Control of brucellosis in Bosnia and Herzegovina

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Worldwide solution pathways
Introduction

• Until the year 2000 there were not adequate data on the presence of brucellosis in Bosnia and Herzegovina

• From 2001 there has been a constant increase in the number of cases of brucellosis in animals

• 2008 was the year of the culmination of the number of cases of brucellosis in animals and humans, when was diagnosed:
  • 260 cases of the disease in cattle,
  • 24,580 positive sheep and goats, and
  • 994 infected people

Introduction - I

• 2008 was the year of the culmination of the number of cases of brucellosis in animals and humans, in which applying test and slaughter strategy was diagnosed:
  - 2007 outbreaks,
  - 60% affected territory of BiH,
  - 70,000 animals were destroyed,
  - Cost damage of 7.5 million EUR.
  - Sampled almost 540,000 sheep and goats (70%) and about 80,000 cattle (dairy cows).
The results of diagnostic tests have shown

- Disease prevalence in BiH (4.55% on individual level, over 40% on HL),
- Possible ways of spreading the disease,
- Level of endangerment of human health, but also committed ourselves to chose the way to control the disease

- Confirmation of agent (Brucella melitensis, biovar 2)

Control measures in 2009

- Development of the Operational Programme for the control of brucellosis in small ruminants
- Beginning of mass vaccination of small ruminants;
- Identification of small ruminants;
- Diagnostic control;
- The educational and media campaigns;

- Monitoring, evaluation and analysis of all the activities and achieved results in the brucellosis control programme.
Implementation of the program - legislation

As the legislative regulations have to follow the law, the effective and efficient implementation of the brucellosis control program in BiH, SVO together with the working group has developed and adopted the following:

- Operational Programme for the control of brucellosis in small ruminants in Bosnia and Herzegovina
- Book of rules on measures to control brucellosis in small ruminants ("Official Gazette of BiH", No. 43/09, 83/09),
- Guidance on the implementation of monitoring the success of vaccination against brucellosis in vaccinated animals, and
- Guidance on organizing the implementation of vaccination against brucellosis in small ruminants, which is adopted each year until the month of March

Implementation of the program – leg. example

Scheme for the circulation of forms and invoicing of brucellosis control measures in small ruminants
For the required efficiency of the programme to control brucellosis in BiH, it was necessary to ensure continuation of the implementation of all activities in upcoming years, as provided in the OP. In this regard, SVO for the continuation of this program has provided:

- Vaccine (Ocurev Rev-1),
- Protective equipment (masks, gloves and goggles)
- Vaccination and identification ear tags,
- Applicators,
- Mobile fridges,
- Forms for the implementation of vaccination and forms for monitoring,
- Diagnostics (tubes, needles, RB, CFT)
- Promotional material for advertising information campaign.

In BiH in 2009 was carried out

- Vaccination of 666,474 animals;
- Identification of 799,376 animals;
- Blood samples collected 19,978;
- Number of positives IGC 15,828, or 80%
Overview of conducted activities in 2009

<table>
<thead>
<tr>
<th></th>
<th>Vaccinated</th>
<th>Identified</th>
<th>No of samples</th>
<th>Positives</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>BiH</td>
<td>666 474</td>
<td>799 376</td>
<td>19 978</td>
<td>15 828</td>
<td>80</td>
</tr>
</tbody>
</table>

Field work, picture examples
Activities:

- Continuation of the initiated activities in vaccination of small ruminants (consistent implementation of vaccination of young animals of 3-6 months of age);
- Vaccination of sheep and goats over six months of age which in previous year were not vaccinated due to gravidity.
- Diagnostic control;
- Education and media campaigns as a permanent task;
- Monitoring, evaluation and analysis of all the activities and results achieved in the control of brucellosis.

Control strategy from 2010 - today

<table>
<thead>
<tr>
<th>Year</th>
<th>Vaccinated</th>
<th>&lt;6 months</th>
<th>&gt;6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>666 474</td>
<td>182 422</td>
<td>484 052</td>
</tr>
<tr>
<td>2010</td>
<td>296 421</td>
<td>177 631</td>
<td>118 790</td>
</tr>
<tr>
<td>2011</td>
<td>178 744</td>
<td>165 290</td>
<td>13 454</td>
</tr>
<tr>
<td>2012</td>
<td>19 913</td>
<td>171 867</td>
<td>9 046</td>
</tr>
<tr>
<td>2013</td>
<td></td>
<td></td>
<td>83</td>
</tr>
</tbody>
</table>

Review of vaccinated animals
Small ruminants flock size in Bosnia and Herzegovina

- < 5 animals: 14%
- 5-10 animals: 11%
- 10-20 animals: 7%
- 20-30 animals: 12%
- 30-50 animals: 5%
- 50-75 animals: 4%
- 75-100 animals: 3%
- 100-200 animals: 18%
- >200 animals: 23%

Distribution of brucellosis in BiH during 2003 - today

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Number of outbreaks</th>
<th>Number of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>32</td>
<td>168</td>
</tr>
<tr>
<td>2004</td>
<td>71</td>
<td>787</td>
</tr>
<tr>
<td>2005</td>
<td>116</td>
<td>838</td>
</tr>
<tr>
<td>2006</td>
<td>107</td>
<td>2263</td>
</tr>
<tr>
<td>2007</td>
<td>582</td>
<td>6830</td>
</tr>
<tr>
<td>2008</td>
<td>1583</td>
<td>22122</td>
</tr>
<tr>
<td>2009</td>
<td>167</td>
<td>2425</td>
</tr>
<tr>
<td>2010</td>
<td>56</td>
<td>294</td>
</tr>
<tr>
<td>2011</td>
<td>28</td>
<td>168</td>
</tr>
<tr>
<td>2012</td>
<td>23</td>
<td>406</td>
</tr>
<tr>
<td>2013</td>
<td>25</td>
<td>88</td>
</tr>
</tbody>
</table>
Geographical distribution of brucellosis 2008 - today

Monitoring of Brucellosis in bovine animals 2011 – 2013

<table>
<thead>
<tr>
<th>Year</th>
<th>Entity</th>
<th>Number of samples</th>
<th>Positives</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>FBiH</td>
<td>65 059</td>
<td>14</td>
<td>0,021</td>
</tr>
<tr>
<td></td>
<td>RS</td>
<td>45 348</td>
<td>6</td>
<td>0,013</td>
</tr>
<tr>
<td></td>
<td>Total in BiH</td>
<td>113 521</td>
<td>20</td>
<td>0,017</td>
</tr>
<tr>
<td>2012</td>
<td>FBiH</td>
<td>70 434</td>
<td>21</td>
<td>0,029</td>
</tr>
<tr>
<td></td>
<td>RS</td>
<td>45 658</td>
<td>7</td>
<td>0,015</td>
</tr>
<tr>
<td></td>
<td>Total in BiH</td>
<td>116 092</td>
<td>28</td>
<td>0,024</td>
</tr>
<tr>
<td>2013</td>
<td>FBiH</td>
<td>69 492</td>
<td>27</td>
<td>0,038</td>
</tr>
<tr>
<td></td>
<td>RS</td>
<td>44 065</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total in BiH</td>
<td>115 994</td>
<td>27</td>
<td>0,023</td>
</tr>
</tbody>
</table>
For the purpose of continuing the oral vaccination of foxes against Rabies, as well as the vaccination of small ruminants against Brucellosis, in the period from 01/01/2014 to 31/12/2015 the funds have been provided through IPA and the European Commission respectively, with certain contribution from BiH side in total amounting of 6.577.500 EUR.

This significant decrease in the number of infected people is the best indicator of the success of the program of vaccination of small ruminants in BiH in the period 2008 - today.
The observed weaknesses

• At the early begging of program implementation there were some resistance in the field which is why vaccination is not carried out in some herds

• At the beginning of mass vaccination in 2009, due to lack of knowledge of the actual situation in terms of the total number of animals in some areas there has been some wastage of used materials, specially in ear tags

• Entering and checking “field” information to a national database is time consuming and requires additional human resources

• The inability to prevent illegal crossing of animals from our neighboring countries (examples shown in the following slides)
The observed weaknesses – examples – II

The observed weaknesses – examples – III
Conclusions and future challenges

- The mass vaccination carried out in BiH represents a model which is used worldwide and it is based on internationally recognized experience and recommendations of the best model that can be applied in the exact situation like it is in BiH.

- Excellent results of the implementation of strategy and undertaken media campaigns for raising public awareness, resulted in a huge reduction in the number of cases of brucellosis in animals and in humans.

- Maintenance and improvement of necessary communication between the veterinary organizations in the field and farmers (animal holders), with defined purpose of creating the necessary confidence in the consistent implementation of planned measures.

Conclusions and future challenges - I

- Based on the indicators identified during the implementation of vaccination programs in other countries, EU member states, for the effectiveness of brucellosis control program like it is in BiH, it is necessary to ensure the continued implementation of all activities in the following years, as proposed by the Operational Program.

- By creating immune population of sheep and goats, and the "eradication" of brucellosis in BiH, produce preconditions for improving the status of veterinary services on the international level.

This would significantly contribute BiH access to the international market, and eventually improve the economic situation in BiH
Better control and much happier patient

Thank you for your attention!