CURRENT RABIES SITUATION IN CROATIA

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INTRODUCTION

Croatia
Population: 4.6 million
Surface area: 56,542 km²
HUMAN RABIES - EPIDEMIOLOGY

The last case of human rabies in Croatia was registered 50 years ago, in 1964. Since then, there were two imported cases of human rabies in Croatia; the first in 1989; and, the second in 1995. Both were from the Republic of Bosnia and Herzegovina.

Transmitting animals: dog, fox
Surveillance systems

Health care infrastructure concerning antirabies activities is organised through public health institutes. There are 21 public health institutes in Croatia, one in every county. They treat the patients, and send their reports to the Reference Centre in Zagreb at Dr. Andrija Štampar Public Health Institute. Reference centre in Zagreb is receiving monthly reports from all county public health institutes. At the end of the year, all county reports are
summarized, and sent to Croatian National Institute of Public Health, which is proceeding it to WHO. Croatian National Institute of Public Health is collaborating with ECDC, and is included in EPISOUTH and CSID programes. Croatia is not a member of the Rabnet network, because we did not have cases of human rabies since 1964.
All county public health institutes in Croatia have a permanent early warning system which includes epidemiologists dealing with infectious diseases. Every week one epidemiologist in every county (total, 21) is on stand by, and every public health facility or other organisations such as police, hospitals, firemen etc. have his/her phone number which they will call if necessary.

In case of any incident, including a patient bitten by an animal, the reaction is prompt and immediate.
In this stand by preparedness, Croatian National Institute of Public Health is also included, because it is also a Reference centre for epidemiology. This early warning epidemiological alert system was established during the Patriotic War (1991-1995) in Croatia. I believe this is the main reason why in Croatia we do not have more cases of human rabies. Also the cooperation with veterinarian organisations is very good, including state, county and municipal level.
LABORATORY DIAGNOSTICS OF RABIES IN CROATIA

Except in Zagreb, where there is Croatian Veterinary Institute; there are 4 laboratories for laboratory diagnostics of rabies in Croatia: Križevci, Vinkovci, Rijeka and Split (total, 5). They are sending their reports to Zagreb, to the Croatian Veterinary Institute, who is proceeding it to WHO. These reports can be read in Rabies Bulletin Europe.
TESTS USED

Procedures for sequencing and virus identification on primary and line culture cells, virus neutralisation tests on cell cultures, methods of haemagglutination and haemadsorption, PCR, ELISA, direct or indirect fluorescent technique antibody test (FAT), etc.

Etiological diagnostic of rabies is performed by direct immunofluorescent test as the “golden standard”, sequencing of virus identification on cell culture (BKC) and biological test on mice.
For serologic diagnostics of rabies, e.g. for checking immunity of dogs and cats, ELISA and FAVN tests are used. Those tests are also used for evaluation of fox immune status concerning oral rabies vaccination campaigns in wildlife. For checking the intake of live oral baits in these campaigns, the bones of killed foxes are tested on presence of oxytetracycline with fluorescent microscopy. Unfortunately, RFFIT test can not be done in Croatia.
National recommendations for post-exposure prophylaxis (PEP)

The National law of protection of people against infectious diseases from 2007 in Croatia, prescribes recommendations and treatment procedures against rabies among other infectious diseases. In Croatia, there are four following risk groups in which PEP is indicated; risk groups A, B, C and D.
Risk group A – Injury by laboratory proven rabid animal that includes bite, scratch, contact with saliva and mucous membranes, contact with rabies virus or any other infectious material in laboratory, etc., or contact in general

Risk group B – Injury by suspect rabid animal (at the moment of patient treatment the biting animal was not found, or escaped, or laboratory testing could not be performed, or killed or died suddenly and the carcass was thrown away or destroyed)
Risk group C – Injury by unknown animal, stray animal etc. which ran away immediately after injuring the patient

Risk group D – Injury by known animal which is put under veterinarian surveillance and stayed healthy after 10 days of custody
WOUND TREATMENT

In case that the wound was not treated in emergency wards in hospitals or at their general practitioners clinics; the wound is thoroughly washed with soap and water, then rinsed with 70% ethyllic alcohol and then with iodine solution.

Also the patient is given an injection against tetanus. Antibiotic treatment is usually prescribed by specialists in hospitals, depending on wound severity, when treating the patient at the emergency wards. Suturing of wounds depends on the severity of the biting wounds.
Vaccine administration regimens approved

There are two regimens for antirabies treatment that are being used in Croatia according to the National recommendations for PEP.

1. Zagreb 2-1-1 regimen, which was adopted by WHO in 1992.; a four dose treatment on days 0, 7 and 21 (two doses are given on day 0 in both deltoid muscles i.m., and then one dose on day 7 and 21).
2. Essen scheme with 5 doses on days 0,3,7,14 and 28 - but it is rarely done (complicated for patients!)
Zagreb 2-1-1 scheme was adopted by WHO for these reasons:

1. It has a better and faster immune response than classical, Essen scheme with 5 doses of vaccine
2. It is saving 1 dose of vaccine
3. It is saving on the travel of patients who had to travel to receive the PEP
4. It is saving two visits to the patient; because instead of 5 visits in Essen scheme, the patient is coming 3 times and receiving 4 doses of vaccine
5. In case of payment for the treatment, the patient has to pay only 4 instead of 5 doses of vaccine
Human rabies immunoglobulin (HRIG)

Usually, HRIG is given via i.m. route when indicated in standard dose of 20 IU/kg of body weight. Institute of Immunology Zagreb, till recently, produced HRIG, which was distributed in other county public health institutes upon their needs.
Indications and recommendations for HRIG are written in Croatian Law of protection against infectious diseases (2007), and usually they are as follows:

- Severe multiple bites that require hospitalisation
- Bites on head, face and neck
- Injury by proven rabid animal (bite, scratch)
- Contact with saliva of rabid animal against abrasive skin lesions, or mucuos membranes
- Injuries with infected materials in diagnostic laboratories
- Injuries during deskinning and decapitating animals (hunters and taxidermists) - rarely
Number and geographic distribution of bite management centers in the country:

It can be done only in public sector, and not in private sector at all. It is done at 21 county public health institutes which cover the entire area of Republic of Croatia; but when we include all cities and towns which are subordinated to county public health institutes all over Croatia, this number grows over 80. Severly bitten patients are taken care of in county hospitals, clinics and hospital centres, but in case of human rabies only at Clinic of Infectious Diseases “Dr. Fran Mihaljević” in Zagreb.
Only trained physician specialists e.g. epidemiologists, are involved in antirabies treatment in Croatia. It is done exclusively in all public health institutes in Croatia, or sometimes in hospitals.
Vaccines used for PEP

In Croatia there are two registered rabies vaccines for human PEP: Human diploid cell culture vaccine (HDCV); Purified chick embryo cell culture vaccine (PCECV). Vero vaccine is not registered in Croatia.
COST OF PEP

The cost of PEP in Croatia is completely covered by Croatian Institute for Health Insurance, and that includes vaccine, HRIG and medical service. These costs are paid by Government (Ministry of Health of Republic of Croatia). Foreign patients who come to Croatia and have to continue their antirabies treatment, or travellers, pay for the treatment themselves, and later refund the expenses from their insurance facilities.
PRE-EXPOSURE PROPHYLAXIS (PReP)

Target population: veterinarians and their staff, including students, veterinarian pathologists, staff in diagnostic laboratories, hunters, speleologists, biologists, professional soldiers of Croatian army in UN and NATO missions, animal catchers and so on. Every county public health centre in Croatia can perform this vaccination, upon specific requirements of target population mentioned above.
Though these risk groups (except the Army!) should receive preexposure treatment, in many counties it represents a financial burden for veterinarians because this vaccination is not covered by Croatian Institute for Health Insurance, and they have to pay for it themselves. The cost of one dose of HDC vaccine is 65 €, while the cost of one dose of PCEC vaccine is 53 €.
ANIMAL RABIES CONTROL

In Croatia, we have a national rabies control programme which is supported by Ministry of Agriculture, and it can be presented in several strategies.

1. Monitoring and surveillance programme for control and eradication of rabies is systematically conducted annually on the territory of whole Croatia
   - Proscribed by Annual Order

2. Lyssacan-electronic software system for registration of dogs
   - also functions as a record of dogs vaccinated against rabies.
According to Annual order mandatory vaccination is prescribed for:
- All dogs older than three months
- Vaccination against rabies in the entire territory of the Republic of Croatia once per year.

**Vaccination of other species of animals is not mandatory!**

a) Decision of the animal’s owner.
b) Recommendations for vaccination of cats and ferrets
   If required by epi-situation the Minister of Agriculture may also order vaccination of other species of animals against rabies.
1991-1996 ORV Croatia
- 11 vaccination campaigns
- 533,900 vaccine baits were used
- Istarska, Primorsko-goranska, Zagrebačka, Karlovačka, Krapinsko-zagorska, Varaždinska, Međimurska and City of Zagreb

Insufficient financial funds stopped ORV program
First oral vaccination campaign was implemented in Autumn 2010
Numbers and figures

Teritory of Croatia: **56.542 km²**
Estimated area covered by baits: **35.000 km²**
Baiting density: **25 baits per km²**
Vaccination campaign: **2 per year** (spring and autumn)
Number of vaccine baits per campaign: **875.000**
Baits drop by airplane
Table 1. The report of human rabies protection in Croatia from 2008. to 2012.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of examined persons</th>
<th>Number of persons who received postexposure prophylaxis (PEP)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Vaccine only</td>
<td>Vaccine + HRIG</td>
</tr>
<tr>
<td>A</td>
<td>1408</td>
<td>1069</td>
<td>238</td>
</tr>
<tr>
<td>B</td>
<td>508</td>
<td>312</td>
<td>135</td>
</tr>
<tr>
<td>C</td>
<td>6531</td>
<td>5415</td>
<td>213</td>
</tr>
<tr>
<td>D</td>
<td>19068</td>
<td>511</td>
<td>38</td>
</tr>
<tr>
<td>TOTAL</td>
<td>27515</td>
<td>7307</td>
<td>624</td>
</tr>
</tbody>
</table>

A: Injury of proven rabid animal (bite, scratch, contact with saliva) or contact in general with proven rabid animal or contaminated material
B: Injury caused by suspect rabid animal
C: Injury caused of an unknown, dead, stray, killed or wild animal
D: Injury caused of an known animal which stayed healthy after 10 days of veterinarian surveillance
Received PEP after being bitten, scratched or having contact with: dog 4684; cat 1729; other animals (species, number): fox 414; rat 304; domestic ungulates (bull, cow, lamb, sheep, goat, pig) 271; other rodents (rabbit, field mouse, squirrel, dormouse, etc.) 157; other animals (monkey, bear, jackal etc.) 96; domestic equids (horse, donkey) 66; wild ungulates (deer, wild boar, raindeer) 56; bat 53; wolf 36; marten 28; weasel 12; skunk 11; poultry 8; badger 2; bait for ORV 4.
Received PEP after being bitten, scratched, or having contact upon: lower limbs – 2498, upper limbs – 2901, trunk – 136, fist and fingers – 1569, head and neck – 401, multiple injuries – 426; Total: 7931
Table 2. An overview of antirabies activities of the county public health institutes in the Republic of Croatia from 2008 to 2012.

<table>
<thead>
<tr>
<th>COUNTY</th>
<th>NUMBER OF PERSONS</th>
<th>EXAMINED</th>
<th>VACCINATED</th>
<th>% OF VACCINATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>CITY OF ZAGREB</td>
<td>3106</td>
<td>785</td>
<td>25,3</td>
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<tr>
<td>KRAPINSKO-ZAGORSKA</td>
<td>764</td>
<td>185</td>
<td>24,2</td>
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<tr>
<td>SISAČKO-MOSLAVAČKA</td>
<td>2022</td>
<td>745</td>
<td>36,8</td>
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</tr>
<tr>
<td>KARLOVAČKA</td>
<td>1017</td>
<td>449</td>
<td>44,1</td>
<td></td>
</tr>
<tr>
<td>VARAŽDINSKA</td>
<td>1194</td>
<td>483</td>
<td>40,5</td>
<td></td>
</tr>
<tr>
<td>KOPRIVNIČKO-KRIŽEVAČKA</td>
<td>884</td>
<td>228</td>
<td>25,8</td>
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</tr>
<tr>
<td>BJEOVARSKO-BILOGORSKA</td>
<td>838</td>
<td>379</td>
<td>45,2</td>
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<tr>
<td>PRIMORSKO-GORANSKA</td>
<td>1731</td>
<td>461</td>
<td>26,6</td>
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<tr>
<td>LIČKO-SENJSKA</td>
<td>122</td>
<td>58</td>
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<td>180</td>
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<tr>
<td>POŽEŠKO-SLAVONSKA</td>
<td>668</td>
<td>300</td>
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<tr>
<td>BRODSKO-POSavska</td>
<td>1490</td>
<td>452</td>
<td>30,3</td>
<td></td>
</tr>
<tr>
<td>ZADARSKA</td>
<td>1102</td>
<td>198</td>
<td>17,9</td>
<td></td>
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<tr>
<td>OSJEČKO-BARANJSKA</td>
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<td>837</td>
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</tr>
<tr>
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<td>283</td>
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<tr>
<td>VUKOVARSKO-SRIJEMSKA</td>
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<td>322</td>
<td>27,9</td>
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<tr>
<td>SPLITSKO-DALMATINSKA</td>
<td>1997</td>
<td>656</td>
<td>32,8</td>
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<tr>
<td>ISTARSKA</td>
<td>1741</td>
<td>258</td>
<td>14,8</td>
<td></td>
</tr>
<tr>
<td>DUBROVAČKO-NERETVANSKA</td>
<td>332</td>
<td>193</td>
<td>58,1</td>
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<tr>
<td>MEDIMURSKA</td>
<td>854</td>
<td>190</td>
<td>22,2</td>
<td></td>
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<tr>
<td>ZAGREBAČKA</td>
<td>1685</td>
<td>289</td>
<td>17,2</td>
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</tr>
<tr>
<td>TOTAL</td>
<td>27515</td>
<td>7931</td>
<td>28,8</td>
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Table 3. The results of rabies analysis of the animals in Croatia in 2008.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. of searched animals</th>
<th>Positive results</th>
<th>% of positive results</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOX</td>
<td>3051</td>
<td>994</td>
<td>32.6</td>
</tr>
<tr>
<td>OTHER WILD ANIMALS</td>
<td>1390</td>
<td>13</td>
<td>0.9</td>
</tr>
<tr>
<td>DOG</td>
<td>599</td>
<td>32</td>
<td>5.3</td>
</tr>
<tr>
<td>CAT</td>
<td>409</td>
<td>30</td>
<td>7.3</td>
</tr>
<tr>
<td>OTHER DOMESTIC ANIMALS</td>
<td>125</td>
<td>21</td>
<td>16.8</td>
</tr>
<tr>
<td>TOTAL</td>
<td><strong>5574</strong></td>
<td><strong>1090</strong></td>
<td><strong>19.6</strong></td>
</tr>
</tbody>
</table>
Source: *Friedrich-Löffler Institut, Germany*

Table 4. The results of rabies analysis of the animals in Croatia in 2009.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. of searched animals</th>
<th>Positive results</th>
<th>% of positive results</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOX</td>
<td>3867</td>
<td>730</td>
<td>18.9</td>
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<tr>
<td>OTHER WILD ANIMALS</td>
<td>1133</td>
<td>20</td>
<td>1.8</td>
</tr>
<tr>
<td>DOG</td>
<td>575</td>
<td>30</td>
<td>5.2</td>
</tr>
<tr>
<td>CAT</td>
<td>440</td>
<td>17</td>
<td>3.9</td>
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<tr>
<td>OTHER DOMESTIC ANIMALS</td>
<td>154</td>
<td>19</td>
<td>12.3</td>
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<tr>
<td>TOTAL</td>
<td><strong>6169</strong></td>
<td><strong>816</strong></td>
<td><strong>13.3</strong></td>
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</table>
Source: Friedrich-Löffler Institut, Germany
Table 5. The results of rabies analysis of the animals in Croatia in 2010.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No.of searched animals</th>
<th>Positive results</th>
<th>% of positive results</th>
</tr>
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<tbody>
<tr>
<td>FOX</td>
<td>3691</td>
<td>589</td>
<td>16</td>
</tr>
<tr>
<td>OTHER WILD ANIMALS</td>
<td>1104</td>
<td>9</td>
<td>0,8</td>
</tr>
<tr>
<td>DOG</td>
<td>562</td>
<td>23</td>
<td>4,1</td>
</tr>
<tr>
<td>CAT</td>
<td>390</td>
<td>13</td>
<td>3,4</td>
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<tr>
<td>OTHER DOMESTIC ANIMALS</td>
<td>138</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>UKUPNO/TOTAL</td>
<td>5885</td>
<td>663</td>
<td>11,3</td>
</tr>
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</table>
Table 6. The results of rabies analysis of the animals in Croatia in 2011.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. of searched animals</th>
<th>Positive results</th>
<th>% of positive results</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOX</td>
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<td>325</td>
<td>9.1</td>
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<tr>
<td>OTHER WILD ANIMALS</td>
<td>1162</td>
<td>3</td>
<td>0.3</td>
</tr>
<tr>
<td>DOG</td>
<td>442</td>
<td>4</td>
<td>0.9</td>
</tr>
<tr>
<td>CAT</td>
<td>329</td>
<td>7</td>
<td>2.1</td>
</tr>
<tr>
<td>OTHER DOMESTIC ANIMALS</td>
<td>183</td>
<td>42</td>
<td>12.1</td>
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<td>UKUPNO/TOTAL</td>
<td>5577</td>
<td>381</td>
<td>6.8</td>
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</table>
Table 7. The results of rabies analysis of the animals in Croatia in 2012.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. of searched animals</th>
<th>Positive results</th>
<th>% of positive results</th>
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</thead>
<tbody>
<tr>
<td>FOX</td>
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<td>117</td>
<td>3.1</td>
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<td>0.5</td>
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<tr>
<td>DOG</td>
<td>562</td>
<td>5</td>
<td>1.1</td>
</tr>
<tr>
<td>CAT</td>
<td>417</td>
<td>2</td>
<td>0.5</td>
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<tr>
<td>OTHER DOMESTIC ANIMALS</td>
<td>244</td>
<td>9</td>
<td>3.7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>5721</td>
<td>137</td>
<td>2.4</td>
</tr>
</tbody>
</table>
Source: Friedrich-Löffler Institut, Germany 
Table 8. The results of rabies analysis of the animals in Croatia from 2008. to 2012.

<table>
<thead>
<tr>
<th>Animal species</th>
<th>No. of searched animals</th>
<th>Positive results</th>
<th>% of positive results</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOX</td>
<td>17926</td>
<td>2755</td>
<td>15.4</td>
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<tr>
<td>OTHER WILD ANIMALS</td>
<td>5553</td>
<td>49</td>
<td>0.9</td>
</tr>
<tr>
<td>DOG</td>
<td>2618</td>
<td>94</td>
<td>3.6</td>
</tr>
<tr>
<td>CAT</td>
<td>1985</td>
<td>69</td>
<td>3.5</td>
</tr>
<tr>
<td>OTHER DOMESTIC ANIMALS</td>
<td>844</td>
<td>120</td>
<td>14.2</td>
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<tr>
<td>TOTAL</td>
<td>28926</td>
<td>3087</td>
<td>10.7</td>
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</table>
Table 9. The number of examined persons in Zagreb antirabies clinic from 2008. to 2012.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>360</td>
<td>326</td>
<td>686</td>
</tr>
<tr>
<td>2009</td>
<td>337</td>
<td>309</td>
<td>646</td>
</tr>
<tr>
<td>2010</td>
<td>295</td>
<td>271</td>
<td>566</td>
</tr>
<tr>
<td>2011</td>
<td>368</td>
<td>215</td>
<td>583</td>
</tr>
<tr>
<td>2012</td>
<td>391</td>
<td>234</td>
<td>625</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1751</td>
<td>1355</td>
<td>3106</td>
</tr>
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</table>
Table 10. The number of vaccinated persons in Zagreb antirabies clinic from 2008. to 2012.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>MALE</th>
<th>FEMALE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>90</td>
<td>84</td>
<td>174</td>
</tr>
<tr>
<td>2009</td>
<td>89</td>
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<td>37</td>
<td>128</td>
</tr>
<tr>
<td>2012</td>
<td>101</td>
<td>60</td>
<td>161</td>
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<tr>
<td>TOTAL</td>
<td>446</td>
<td>339</td>
<td>785</td>
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</table>
Table 11. An overview of examined and vaccinated persons due to ABCD groups in Zagreb antirabies clinic from 2008 to 2012.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of examined persons</th>
<th>Number of persons who received postexposure prophylaxis (PEP)</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Vaccine only</td>
<td>Vaccine + HRIG</td>
</tr>
<tr>
<td>A</td>
<td>122</td>
<td>64</td>
<td>31</td>
</tr>
<tr>
<td>B</td>
<td>51</td>
<td>34</td>
<td>8</td>
</tr>
<tr>
<td>C</td>
<td>946</td>
<td>593</td>
<td>18</td>
</tr>
<tr>
<td>D</td>
<td>1987</td>
<td>32</td>
<td>5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>3106</td>
<td>723</td>
<td>62</td>
</tr>
</tbody>
</table>

A: Injury of proven rabid animal (bite, scratch, contact with saliva) or contact in general with proven rabid animal or contaminated material
B: Injury caused by an animal suspected on rabies
C: Injury caused by an unknown, dead, stray, killed or wild animal
D: Injury caused by the known animal which stayed healthy after 10 days of veterinarian surveillance
Table 12. The animal species from which the persons had to receive postexposure rabies prophylaxis (PEP) according to ABCD groups in Zagreb antirabies clinic from 2008. to 2012.

<table>
<thead>
<tr>
<th>ANIMAL SPECIES</th>
<th>Number</th>
<th>ANIMAL SPECIES</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOG</td>
<td>473</td>
<td>DOMESTIC EQUIDS</td>
<td>4</td>
</tr>
<tr>
<td>CAT</td>
<td>211</td>
<td>WEASEL</td>
<td>2</td>
</tr>
<tr>
<td>RAT</td>
<td>32</td>
<td>DOMESTIC UNGULATES</td>
<td>1</td>
</tr>
<tr>
<td>BAT</td>
<td>24</td>
<td>MARTEN</td>
<td>1</td>
</tr>
<tr>
<td>OTHER RODENTS</td>
<td>18</td>
<td>WOLF</td>
<td>1</td>
</tr>
<tr>
<td>FOX</td>
<td>9</td>
<td>POULTRY</td>
<td>1</td>
</tr>
<tr>
<td>OTHER ANIMALS</td>
<td>6</td>
<td>FOX BAIT WITH ORV</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>785</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 13. The distribution of afflicting wounds in vaccinated persons against rabies in Zagreb antirabies clinic from 2008 to 2012.

<table>
<thead>
<tr>
<th>THE ANATOMICAL LOCALISATION OF AFFLICTING WOUNDS</th>
<th>Number of BITES/INJURIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOWER LIMBS</td>
<td>219</td>
</tr>
<tr>
<td>UPPER LIMBS</td>
<td>98</td>
</tr>
<tr>
<td>TRUNK</td>
<td>8</td>
</tr>
<tr>
<td>FIST AND FINGERS</td>
<td>387</td>
</tr>
<tr>
<td>HEAD AND NECK</td>
<td>24</td>
</tr>
<tr>
<td>MULTIPLE INJURIES</td>
<td>49</td>
</tr>
<tr>
<td>TOTAL</td>
<td>785</td>
</tr>
</tbody>
</table>
Table 14. The number of animal species due to frequency of bites/injuries in Zagreb antirabies clinic from 2008. to 2012.

<table>
<thead>
<tr>
<th>ANIMAL SPECIES</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOG</td>
<td>81,16</td>
</tr>
<tr>
<td>CAT</td>
<td>13,54</td>
</tr>
<tr>
<td>BAT</td>
<td>1,33</td>
</tr>
<tr>
<td>RAT</td>
<td>1,31</td>
</tr>
<tr>
<td>FOX</td>
<td>0,38</td>
</tr>
<tr>
<td>WEASEL</td>
<td>0,38</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>98,04</td>
</tr>
<tr>
<td>OTHER ANIMALS</td>
<td>1,01</td>
</tr>
<tr>
<td>OTHER RODENTS</td>
<td>0,76</td>
</tr>
<tr>
<td>FOX BAIT WITH ORV</td>
<td>0,19</td>
</tr>
<tr>
<td>SUBTOTAL</td>
<td>1,96</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100,00</td>
</tr>
</tbody>
</table>
Strategy 2010-2016

- Enforcement of proscribed measures for control and eradication of rabies
  - Marking of all dogs with microchips
  - Building of new shelters for abandoned animals

- Oral vaccination of foxes to be carried out on the territory of the whole country for at least 5 consecutive years

- To increase general public awareness on rabies as well as on their contribution/obligations in measures for prevention and eradication of diseases

- Financial resources
  - Continuously providing (national funds, EU funds, WB funds, other...)
Public awareness campaigns

- Oral vaccination of foxes is a complex project which demands the cooperation of all bodies and organisations competent for veterinarian and human medicine and hunting as well as an active cooperation of the public in terms of taking responsibility by the owners for the health of their pets and raising of general knowledge about rabies and the oral vaccination of foxes.

- For this purpose, before every campaign an active awareness campaign will be conducted by means of educational events, promotional materials and media campaign.
Support to World Rabies Day

In 2009, Croatia began taking an active part in the marking of THE WORLD RABIES DAY. This event involves the Faculty of Veterinary medicine of the University of Zagreb, the National Institute of Public Health and the Reference centre for rabies. Press conference is being organised on which the current state and means of prevention of rabies in both, human and veterinarian medicine are presented. On the main city square, educational leaflets about rabies are being distributed to the public.

The Ministry of Agriculture – Veterinary Department plans to mark the WORLD RABIES DAY in 2014 as well.
CONCLUSIONS

1. Croatia has no urban rabies, but we have a continuing presence of rabies in wildlife, and occasionally in domestic animals.

2. The cooperation between human and veterinarian medicine is very good, and this system has been functioning since 1995.

3. The last human rabies case in Croatia was registered 50 years ago (in 1964.)

4. Croatia acts in accordance with all recommendations by the WHO and it has also made its permanent contribution to human rabies treatment in the form of 2-1-1 schedule.

5. With further implementation of ORV-programme, in several years Croatia will eliminate terrestrial rabies in wildlife, and become a rabies-free country.
Thank you very much for your attention!