Food and Veterinary Agency

- FVA establish in 2011
- Food Safety Law-2010
- Seven departments
  - Animal health and welfare
  - Veterinary public health
  - Food of non animal origin
  - Border inspection
  - EU and international cooperation
  - Legal and administrative affairs
  - Professional support
FVA Competences

- Control of food and feed safety and control of the quality of food of animal origin;
- Veterinary issues related to animal health and animal welfare;
- Identification and registration of animals;
- Protection and welfare of animals;
- Animal by-products;
- Veterinary medicinal products;
- Other activities significant for the veterinary health, food and feed safety.

Department for Animal Health and Welfare

- Animal Health Unit
- Animal Welfare and Protection Unit
- Identification and Registration Unit
- Unit for Contingency planning
- State inspectorate for Animal Health
Department competence

- Animal health
- Identification and registration of animals
- Animal welfare

Legal Frame and VIS

- Laws
  - Law on animal health
  - Law on Identification and registration
  - Law on animal protection and welfare
- Book of rules
- Annual order for animal health
- Annual or Multiannual programs for control and eradication of diseases
- Monitoring programs
- Veterinary information system (VIS) during 2013 was completed and became operational
  - Connected with the Laboratory Information System
  - Database for identification and registration of animals is also an integral part of this information
Levels of Veterinary service

• First Level
  – FVA Central office (21 employees)

• Second Level
  – Local units (28 local units with 62 employees of which 37 official veterinarians)

• Third Level
  – Private Veterinary Practices (118 contracts)

Animal health control system

Surveillance network

Annual order for animal health protection

Law, BoR and multiannual disease control plans and programs

Private Veterinary Practices - implementation (vaccination, animal testing, implementation of I&R activities)

National Reference Laboratory - Faculty of Veterinary Medicine - Skopje

Enforcement and overall control - Official veterinarians responsible for control of implementation of measures for animal health
Measures for control of Brucellosis in small ruminants before 2008

- Test and slaughter
- Laboratory test
  - Rose Bengal as screening test
  - CFT or ELISA as confirmation test
- Compensation for slaughtered animals at 100% market value
Test and slaughter < 2008

<table>
<thead>
<tr>
<th></th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested villages</td>
<td>967</td>
<td>/</td>
<td>662</td>
<td>273</td>
</tr>
<tr>
<td>Infected villages</td>
<td>323</td>
<td>256</td>
<td>158</td>
<td>62</td>
</tr>
<tr>
<td>% of infected villages</td>
<td>33.4%</td>
<td>24.0%</td>
<td>23.9%</td>
<td>22.71%</td>
</tr>
</tbody>
</table>

Test and slaughter < 2008-statistical parameters in infected villages

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average prevalence</td>
<td>10.28%</td>
</tr>
<tr>
<td>Median of prevalence</td>
<td>3.34%</td>
</tr>
<tr>
<td>Average number of positive animals</td>
<td>43</td>
</tr>
<tr>
<td>Median of positive animals/village</td>
<td>7</td>
</tr>
<tr>
<td>Estimated number of infected flocks</td>
<td>&gt;1000</td>
</tr>
</tbody>
</table>
Conclusions and shortcomings in respect of brucellosis control before 2008

- A number of inconsistencies have been identified during implementation of test & slaughter strategy
  - Only a proportion of villages (and flocks) were tested
  - Retesting in positive flocks is not done consistently
  - Animals were not permanently identified
  - Insufficient movement control
  - Positive animals are not removed consistently
  - Proper implementation of diagnostic tests (RB as screening and CFT or ELISA as confirmatory) was very expensive
- Timely removal and compensation require great financial resources
- Brucellosis is widely spread in the country and the disease prevalence and absolute number of infected animals differ between regions

Brucellosis control after 2008

- The test and slaughter strategy was inappropriate in terms of implementation of same strategy in flocks with different prevalence
- Based on the disease situation, the country is divided in three regions:
  - Regions where the disease is not present or is present in very low prevalence (0-1%)
  - Regions where the disease is commonly present in low or higher prevalence (1-5%)
  - Regions where the disease is present in high prevalence (>5%)
- Passive surveillance - submission of aborted materials for laboratory testing and exclusion Brucella as causative agent of abortions
Division of country based on prevalence of brucellosis after 2008

Measures in “green” regions

- The flock prevalence in the region is low (<1%)
  - Implemented in "traditional" free regions of the country
  - Vaccination is forbidden
  - Diagnostic testing of all sheep and goats older than six months
  - Slaughter of all positive animals and very frequently complete depopulation of infected flock
  - Enforce strict hygienic measures in infected flocks
  - Immediate retesting of all positive and suspected flocks (first test 30 days after slaughter of positive animals second is one month after receiving results with negative outcome, and the third test will be three months after the second test)
Measures in “yellow” regions

- The flock prevalence in the region with prevalence of (2-5%)
  - Combination of mass vaccination and test and slaughter
  - Vaccination of replacement animals 3-6 months old
  - Vaccinated animals are tagged with special ear tags or recently identified in VIS
  - Movement of vaccinated animals is banned four weeks after vaccination
  - Slaughter of vaccinated animals is allowed three months after vaccination
  - Vaccination of older sheep and goats is not allowed
  - Testing of sheep and goats older than 6 months and 18 months in case of vaccinated animals

Measures in “red” regions

- The flock prevalence in the region with prevalence of (>5%)
  - Mass vaccination (live *Br. melitensis* Rev 1)
  - Aim is to rapidly create immune population
  - Decrease the incidence within flock and “close the door” for new infections in healthy flocks
  - In 2008, mass vaccination of all sheep and goats older than 3 months (Stip, Karbinci, Radovis, Konce, Valandovo)
  - In following years, vaccination of replacements animals
  - In 2010 additional 3 regions with mass vaccination (Skopje, Tetovo and Gostivar)
Diagnostic tests 2010

- Identification of the agent
- Laboratory test
  - RB
  - CFT
  - AGID tests (differentiation between vaccinated and infected animals) implemented after 2012

Movement of animals - 1

- Only animals that fulfill the animal health conditions can be placed on the market
- The other animals of the positive flock may be sent directly to the slaughterhouse with a special document issued by the official veterinarian
- Animal health Certificate issued by the VP
- Control by the OV
Movement of animals-2

- During July 2014 amending the program for control and eradication of Brucellosis in sheep and goats (main change is facilitation of movement of animals between Epidemiological units with different health status in respect of brucellosis)
- Animals coming from holdings of the same health status
- Individual identified
- Movement of animals that come from holdings with different health status is done under stringent conditions:
  - not showing clinical signs last 12 months
  - isolated in period at least six weeks when tested with negative results

Expected results

- Reduce the further spreading of the disease
- Decrease the absolute number of positive animals
- Decrease the number of positive cases in human population
- Decrease financial resources allocated for control of the disease
- Improve the movement control
### Result of implementation of Brucellosis control 2008-2013

<table>
<thead>
<tr>
<th>Years</th>
<th>Tested sheep and goats</th>
<th>Positive sheep/goats</th>
<th>% positive sheep/goats</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>626,748</td>
<td>16,052</td>
<td>2.56%</td>
</tr>
<tr>
<td>2009</td>
<td>653,863</td>
<td>11,256</td>
<td>1.72%</td>
</tr>
<tr>
<td>2010</td>
<td>422,752</td>
<td>2,865</td>
<td>0.68%</td>
</tr>
<tr>
<td>2011</td>
<td>362,662</td>
<td>1,312</td>
<td>0.36%</td>
</tr>
<tr>
<td>2012</td>
<td>296,561</td>
<td>112</td>
<td>0.04%</td>
</tr>
<tr>
<td>2013</td>
<td>346,947</td>
<td>338</td>
<td>0.10%</td>
</tr>
</tbody>
</table>

![Graph showing positive sheep/goats]

### Result of implementation of Brucellosis control 2008-2013

<table>
<thead>
<tr>
<th>Years</th>
<th>Tested flock</th>
<th>Positive flock</th>
<th>% positive sheep and goats</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>5,820</td>
<td>636</td>
<td>10.93%</td>
</tr>
<tr>
<td>2009</td>
<td>6,522</td>
<td>712</td>
<td>10.92%</td>
</tr>
<tr>
<td>2010</td>
<td>6,312</td>
<td>171</td>
<td>3.22%</td>
</tr>
<tr>
<td>2011</td>
<td>4,545</td>
<td>80</td>
<td>1.76%</td>
</tr>
<tr>
<td>2012</td>
<td>3,889</td>
<td>16</td>
<td>0.41%</td>
</tr>
<tr>
<td>2013</td>
<td>7,453</td>
<td>42</td>
<td>0.56%</td>
</tr>
</tbody>
</table>

![Graph showing positive flock]

---

12
Brucellosis cases in human population

Conclusions after implementation

- New strategy have limited success in decreasing of the number of positive flocks
- There is improvement of within flock control
- Number of positive humans is decreased
- Savings of financial resources for compensation are significant
- Good base for further improvement of the national strategy of eradication of brucellosis
Challenges - next steps

- Revise the achieved results and adopt revised approach accordingly with current situation (2015 – 2020)
- Strengthen animal I&R and movement control
- Strengthen of the epidemiological investigation and tracing back
- Improvement of diagnostic regime (RB+CFT+bacteriology)
- More in depth analysis of the situation and division of the country on more epidemiological units
- Introduce and maintaining of classification of status on flocks (Brucellosis)
- Prepare to phase out of Brucellosis vaccination strategy
- To extend the programme for eradication of brucellosis in wild animals on whole territory of the country

Bovine Brucellosis

- Control and eradication of Bovine Brucellosis in accordance with multiannual programme
- Test and slaughter policy (all animals > 6 months)
- Laboratory test
  - Rose Bengal as screening test
  - CFT or ELISA as confirmation test
- Compensation for slaughtered animals at 100% market value
### Bovine Brucellosis

<table>
<thead>
<tr>
<th>Year</th>
<th>No. of tested animals</th>
<th>No. of positive animals</th>
<th>% of positive animals</th>
<th>No. of positive herds</th>
<th>No. of slaughtered animals</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>168,682</td>
<td>663</td>
<td>0.39%</td>
<td>78</td>
<td>665</td>
</tr>
<tr>
<td>2011</td>
<td>147,615</td>
<td>225</td>
<td>0.15%</td>
<td>66</td>
<td>229</td>
</tr>
<tr>
<td>2012</td>
<td>144,619</td>
<td>416</td>
<td>0.29%</td>
<td>64</td>
<td>357</td>
</tr>
<tr>
<td>2013</td>
<td>144,629</td>
<td>344</td>
<td>0.24%</td>
<td>46</td>
<td>321</td>
</tr>
</tbody>
</table>

Thank you on your attention

**Contact details:**
Blagojcho Tabakovski  
Acting Head of Animal Health and Welfare Department  
E-mail: btabakovski@fva.gov.mk