PRIMARY RISK ASSESSMENT

Non-conforming Beef Meat

Date of the signal	Date of the RA	Signal provider	Experts consultation	Method
07 march 2018	**08 March 2018**	**SPF Public Health**	**Permanent experts:** Dr Valeska Laisnez (AZG), Dr Romain Mahieu (COCOM-GGC), Dr Sophie Quoilin (WIV-ISP), Dr Daniel Reynders (FOD), Dr Carole Schirvel (AViQ) **Specific experts :** N. Botteldoorn, S. Denayer (NRL WIV-ISP), W. Mattheus (NRC Salmonella, shigella, listeria), M. Dispas (CODA-CERVA) With information transmitted by Ph. Houdart (FAVV-AFSCA).	**eMail consultation**
Date of update	**Closing date**			

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PRIMARY RISK ASSESSMENT OF POTENTIAL PUBLIC HEALTH EVENT

Signal		On Wednesday 7th March, MoH has requested information on the epidemiological evolution of gastro-intestinal diseases in the general population after the identification of a major fraud by a large company in the meat sector. The fraud is related to falsified dates of freezing and non-compliance with rules of good practice in food safety, which could induce a danger for food safety.
Description	**Score**	**Description / arguments**
1	Cause known?		Microbiological quality of frozen meat depends on conditions like quantity of microbes/toxins present in the meat before freezing, preservation conditions (constant t°), … and is not supposed to be modified by long-term freezing even if the expiration date is exceeded.
			Potential risk associated with this event is mainly a microbiological contamination related to use of meat unfit for consumption or inappropriate cuts:
			Meat from around the incision points can be contaminated by *E.coli*, *Clostridium perfringens*, *Salmonella* but also possibly *Campylobacter*, *Listeria* and cannot be used for mince.
			Cutting off the tails before veterinary control is forbidden due to a potential contamination by *Staphylococcus aureus/epidermidis*, or *Streptococcus pyogenes* in case of abscess but also chemical residue or physical element (eg.: broken needle).
			More pathogens are possible but these are more associated with beef meat and with diseases in humans.
2	Unexpected/unusual	Unusual	Fraud inducing a potential exposition of the population to microbiological (chemical or physical) hazard.
3	Severity	Undefined	Severity depends on the pathogen (if any) and health status of exposed persons.
4	Dissemination (Low/Medium/High)	FAVV-AFSCA still gathering information	Duration of the fraud is still under investigation by the FAVV-AFSCA but appears to have existed for years.
			Extent of the distribution:
			Fresh meat (mince): distribution is limited as far as is currently known to Belgium and only at a butcher's shop in Anderlecht and at the company itself in Bastogne.
			Tails: sold in the same butchery in Anderlecht and further to Delhaize, Match and Colruyt

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			group (recall messages by FAVV-AFSCA).
			Fresh meat since the end of January 2018 has been traced back and recalled.
			Frozen meat concerned by the fraud is potentially all of the approx. 2,000 available pallets. FAVV-AFSCA is still working on the identification of customers. Possibly more impact due to major volumes and international character of the trade but microbiological quality not supposed to be modified by long-term freezing if food safety practices are correctly applied.
			Market share: 30% of beef meat market in Belgium (all types: minced beef, steaks, roasts, …).
			Abscesses at tail: no numbers found but should not be frequent.
			Microbiological analysis requested: 20 samples from meat from around the incision points and cut meat are currently analysed. Samples from frozen meat also taken. Results should be known by the end of the week. Based on these results, a more precise epidemiological analysis could be undertaken
5	Risk of (inter)national spread		The company exports at least to Eastern Europe, Africa (… ?).
Preparedness and response			
6	Preparedness		FAVV-AFSCA has a control strategy. But no automatic communication between food and human sector. Mandatory notification of unusual event. Sentinel surveillance system. But no syndromic surveillance system to detect unusual event.
7	Specific control measures (surveillance, control, communication)		Withdrawal of company approvals by the FAVV-AFSCA. Removal of concerned meat from distribution channels.
Public health impact			
A	Public health impact in Belgium (Low/Medium/high)	Indeterminable	FAVV-AFSCA recalled potentially contaminated fresh meat, no more exposure of the population. No indication yet of a microbiological risk in incriminated products. No notification of unusual event to Health inspection of Federated Entities. No signal of increased foodborne infections identified in sentinel surveillance system.

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			See annexes for epidemiological situation, existing data sources and their limitations. Fresh meat and tails: more risk of microbiological contamination but quantity of meat more limited (no precise amount received). Frozen meat: probably less risk of microbiological contamination (if produced and stored properly) but larger (no precise amount received) quantity of meat. The epidemiological situation doesn't demonstrate an acute increase of foodborne diseases. If risk for human health, probably no acute risk but it cannot be excluded that a part of the observed cases in previous months/years could be associated with the consumption of meat from the incriminated company considering they represent 30% of the Belgian market. Quantification of retrospective risk will require some additional information like the pathogen(s) potentially incriminated, the extent and duration of the fraud, the way the products have been used (eg.: frozen meat used for prepared meals) or consumption habits (eg.: to eat raw mince = about 4% of participants in Consumption survey, WIV-ISP – but should be extrapolated to Belgian population) and of course the capacity to establish a causal link between incriminated products and possible case(s).
B	Recommendations (surveillance, control, communication)		By FAVV-AFSCA
C	Actions		To re-evaluate the risk based on additional information from FAVV-AFSCA and mainly when results of microbiological analysis will be available. To launch syndromic surveillance by using UREG data *(see more comments in annex)*. To implement a Belgian plan for foodborne outbreaks management *(see more comments in annex)*.

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CONTEXT

Foodborne diseases are

- quite frequent but globally decreasing trends thanks to food safety policy,

- most of the time associated with mild limited symptoms but can be severe among some specific patients (e.g.: Ecoli cause of HUS among children, septicaemia among immune-compromised persons, …) or due to occurrence/circulation of a new virulent type (Ecoli O104 in Germany),

- most cases are sporadic but cluster or outbreak can occur according to cause of the food contamination (e.g.: food production, transformation process, food processing or preservation, … at industrial, commercial or household level).

MANDATORY NOTIFICATION

Resulting from the elements presented in the context, sporadic foodborne diseases do not require control measures and few of them are in the list of mandatory notification system but collective food toxi-infections are included as well as any unusual event.

List of notifiable foodborne diseases by region, Belgium	Brussel	Vlanderen	Wallonie
Botulisme	x	x	x
E. coli (STEC)	x	x	x
Voedsel-toxiinfecties (TIAC)	x	x	x
Salmonella typhi/paratyphi	x	x	x
Listeria	x	/	x
Shigella	/	x	/
Voedselinfectie (vanaf 2 gevallen)	/	x	/
Ongewone evenement met ernstige karakteristiek	x	x	x

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If sporadic cases do not require control measures, the frequency of these foodborne diseases justifies informing public health authorities about their impact, their evolution and the possible changes in microbiological patterns. Various surveillance systems collect epidemiological and microbiological data on foodborne diseases.

Network of sentinel laboratories: mainly for trends and impact

About 60% of accredited Belgian laboratories participate on a voluntary basis in the weekly registration of about 40 infectious diseases. This network is coordinated by the WIV-ISP. https://nrchm.wiv-isp.be/fr/labovigies/default.aspx

National reference centre (NRC): mainly for microbiological patterns

The RIZIV is giving financial support to reference centres in order to offer an expertise for the diagnosis or the confirmation of a disease. The reference centres also contribute to surveillance. https://nrchm.wiv-isp.be/fr/centres_ref_labo/default.aspx

	Sentinel labs	NRC
Campylobacter	X	x
Clostridium perfringens	/	x
E. coli (VTEC-EHEC)	X	x
Listeria	X	x
Shigella	X	x
Salmonella	X	x
Norovirus	X	x
Y. enterolitica	X	x

THREAT DETECTION

Mandatory notification system has as aim to detect and control threats but is limited by the possible non-exhaustive notification by health workers who can also fail to identify a threat, by the difficulty to identify links between cases, in particular at national level.

Sentinel network of laboratories is representative for Belgium and the regions but it remains sentinel and is therefore limited for threat detection.

NRCs can obviously contribute to the identification of a threat but they are not supposed to receive all strains or to do real-time threat detection.

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INCREASE OF THREAT DETECTION CAPACITY

UREG data (emergency wards):

A very useful complement to existing systems in order to support real-time detection of unusual events is the possibility to use UREG data on which a syndromic surveillance (e.g.: gastro-enteritis) could be performed in real time. The WIV-ISP has already applied such a tool on the data from the sentinel laboratory network; this model could be validated for UREG data.

Official collaboration with FAVV-AFSCA:

FAVV-AFSCA has data from control activities on food and public health officers of regional health authorities (from mandatory notification and surveillance systems coordinated by the WIV-ISP) has data on human infections, mechanism for information sharing could benefit threat detection capacity. This aspect should be included in the national plan (in preparation).

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EPIDEMIOLOGICAL SITUATION

Number of cases of Campylobacter, Ecoli and Listeria registered by the sentinel laboratory network, 2007-2017, Belgium, WIV-ISP.
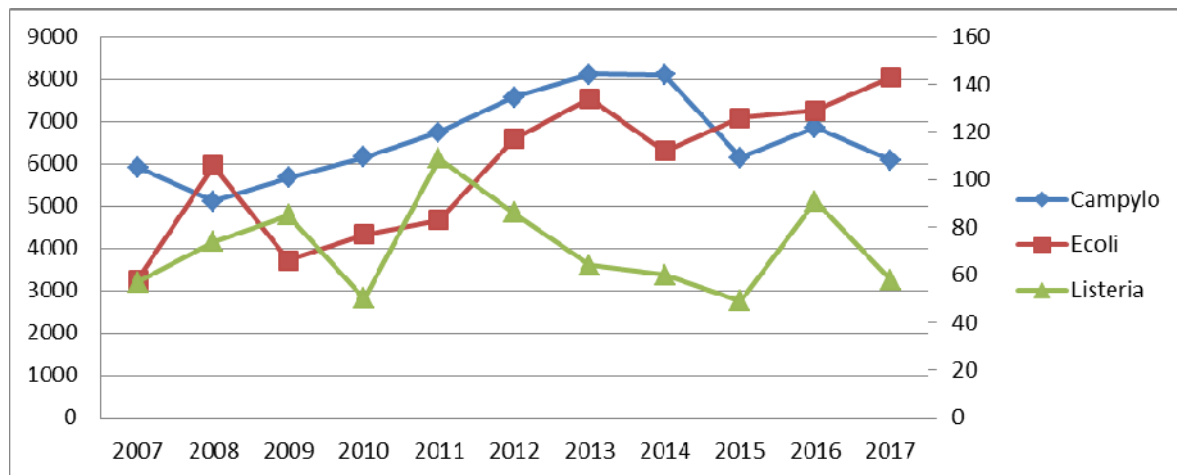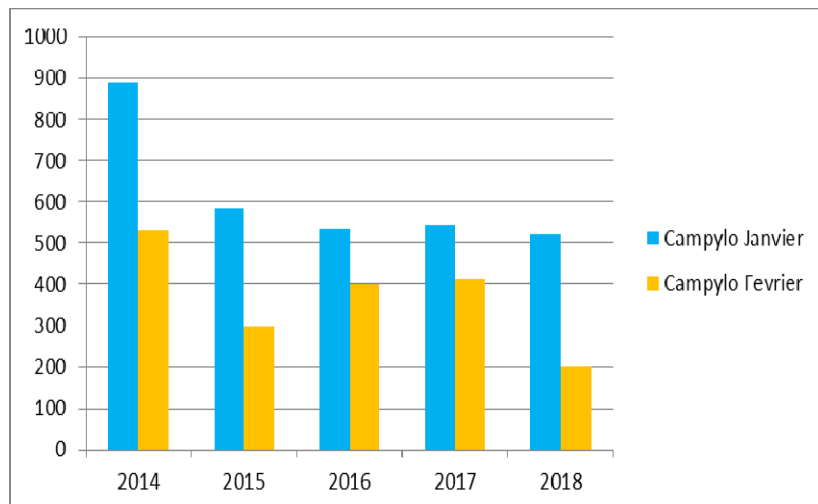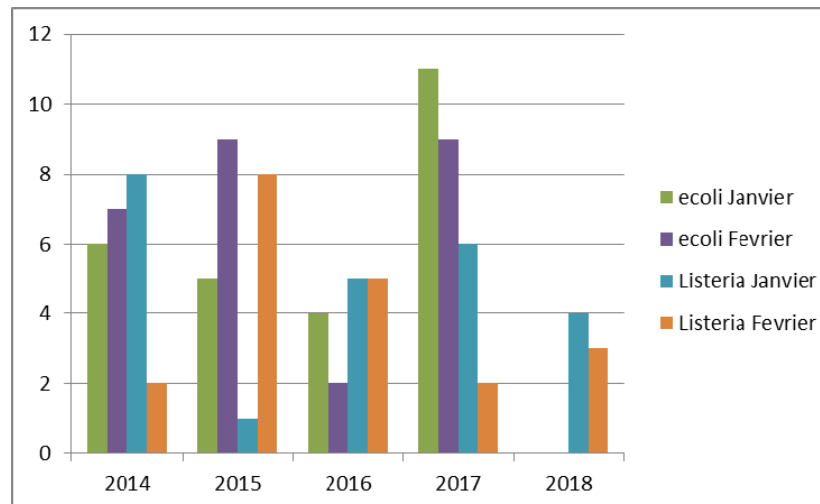

Campylobacter on left axis

Ecoli and Listeria on right axis

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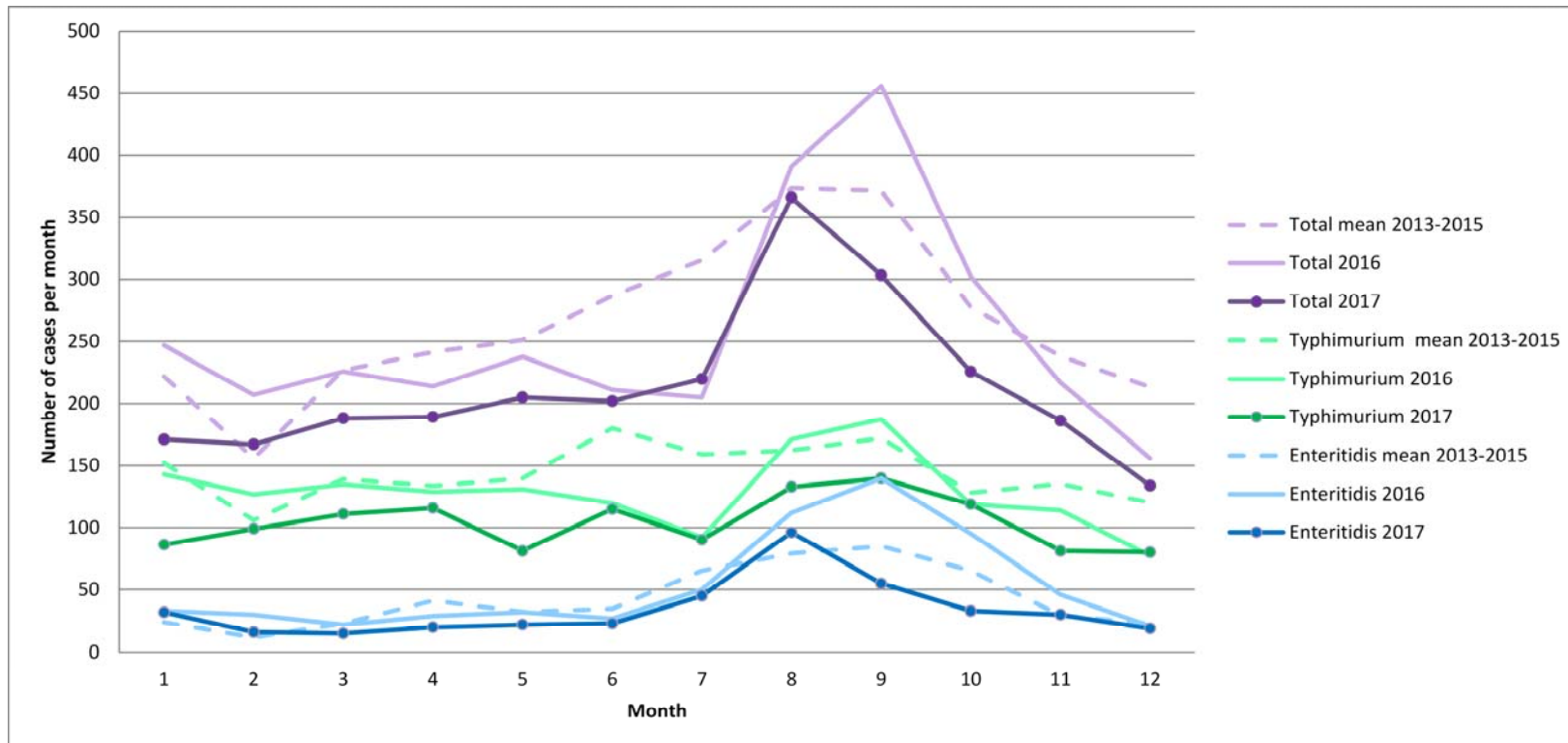**Number of cases of Campylobacteriosis, Jan-Feb, 2014-2018, Belgium, sentinel labs, WIV-ISP**

Number of cases of Ecoli and Listeria, Jan-Feb, 2014-2018, Belgium, sentinel labs, WIV-ISP.

° February 2018 can be incomplete

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Number of reported cases of Salmonella per month and serotype, 2013-2017 (source: CNR Salmonella), WIV-ISP.

Evolution of the number of outbreaks/clusters by causal agent and affected subjects, Belgium, 2010-2017 (source: LNR TIA), WIV-ISP.

Agent|Year	Number of foodborne disease outbreaks/clusters									Number of human cases							
	2010	2011	2012	2013	2014	2015	2016	2017		2010	2011	2012	2013	2014	2015	2016	2017
Salmonella	5	2	6	10	5	4	2	2		55	7	38	33	80	68	139	14
Staphylococcus	0	2	2	4	3	4	2	0		0	7	3	59	36	112	25	0
Bacillus cereus	4	8	2	4	11	5	0	1		88	87	24	30	46	83	0	3
Campylobacter	3	5	1	9	1	2	3	4		4	103	2	45	2	10	6	18
Norovirus	7	2	9	1	5	2	7	3		429	13	94	20	275	29	205	90
E. coli O157/STEC	2	3	3	10	1	2	2	2		6	8	30	41	2	8	14	10
Listeria	0	1	0	2	1	0	0	0		0	11	0	4	2	0	0	0
C. perfringens	0	0	0	2	1	0	4	2		0	0	0	88	17	0	302	182
Other	6	5	9	9	4	4	0	3		3 058	229	192	45	23	9	0	19
No samples	58	170	195	192	227	248	289	241		305	521	544	575	842	850	862	774
Unknown agent	21	83	100	68	111	80	68	46		137	553	557	372	464	504	436	299
Total	**106**	**281**	**327**	**311**	**370**	**351**	**377**	**304**		**4 211**	**1 539**	**1 484**	**1 312**	**1 789**	**1 673**	**1 989**	**1409**

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