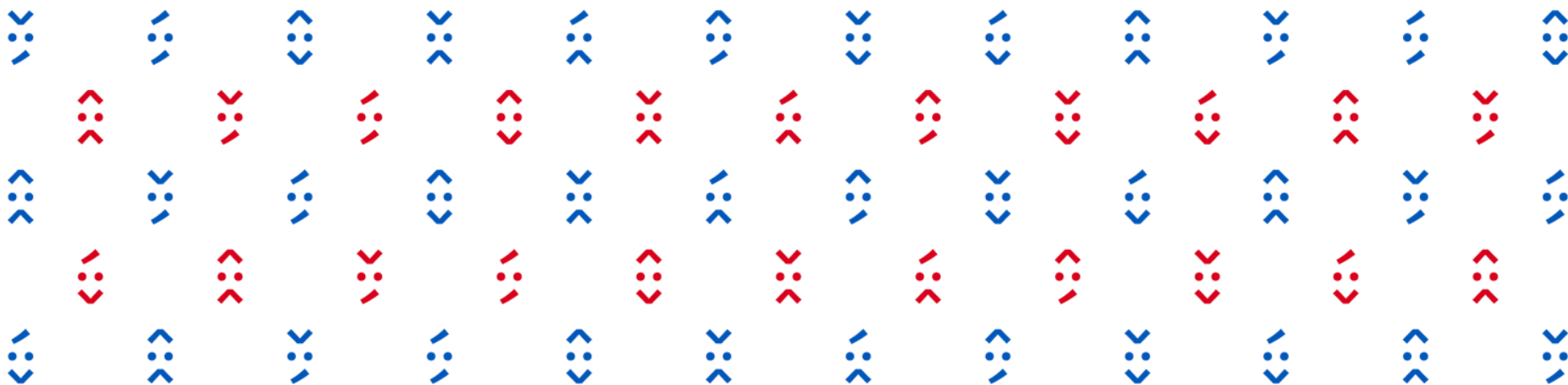




Slovak Presidency of the Council
of the European Union



Report on zoonosis, foodborne and waterborne diseases in the Slovak Republic



What we think and what we do?

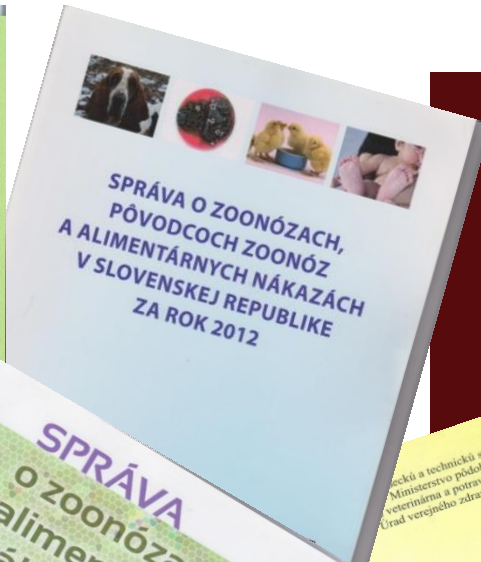
Human and animal health protection can only be reached with active cooperation of experts from control and research in human and veterinarian areas.

Coordination - task of FSD MARD

Report on zoonosis, foodborne and waterborne diseases in the Slovak Republic - from 2008

- *background for Risk Assessment and Risk Management in Slovakia*

Report on zoonosis, foodborne and waterborne diseases in the Slovak Republic



Report on zoonosis, foodborne and waterborne diseases in the Slovak Republic

Composite author: 78 experts from 24 organizations

1. Comenius University, Faculty of Medicine, Bratislava;
2. Food Research Institute, Bratislava;
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8. Regional State Veterinary and Food Administration, Nitra;
9. Regional Public Health Authority, Banská Bystrica;
10. Regional Public Health Authority, Komárno
11. Regional Public Health Authority Košice;
12. Regional Public Health Authority, Trenčín
13. Slovak Academy of Sciences – Institute of Parasitology, Košice;
14. Slovak Academy of Sciences – Institute of Virology, Bratislava;
15. Slovak Academy of Sciences – Institute of Zoology, Bratislava;
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20. Veterinary and Food Institute, Bratislava;
21. Veterinary and Food Institute, Dolný Kubín;
22. Veterinary and Food Institute, Košice;
23. Veterinary Institute, Zvolen
24. Water Research Institute, Bratislava

Report on zoonosis, foodborne and waterborne diseases in the Slovak Republic

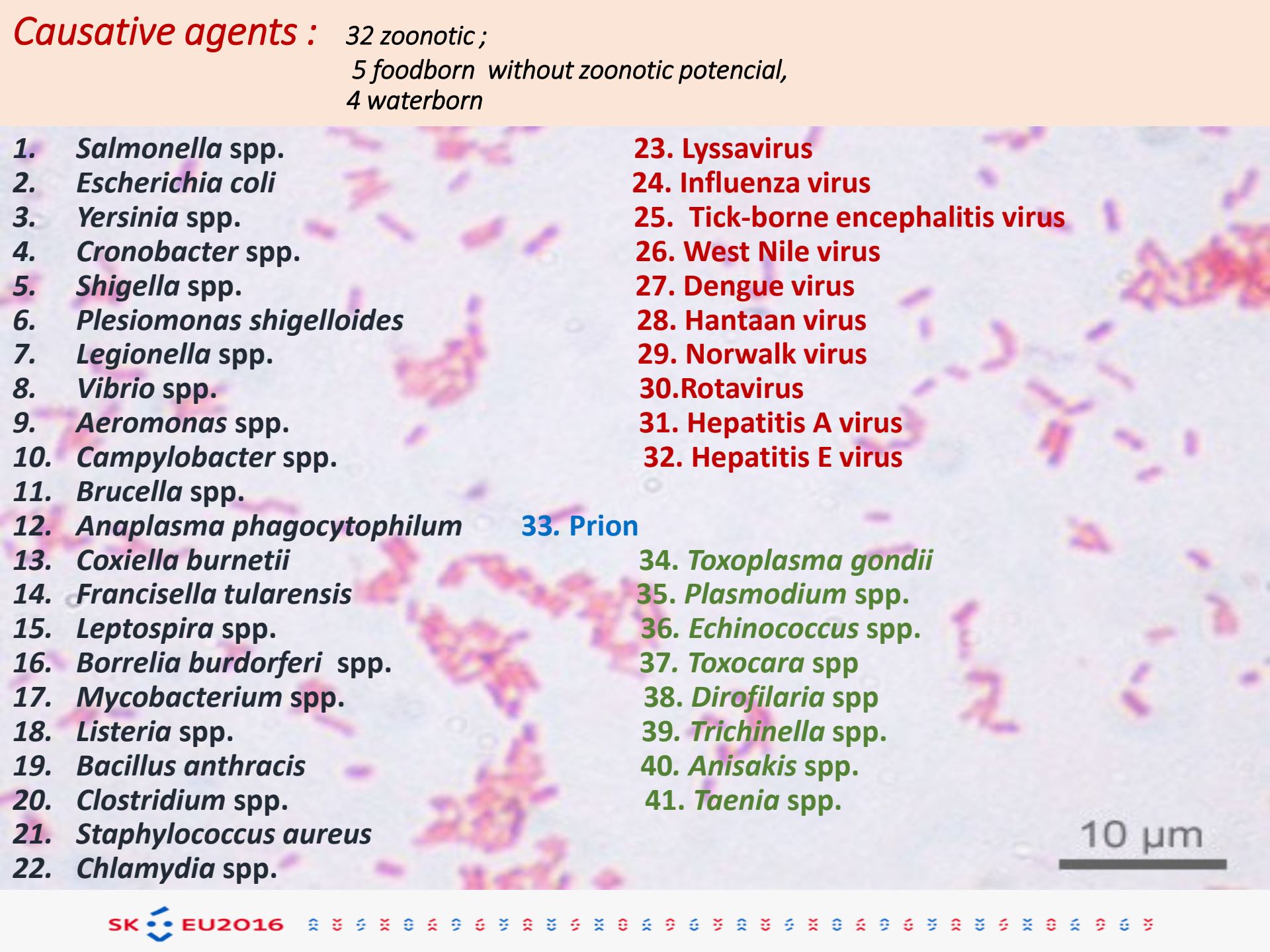
Data : *epidemiological data,
Official control
research,
monitoring
surveillance*

Structure:

- *by causative agents*
- *Human epidemiological situation*
- *Animals -epizootological situation*
- *foodstuffs*
- *feedstuff*
- *environment*
- *antimicrobial resistance*



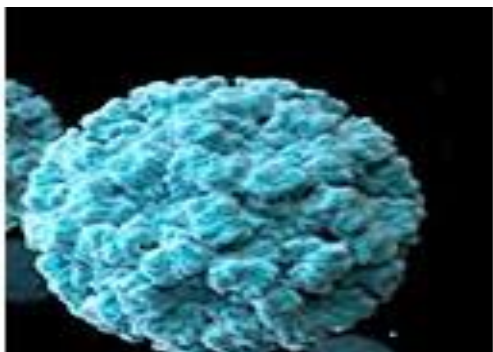
Causative agents : 32 zoonotic ;
5 foodborn without zoonotic potencial,
4 waterborn

- 
1. *Salmonella* spp.
 2. *Escherichia coli*
 3. *Yersinia* spp.
 4. *Cronobacter* spp.
 5. *Shigella* spp.
 6. *Plesiomonas shigelloides*
 7. *Legionella* spp.
 8. *Vibrio* spp.
 9. *Aeromonas* spp.
 10. *Campylobacter* spp.
 11. *Brucella* spp.
 12. *Anaplasma phagocytophilum*
 13. *Coxiella burnetii*
 14. *Francisella tularensis*
 15. *Leptospira* spp.
 16. *Borrelia burdorferi* spp.
 17. *Mycobacterium* spp.
 18. *Listeria* spp.
 19. *Bacillus anthracis*
 20. *Clostridium* spp.
 21. *Staphylococcus aureus*
 22. *Chlamydia* spp.
 23. **Lyssavirus**
 24. **Influenza virus**
 25. **Tick-borne encephalitis virus**
 26. **West Nile virus**
 27. **Dengue virus**
 28. **Hantaan virus**
 29. **Norwalk virus**
 30. **Rotavirus**
 31. **Hepatitis A virus**
 32. **Hepatitis E virus**
 33. **Prion**
 34. *Toxoplasma gondii*
 35. *Plasmodium* spp.
 36. *Echinococcus* spp.
 37. *Toxocara* spp.
 38. *Dirofilaria* spp.
 39. *Trichinella* spp.
 40. *Anisakis* spp.
 41. *Taenia* spp.

10 µm

2015 – Human -41 causative agents

23 482 human diseases –



29,9% camphylobacterioses

21,7% salmonelloses

19,7% Rotavirus

8,9% Norwalk

6,1% Clostridium difficile

3,9% Borrelia burdorferi s.l.



503 epidemic outbreaks –



44,9 % salmonelloses

20,5% camphylobacterioses

18,3% Rotavirus

6,9% HAV

5,9% Norwalk

1% Staphylococcal enterotoxigenic

0,8% TBE

Death of 56 patients

2015-Food -11 causative agents – 46 089 samples

1% samples was positive

	Number of samples	Positive samples	% positivity
1. <i>Salmonella</i> spp.	18 517	38	0,21
2. <i>Escherichia coli</i> /VTEC	3595 / 15	167 / 0	4,65 / 0
3. <i>Yersinia</i> spp.	70	1	1,43
4. <i>Cronobacter (Enterobacter)</i> spp.	318	0	0
5. <i>Campylobacter</i> spp.	785	0	0
6. <i>Listeria</i> spp.	5013	74	1,47
7. <i>Clostridium</i> spp.	6374	14	0,22
8. <i>Staphylococcus aureus</i> / enterotoxin	11209	Coagulase positive 179	1,6 / 0
9. Tick-borne encefphalitis virus	187	0	0
10. Norwalk virus	1	0	0
11. <i>Anisakis</i> spp.	20	1	5



2015-Animals-26 causative agents

798 359 samples -0, 3% positive samples

- Various animal species (farm, pets, wild, zoo)
- Official control, monitoring, sick and dead animals

Higher percentage of positive findings:

<i>Francisella tularensis</i>	57%
<i>Clostridium</i> spp.	54,9%
<i>Echinococcus</i> spp.	21,5%
<i>Staphylococcus aureus</i>	16,8 %
<i>Borrelia burdorferi</i> s.l.	15,1%
<i>Listeria</i> spp.	12,7 %
TBE virus	12,4 %



2015-Feedstuff -2 causative agents

731 samples , 23 types of feed;

1,5 % positive

Salmonella spp. 0,76% positive

Clostridium spp. 8,2 % - mainly: dry milk, feed milk mixture,



2015 –Environment -6 causative agents

Swab (food premises, farms), water (rivers, spring, technical, air conditions, sewage water), Play-pit

99 392 samples – 2,7% positive

Salmonella spp. 0,76%

Escherichia coli 5,1% (mainly sewage water and lakes)

Legionella spp. 11,4% (mainly warm water)

Listeria spp. 0,85 % (only FP premises)

Bacillus anthracis 0% (leather)

Staphylococcus aureus - Coug. Posit.1,15 % mainly sewage water

2015 – Vector: 4 causative agents -4636 samples of ticks

Anaplasma phagocytophilum

- from vegetation: 1376 ticks, prevalence rate - 0,7%
- from small mammalian: 788 ticks, prevalence rate - 8,9%



Coxiella burnetii - from human: 89 ticks, prevalence rate - 0%

Borrelia spp.-from human: 93 ticks , 9,7% (*B.afzelii*, *B.garinii*)
93 ticks, 2% (*B. miyamotoi*)

- from vegetation: 626 ticks, 7% (*B.garinii*, *B.afzelii*, *B.valaisiana*)
735 ticks 7,4% (*B. miyamotoi*)
- from small mammalian: 788 ticks, prevalence rate - 8,9% (*B.afzelii*)

Tick-borne encephalitis virus – TBEV

48 mixed samples prevalence rate – 10,4 %



Human salmonellosis



(A02) Výskyt salmonelóz / Incidence of salmonellosis.
Trend za 10 rokov.
Rok 2015. SR.



Zdroj údajov: EPIS, © ÚVZ SR

EU /SR Decreasing trend from 1998 to 2013 and increasing from 2014

28 EU MS 2014 morbidity 23,4/100 000 population

SR 2015: 5 103 cases; morb. 94,13/100 000 pop. - more about 17% then in 2014

Mortality: 2 exitus: women 63 year, polymorbiditas / *S. Typhymurium*
man 82 year, polymorbiditas / *S. Typhymurium*

Outbreaks:

226 epidemics - 37 greater (more than 5 cases);

in etiology : 36 x *S. Enteritidis*, 1 x *S. Infantis* (chicken meat)

main source of outbreaks: 17 x eggs, 6 x chicken meat

Salmonella spp.

Food: 18 517 samples of 36 types of food; 0,21% positive mainly:

poultry meat 1,9% ; *S. Infantis*,

eggs and egg products 0,98 %; *S. Enteritidis*

12 serovars – predominated : 31,6 % *S. Enteritidis*

18,4 % *S. Derby*

13,2 % *S. Typhimurium*

13,2 % *S. Infantis*,

Poultry : 5127 poultry flocks; 1,9% positive

-*Gallus Gallus* breeding flocks; 0% positive

-*Gallus Gallus* laying hens 2,1%, predominated *S. Enteritidis*

-*Gallus Gallus* broilers 1.88%, predominated *S. Infantis*

-Turkey 1,7%, predominated *S. Infantis*, *S. Kentucky*



Others animals : (cattle, pig, goat, sheep, pigeon, dog, cat, bear, zoo animals, turtle, reptile,)

– **only - suspicion on illness** - 1446 samples, 3,4% positive

15 serovars – predominated : 44,3% *S. Infantis*,
36,4% *S. Enteritidis*,
9,3% *S. Typhimurium*

Salmonella spp.

Feedstuff: 658 samples 14 types of feed; 0,76 % positive

- only feed of animal origin

4 serovars: *S. Typhimurium*, *S. Derby*, *S. Infantis*; *S. Kentucky*



Environment: 16 130 samples / 0,7% positive

- Food Production Premises - 3 684 samples / 0,0% positive
- Water (rivers, spring water, watercoolers, swimming pools)
400 samples – 6,75% positives – rivers: Danube, Vah, Hron
3 serovars: *S. Java*, *S. Derby*, *S. Infantis*
- Play-pit - 581 samples – only 1 positive - *S. Infantis*
- Terrarium, aquarium (gecko, turtle, agama)
47 samples - 22 positives
9 serovars: *S. Infantis*, *S. Kentucky*, *S. Kottbus*, *S. Vitkin*, *S. Fluntern*,
S. Carrau, *S. Litchfield*, *S. Sandiego*, *S. Postdam*

Tick-borne encephalitis virus - TBEV



*Slovakia: endemic regions /Western European subtype
principal vector - Ixodes ricinus*

Occurrence of ticks in Slovakia

years:

1980 -1990

Max 800 m



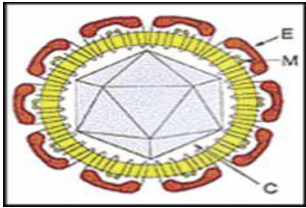
years:

1992-2012

Max 1346m



Tick-borne encephalitis virus - TBEV



ECDC 2014: „*The number of human cases of TBE in all endemic regions of Europe has increased by almost 400% in the last 30 years*“

Slovakia - increasing trend of human TBE from 1989

1989 morbidity – 0,32/ 100 000 population

2015 morbidity – 1,62/ 100 000 population

Mortality: - 47 years old man after kidney transplantation

consummation raw goat milk from his own breeding

Outbreaks:

Year	Number of outbreaks	Number exposed	Number patients	Transmission factor
2012	2	16	15	Goat milk and products
2013	1	15	5	Sheep cheese
2014	1	21	11	Sheep cheese
2015	4	24	14	Goat and sheep milk

Tick-borne encephalitis virus – TBEV

blood ELISA anti-body/Ig

year	kind of animal	samples	% positivity
2007	goat	49	0
2008		40	17,5
2012		36	25,0
2013		64	42,1
2014		66	0
2015		44	9,0
2008	sheep	340	7,94
2012		50	18,0
2013		311	5,78
2014		244	3,69
2015		211	13,3
2013	livestock	2	0
2014		32	12,5
2015		2	0



Tick-borne encephalitis virus - TBEV

Food: goat and sheep milk from farms - RT PCR



2014: 409 samples, 0,98% positive (only sheep milk)

2015: 187 samples, 0 % positive

Animals:

2015: 257 samples – blood ELISA anti-body/Ig – 12,4% positive

Beef cattle - 0% positive

Goat - 9% positive

Sheep - 13,3% positive



Vectors:

48 samples of ticks, genus: *Ixodes*, *Haemaphysalis*, *Dermacentor*

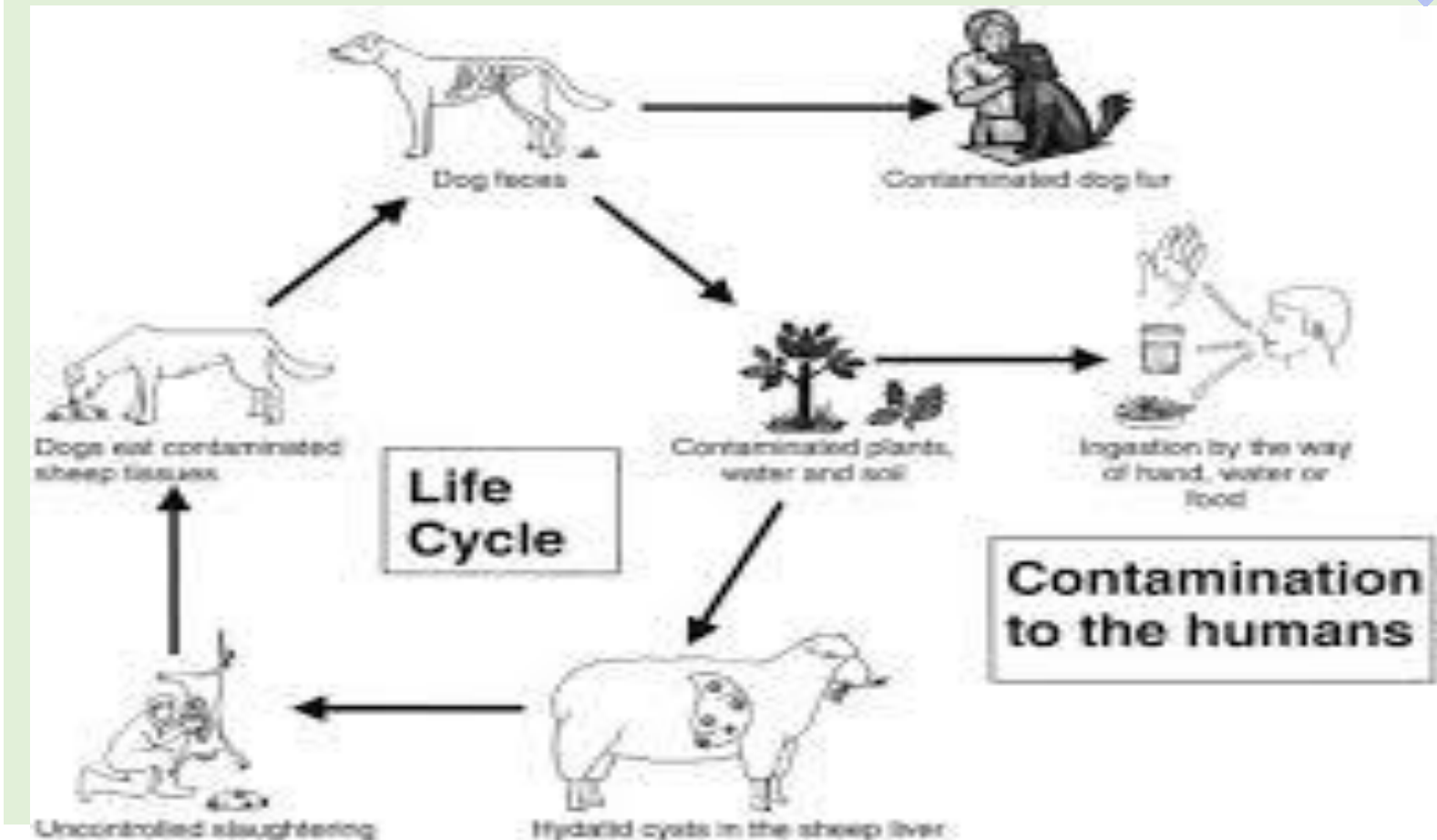
10,4% positivity



Echinococcus spp.

Human echinococcosis - parasitic disease caused by tapeworms

- alveolar echinococcosis - *E. multilocularis*
- cystic echinococcosis - *E. granulosus*.



Echinococcus spp.

28 EU MS 2014 morbidity 0,18/100 000 population

SR 2015: 5 cases; morb. 0,09/100 000 population

Age distribution: 55-64 =2; 65 + = 3

to 2014 cystic echinococcosis; 2015 – increase alveolar echinococcosis



Year	N. cases	Etiological agents
2007	4	-
2008	5	3x <i>E. granulosus</i> ; 2x unspecified
2009	4	1x <i>E. granulosus</i> ; 1x <i>E. multilocularis</i> ; 2x unspecified
2010	9	8x <i>E. granulosus</i> ; 1x unspecified
2011	2	1x <i>E. granulosus</i> ; 1x unspecified
2012	3	2x <i>E. granulosus</i> ; 1x <i>E. multilocularis</i>
2013	20	13x <i>E. granulosus</i> ; 5x <i>E. multilocularis</i> ; 2x unspecified
2014	8	7x <i>E. granulosus</i> ; 1x <i>E. multilocularis</i>
2015	5	2 x <i>E. granulosus</i> ; 3x <i>E. multilocularis</i>

Echinococcus spp.

- Main source in SR - fox



Rok	Počet vzoriek	% pozitívnych
2011	186	16,67
2012	1 713	5,95
2013	363	22,31
2014	277	23,83
2015	195	21,54

2015 - Slaughterhouses: during visual inspections

- tested 575 534 sensitive animals
- notified 46 positive findings
- 45 pigs and 1 sheep



Echinococcus spp.



E. multilocularis - positive findings - foxes, Slovakia - 2011



E. multilocularis - positive findings - foxes, Slovakia - 2015

small projects

2011- Screening of *E. coli* in food

2012 - Screening of *Yersinia* in the meat from the Slovak breeding

- Screening of *Campylobacter* spp. antimicrobial resistance

2013 - Screening of *Yersinia* in food taken from the retail

- Surveillance of echinococcosis in canine , feline and fox in the western part of Slovakia

2014 - Surveillance of Tick–borne encephalitis virus

2015 - Surveillance of *Yersinia* in the raw milk

- Antimicrobial resistance of *Campylobacter* spp.

- Toxin production of *Clostridium* spp.

- Antimicrobial resistance of *Salmonella* spp. in poultry

2016 - Spread of the harmful organisms in terms of human and animal health

Ďakujem za pozornosť



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