



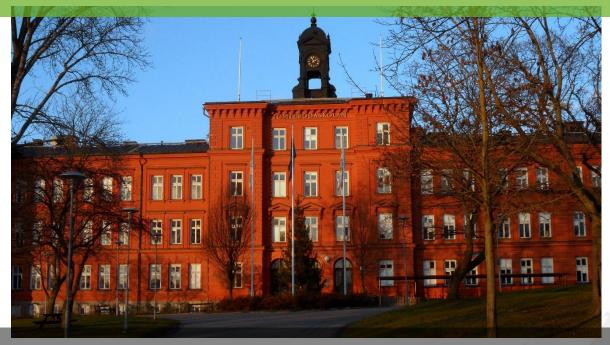
Upgrade of the EPIS-FWD system: Concept and concrete features

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11th Annual Workshop of the NRLs for *E. coli* in the EU Rome, 10 November 2016

ECDC – European Centre for Disease Prevention and Control





- An agency of the European Union, located in Stockholm, Sweden
- Founded in 2005; nearly 300 employees in 2016
- Mandate to 'identify, assess and communicate current and emerging threats to human health from communicable diseases'

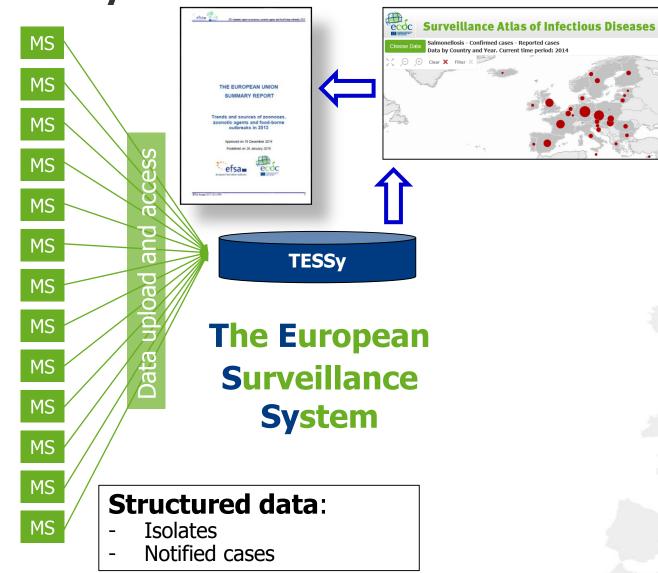
What is EPIS-FWD?



- Epidemic Intelligence Information System for Food and Waterborne Diseases
- Purpose: To ensure the early detection and coordination of the response to multi-country outbreaks through the timely sharing of cross-sectorial information
- A web-based, restricted access communication platform hosted by ECDC
- Currently available to public health epidemiologists, microbiologists, policymakers and risk managers from:
 - All 28 EU Member States
 - European Economic Area (EEA) countries: Iceland, Norway and Liechtenstein
 - EU enlargement countries: Albania, Bosnia and Herzegovina, Kosovo*, Montenegro, Serbia, the former Yugoslav Republic of Macedonia, and Turkey
 - Public health collaborating countries: Australia, Canada, Japan, New Zealand, South Africa, Switzerland and the United States

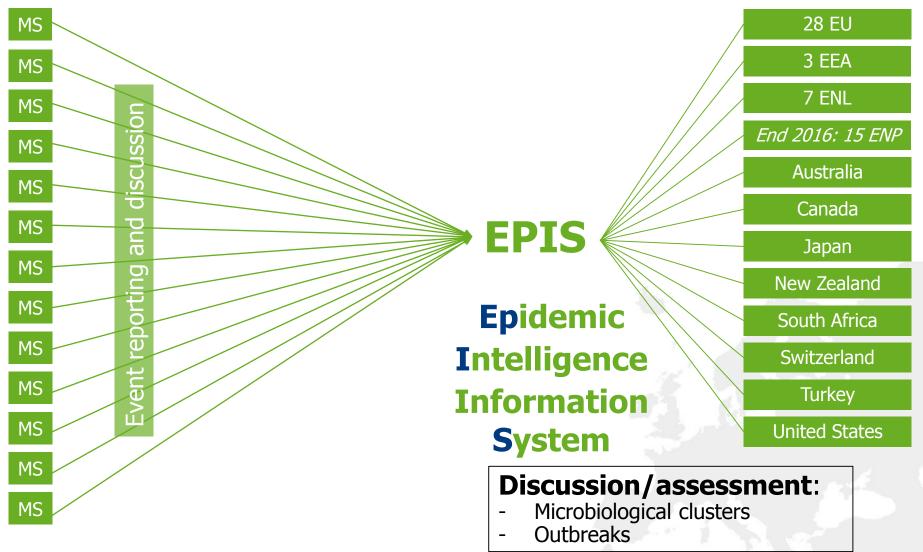
Indicator-based and event-based surveillance: TESSy and EPIS





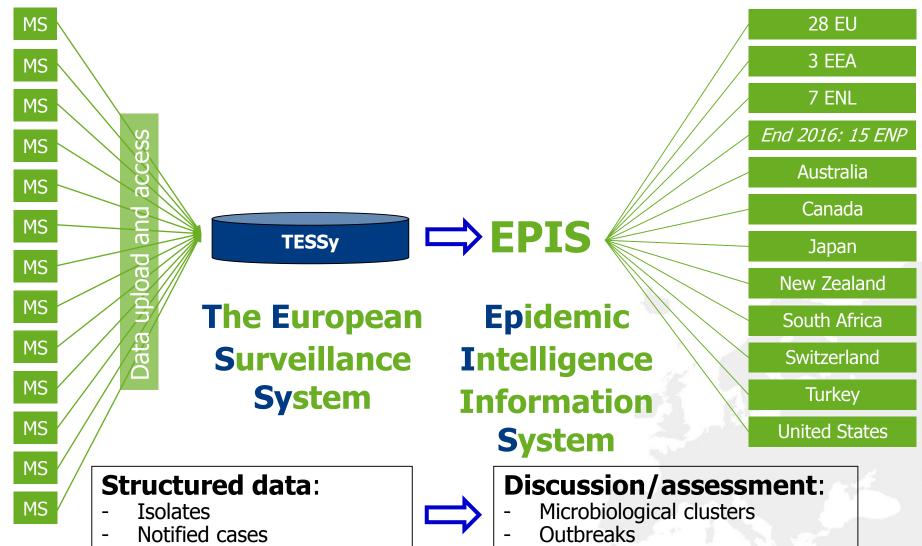
Indicator-based and event-based surveillance: TESSy and EPIS





Indicator-based and event-based surveillance: TESSy and EPIS





Main EPIS-FWD features



	What it is?	Who can access it?
Molecular Typing Cluster Investigation (MTCI)	Forum for exchange of information about a specific cluster / molecular type	Only accessible by representatives of Member States that have isolates in the cluster
Urgent Inquiry (UI)	Forum for exchange of information about an unusual event with the potential for international spread	Accessible to representatives of all Member States and international partners

Why use EPIS-FWD for joint and non-human cluster management?



- Already supports human cluster management
 - Upgraded to also support non-human and joint cluster management according to the Standard Operating Procedure (SOP) developed by the joint database steering committee
- Already implements restricted access to cluster evaluation for involved Member States only
 - Upgraded to also support restricted access based on sector
- Opportunity to allow representatives from national food and veterinary authorities and laboratories to exchange information with counterparts from national public health authorities and laboratories

Example: Fictional VTEC cluster



- Example based on (quite likely) scenario where food isolates submitted to the joint database cluster with an existing human cluster
- Like many investigations, the example spans over three points in time that may be days or weeks apart
- All data are entirely fictional, and in no way implicate any of the countries used in the example!

Example part 1



- A human cluster of 5 VTEC isolates is detected by the ECDC curator during the weekly data review
- All isolates in the cluster have been submitted by the public health laboratories in Austria (2 cases) and France (3 cases), have the same PFGE profile (XbaI.0162) and have been detected during the past three weeks
- The curator creates and names a multi-country cluster, which makes it visible in TESSy (aka the ECDC-EFSA joint molecular typing database)

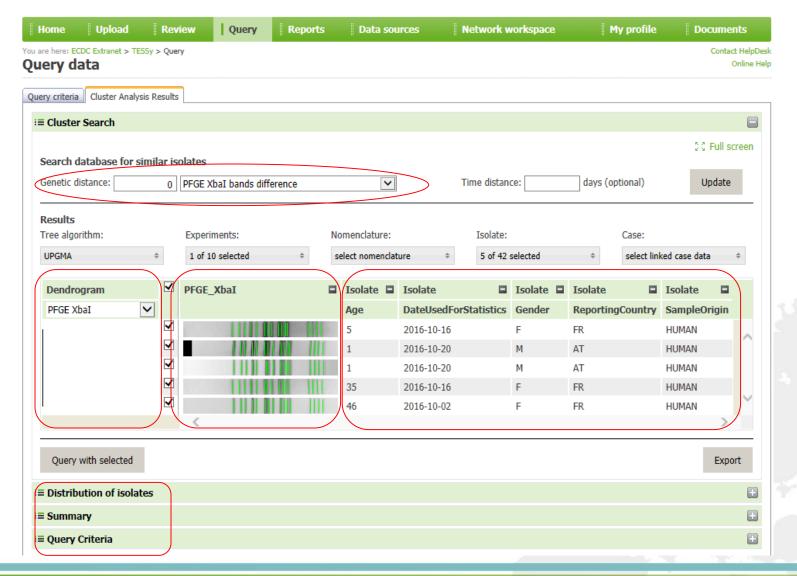
Example part 1: Cluster in TESSy



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Query cr	riteria							
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0,	Analyse case data	O Do	wnload data	(Analyse microbiological clusters			
:≣ Su	bject							
0 :	Salmonella	O Lis	teria	(E. coli (STEC/VTEC)	O M. tuberculosis	O Campylobacte	r
:≣ Se	lect Isolates							
Selec	ct the isolates to p	erform the initial cl	uster analysis	with:				
O D	ate within last:		days		☐ Search	all countries		
O D	ate between:	YYYY-MM-DI	D and Y	YY-MM-DD	☐ Search	all countries		
● Ir	n cluster:	2016-10.ECC	LI.01.0157		☐ Include	closed		
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00	ustom selection:	Isolates selec	ted as a custo	m list of isolate	identifiers, separated by ';	' or 'newline'		
								Search

Example part 1: Cluster in TESSy





Example part 1: ECDC creates new MTCI in EPIS-FWD



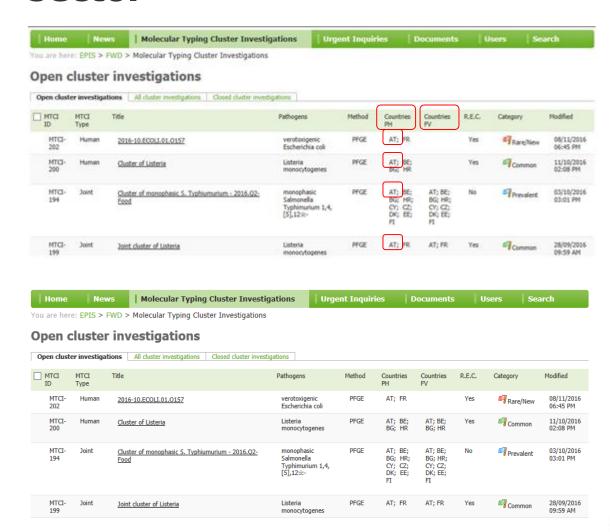
Molecular Typing Cluster Inv	vestigations - New cluster investigation	×
MTCI Type *	Human V	^
Rapidly Evolving Cluster *	Yes	
Disease *	verotoxigenic Escherichia coli infection	Ī
Pathogens *	verotoxigenic Escherichia coli Add > < Remove	
Method *	PFGE V	1
TESSy cluster reference(s)	2016-10.ECOLI.01.0157	
Title *	■ Add/change cluster references	-
Countries involved in PH sector *	Belgium Bulgaria Croatia Cyprus Czech Republic Denmark Estonia Finland Germany Croass	
Countries involved in FV sector *	Austria Belgium Bulgaria Croatia Cyprus Czech Republic Denmark Estonia Finland Ference	
Category *	Rare/New 🗸	-
Description	This is a new cluster of 5 isolates with the same PFGE profile; 3 cases from France and 2 cases from Austria. Three of the cases are children <6 years old, whereas the other two are adult women (aged 35 and 46). The PFGE type has not been seen before in the TESSy database; rare sporadic cases of PFGE profiles with one band difference have been seen, most recently from France in August 2014. Countries are invited to share any additional information that they have about these cases and if any investigation is being performed at the national level.	

Example part 1: New MTCI visible to AT PH and FR PH



Home	Upload	Revi	ew Query	Reports	Data sou	rces	Network w	orkspace	I	1y profile	Doc	ıments
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	database for sin											
Genetic d	listance:	0	PFGE XbaI bands diffe	erence	~		Time distanc	ce:	days (o	ptional)	Up	date
Results												
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UPGMA		\$	1 of 10 selected	÷ Se	elect nomenclat	ure \$	5 of 42 s	selected	\$	select link	ked case data	\$
Dendro	ogram	✓	PFGE_XbaI		Isolate	Isolate		Isolate ■	Isolate	-	Isolate	
PFGE X					Age	DateUsedFo	rStatistics			gCountry		_
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		✓			1	2016-10-20		M	AT		HUMAN	
		✓			1	2016-10-20		M	AT		HUMAN	
		✓			35	2016-10-16		F	FR		HUMAN	
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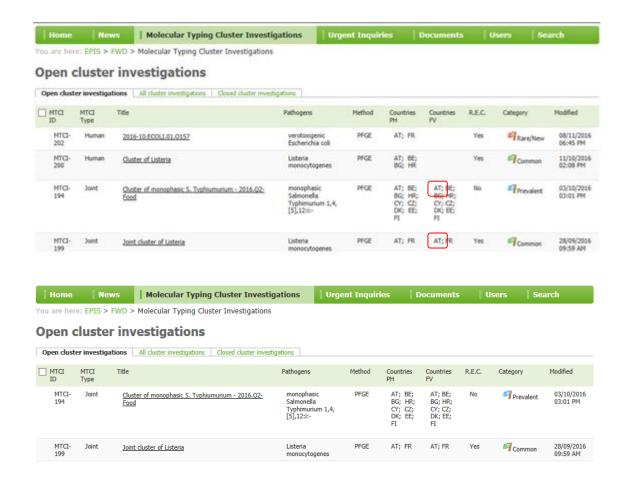




ECDC view

AT PH view

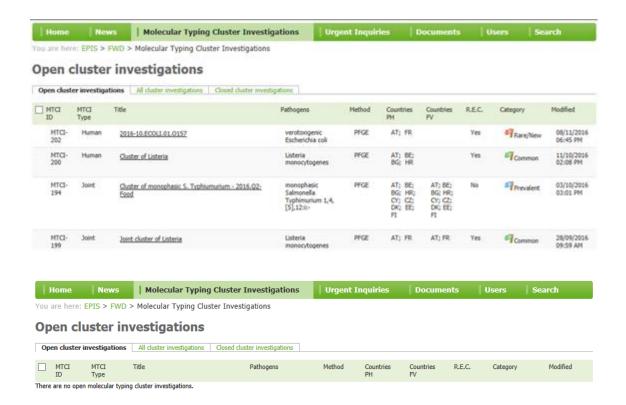




ECDC view

AT FV view





ECDC view

IT PH view

Example part 1: Cluster information sharing and discussion in the MTCI

Comments



Molecular typing cluster investigations: 2016-10.ECOLI.01.0157

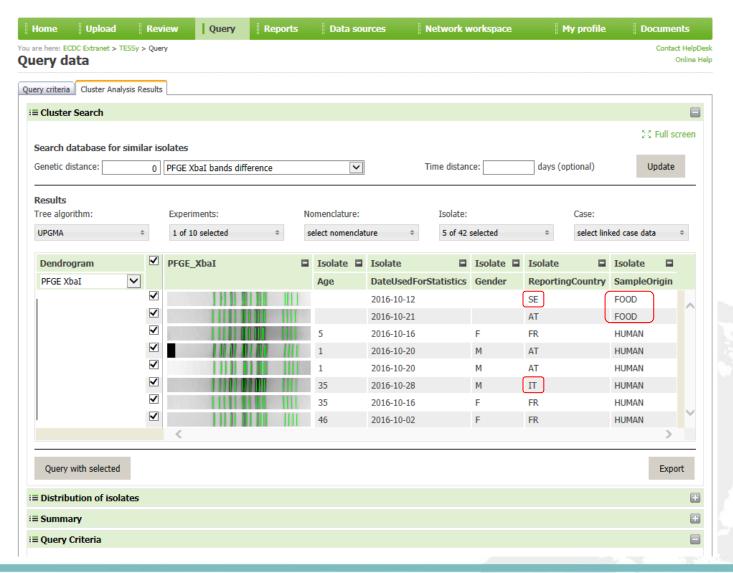
MTCI ID	MTCI-202
MTCI type	Human
Rapidly evolving cluster	Yes
Disease	verotoxigenic Escherichia coli infection
Pathogens	verotoxigenic Escherichia coli
TESSy cluster reference(s)	2016-10.ECOLI.01.0157
Method	PFGE
Countries involved in PH sector	Austria; France
Countries involved in FV sector	
Category	Rare/New
Urgent inquiry	
Status	Open
Investigation Country/ Sector Modified	Comment
Institution/ Role	Continue Con
ECDC 08/11/	2016 This is a new cluster of 5 isolates with the same PFGE profile; 3 cases from France and 2 cases from test_fwd_ecdc
06:45	Austria. Three of the cases are children <6 years old, whereas the other two are adult women (aged 35 and 46).
	46). The PFGE type has not been seen before in the TESSy database; rare sporadic cases of PFGE profiles with
	46). The PFGE type has not been seen before in the TESSy database; rare sporadic cases of PFGE profiles with one band difference have been seen, most recently from France in August 2014. Countries are invited to share any additional information that they have about these cases and if any investigation is being performed at the national level. Epidemiological information: test_fwd_at_ph
06:45	46). The PFGE type has not been seen before in the TESSy database; rare sporadic cases of PFGE profiles with one band difference have been seen, most recently from France in August 2014. Countries are invited to share any additional information that they have about these cases and if any investigation is being performed at the national level. Epidemiological information: Solated from two boys aged 15 and 20 months, kindergarden classmates. The 15-months old presented with long-term diarrhea, was not hospitalized and recovered well. The 20-months old was asymptomatic. The sample was taken as a request of her mother. Food samples have been taken from the kindergarden kitchen and are being analysed by our food safety
06:45	The PFGE type has not been seen before in the TESSy database; rare sporadic cases of PFGE profiles with one band difference have been seen, most recently from France in August 2014. Countries are invited to share any additional information that they have about these cases and if any investigation is being performed at the national level. Epidemiological information: Solated from two boys aged 15 and 20 months, kindergarden classmates. The 15-months old presented with long-term diarrhea, was not hospitalized and recovered well. The 20-months old vas asymptomatic. The sample was taken as a request of her mother. Food samples have been taken from the kindergarden kitchen and are being analysed by our food safety laboratory. Microbiological information: O157:H non motile; sk1+, sk2+, eae+, E-hly+, non-sorbitol fermenting; beta-glucuronidase -

Example part 2



- New isolates are continuously being submitted to the EFSA and ECDC molecular typing databases
- It is found (by EURL VTEC or ECDC's curator) that both human and non-human isolates match the existing human cluster (i.e. has PFGE profile XbaI.0162)
- Either EURL VTEC or ECDC's curator updates the multicountry cluster data in TESSy, and notifies EFSA and ECDC

Example part 2: Updated cluster in TESSy (ECDC/EFSA view)



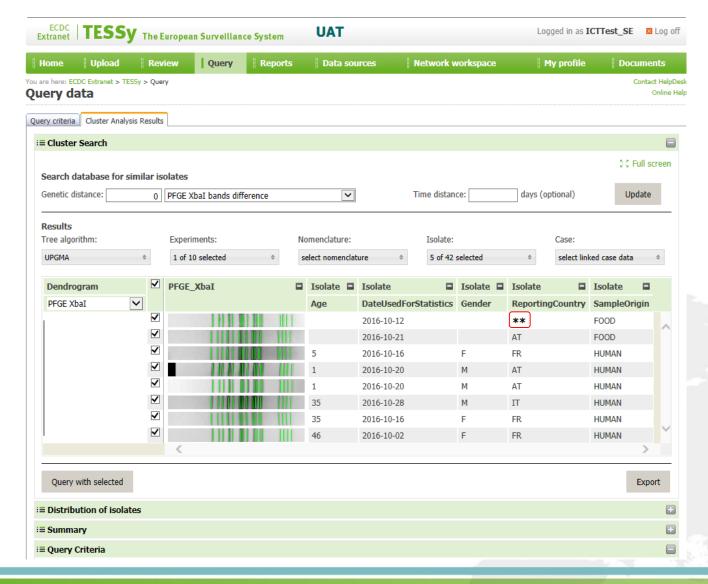
TESSy data view restrictions



- Country users from the public health sector:
 - Can see information (except national record ID) for all human isolates from all countries
 - Can see information about all non-human isolates for their own country
- Country users from the food safety and veterinary sector:
 - Can see information for all human and non-human isolates from their own country

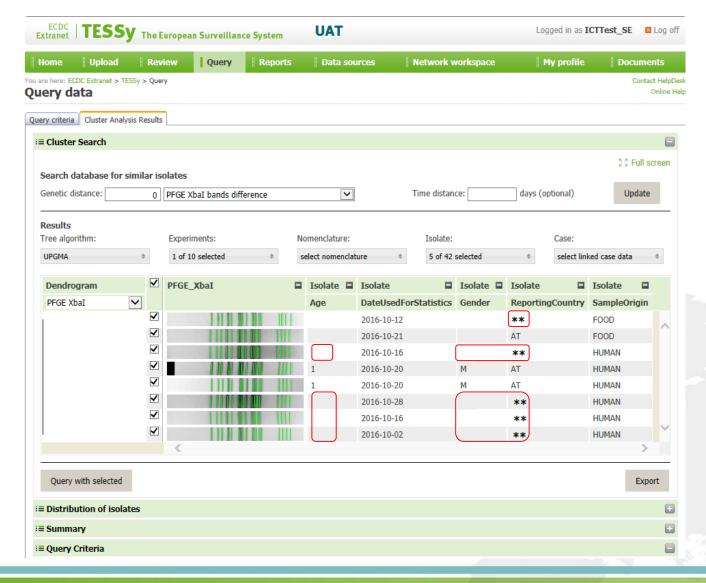
Example part 2: Updated cluster in TESSy (AT PH view)





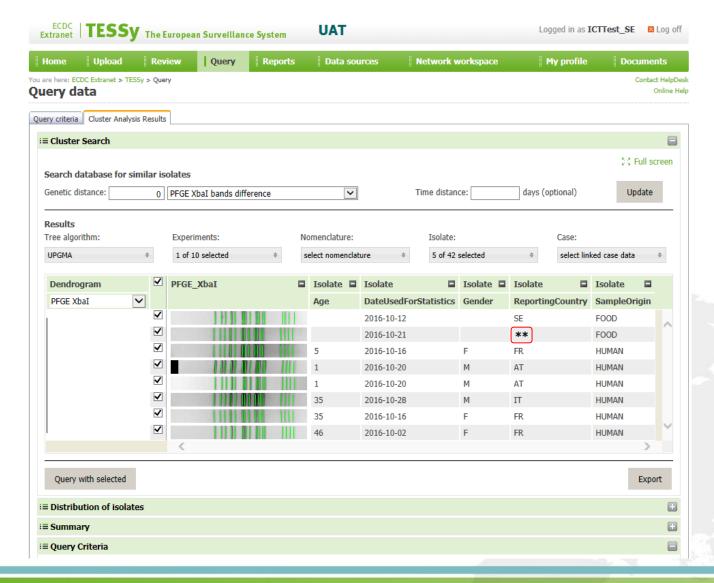
Example week 2/3: Updated cluster in TESSy (AT FV view)





Example part 2: Updated cluster in TESSy (SE PH view)





Example part 2: Update to joint MTCI in EPIS-FWD



Molecular Typing Cluster Inve	estigations - Update cluster investi	gation	□ × •
Save Cancel Paste Copy Spellin			
Commit Clipboard Spellin	ng		
MTCI Type * (Joint V		
Rapidly Evolving Cluster *	Yes 🗸		
Disease *	verotoxigenic Escherichia coli infection		
Pathogens *	verotoxigenic Escherichia coli		
Method *	PFGE V		
TESSy cluster reference(s)	2016-10.ECOLI.01.0157		^
			~
Tal. *	Add/change cluster references	X Delete all cluster refe	erences
Title *	2016-10.ECOLI.01.0157		
Countries involved in PH sector *	Netherlands Norway Polland Portugal Romania Slovakia Slovenia Spain United Kingdom	Austria France Italy Sweden < Remove	
Countries involved in FV sector *	Maita Netherlands Norway Poland Portugal Romania Slovakia Slovania Spain United Kingdom	Add > Sweden < Remove	
Category *	Rare/New 🗸		
Attach file		Save	Cancel

Example part 2: MTCI visible to AT, FR, IT and SE PH & FV

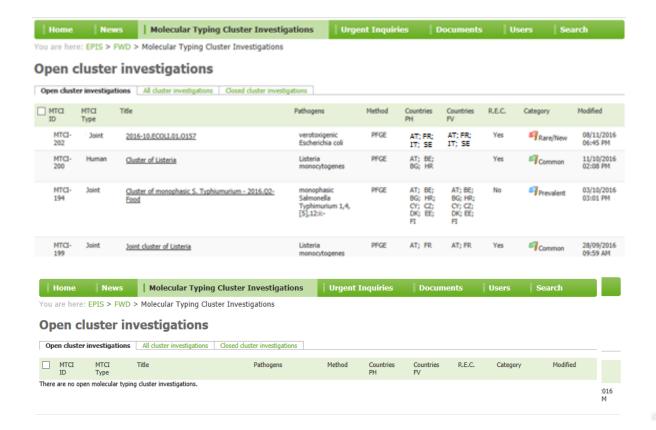


Molecular typing cluster investigations: 2016-10.ECOLI.01.0157

Comments

MTCI ID				PITCL 202						
	MTCI type			Joint						
	Rapidly evolving cluste	er		Yes						
Disease Pathogens TESSy cluster reference(s)				verotoxigenic Escherichia coli infection						
				verotoxigenic Escherichia coli						
				2016-10.ECOLI.01.0157						
Method				PFGE						
	Countries involved in F	H sector		Austria; France; Italy; Sweden						
Countries involved in FV sector				Austria; France; Italy; Sweden						
Category				Rare/New						
Urgent inquiry										
	Status			Open						
	☑ Edit MTCI									
	Investigation	,								
	_									
	Country/ Institution/ Role	Sector	Modified	Comment		Modified By				
	ECDC		08/11/2016 06:45 PM	This is a new cluster of 5 isolates with the same PFGE profile; 3 cases from France and 2 cases from Austria. Three of the cases are children <6 years old, whereas the other two are adult women (aged 35 and 46).		test_fwd_ecdc				
				The PFGE type has not been seen before in the TESSy database; rare sporadic cases of PFGE profiles with one band difference have been seen, most recently from France in August 2014.						
				Countries are invited to share any additional information that they have about these cases and if any investigation is being performed at the national level.						
	Austria	PH	08/11/2016 06:53 PM	Epidemiological information: Isolated from two boys aged 15 and 20 months, kindergarden classmates. The 15-months old presented with long-term diarrhea, was not hospitalized and recovered well. The 20-months old was asymptomatic. The sample was taken as a request of her mother. Food samples have been taken from the kindergarden kitchen and are being analysed by our food safety laboratory.		test_fwd_at_ph				
				Microbiological information: 0157:H non motile; stx1+, stx2+, eae+, E-hly+, non-sorbitol fermenting; beta-glucuronidase -						
	France	PH	08/11/2016 06:55 PM	Epidemiological information: Two cases are from a mother (35y) and a 5y old girl from the same family, where the child has developed HUS and is currently hospitalised. The third case (woman, 46 y) is from a different part of the country, suffered from bloody diarrhoea and has recovered after Cproxin treatment. Infections are most likely domestically acquired.		test_fwd_fr_ph				

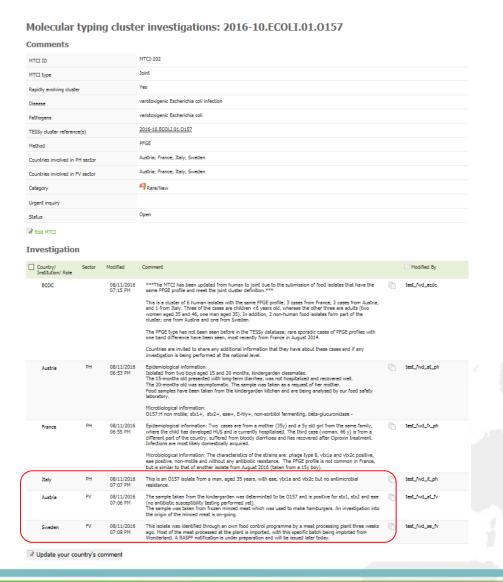




ECDC view

IT PH view

Example part 2: Joint MTCI with discussion between between both sectors



Example part 3



- If the information provided in the MTCI leads the group to:
 - Suspect that more countries may be involved, and/or
 - That there is value in informing both the food safety and veterinary expert networks,

The MTCI can be escalated to an Urgent Inquiry (UI)

- Joint MTCIs are only escalated with the explicit approval of both EFSA and ECDC
- The new UI <u>does not</u> automatically contain the information from the MTCI; a summary text is drafted before UI publication
- The MTCI is automatically closed once a UI is created from it.

Example part 3: MTCI escalated to UI



Urgent Inquiries - New urgent inquiry		□ ×
		②
Save Cancel Paste Clipboard Spelling Commit Clipboard Spelling		
MTCI	associated MTCI	
TESSy report(s)	2016-10.ECOLI.01.0157	
Disease *	verotoxigenic Escherichia coli infection	~
Pathogens *	unknown Add > < Remove	
Title *	Multi-country cluster of verocytotoxic VTEC 0157 (vtx1+2, eae)	
Number of human cases * (set 0 for FV)	7	
Epidemiological information and suspected vehicles	The cluster comprises two human cases from Austria, three human cases from France, and one human case from Italy as well as one non-human isolate from Austria and one non-human isolate from Sweden. The patients are three males three femaes whose ages range from 1-46 years old including three children under the age of 6. Symptoms range fron asymptomatic to HUS. Available information suggest possible links to minced meat, and investigations on positive food samples are on-going	s, ^
Microbiological information	Shared microbiological characterisation of the isolates in the cluster are O157 (H non-motile), stx1/vtx1+ (vtx1a) and stx2/vtx2+ (vtx2c), and eea+. Phage type 8, non-sorbitol fermenting and beta-glucuronidase negative has also been reported for a subset of the isolates, and with no antimicrobial resistance reported for any of the isolates.	^
Accessible by WHO (WHO Europe and INFOSAN)		
Attach file	Save Cancel	

Example part 3: UI notified to entire expert network(s)



Home	News	Molecul	ar Typing Clu	ster Investigations	Urgent Inquiries	Documents	Users	Search	
You are here:	EPIS > FWD	> Urgent Inqu	uiries > Multi-c	ountry cluster of verocyto	toxic VTEC 0157 (vtx1+2	2, eae)			
Urgent i	nquiry:	Multi-c	ountry o	cluster of vero	cytotoxic VTE	C O157 (vt	x1+2, ead	e)	
Epidemiol	ogical an	d microbi	iological ir	nformation					
UI ID: UI-382	Country/ I	nstitution/ Rol	e: ECDC	Disease: verotoxigenic Escher	ichia coli infection Po	athogens: verotoxigen	ic Escherichia coli	Open ma	ар
ECDC Sun	nmary								
cases from Austria	, three human c	ases from France	, and one human	aI.0162 was detected on 26 Oct case from Italy as well as one no three children under the age of	on-human isolate from Austria a	and one non-human isola			uman
Shared microbiological characterisation of the isolates in the cluster are O157 (H non-motile), sbx1/vbx1+ (vbx1a) and sbx2/vbx2+ (vbx2c), and eea+. Phage type 8, non-sorbitol fermenting and beta-glucuronidase negative has also been reported for a subset of the isolates, and with no antimicrobial resistance reported for any of the isolates.									
Available informat	ion suggest poss	ible links to minc	ed meat, and inve	estigations on positive food samp	oles are on-going.				
Bdit ECDC Sur	mmary								
Urgent in	quiry and	response	es						
Epidemiologic	al and microbi	ological inform	ation Authorin	ng information					
Country/ Institution/ R	Sector	Modified	Number of human cases	Epidemiological information a	and suspected vehicles		Microbiological inform	mation	
ECDC		08/11/2016 07:25 PM	7	France, and one human cas Austria and one non-human males, three femaes whose children under the age of 6.	numan cases from Austria, three from Italy as well as one non isolate from Yowden. The pat ages range from 1.46 years ol. 5 ymptoms range from asympt st possible links to minced mea e on-going.	-human isolate from ients are three d including three comatic to HUS,	Shared microbiolog characterisation of the cluster are O15 motile), stx1/vtx1+ stx2/vtx2+ (vtx2-) Phage type 8, non-fermenting and bel negative has also be a subset of the isol no antimicrobial refor any of the isola	the isolates in formal through the formal through thro	
☑ Update y	our country's	post							
Attackers									
Attachme There are no attachme									
Miscellane	eous								
MTCI			associated MTCI						
TESSy cluster ref	ference(s)		Manage TES!	Sy cluster reference(s) 2016-:	10.ECOLI.01.0157				
Discussion			Create a free	discussion					
Questionnaire(s)			Create a que	stionnaire					
Document library	1		Create a docu	ument library					
Who can access	this urgent inqui	ry?	(Austria, Belgium Latvia, Liechtenst	lth experts from participating co , Bulgaria, Croatia, Cyprus, Czec tein, Lithuania, Luxembourg, Mal Curator, EURL, DG SANTE G	h Republic, Denmark, Estonia,	Finland, France, German	ny, Greece, Hungary,	Iceland, Ireland, Italy	ly,
Status			Open						

Example part 3: UI notified to entire expert network(s)



Home	News	Molecula	ar Typir	ng Cluster Investigations	Urgent Inquiries	Documents	Users	Search	
ou are here: EF	IS > FWD :	> Urgent Inqu	iiries > 1	Multi-country cluster of verocyto	toxic VTEC 0157 (vtx1+	2, eae)			
Jrgent in	quiry:	Multi-c	ount	ry cluster of vero	cytotoxic VTE	C O157 (vt	x1+2, ea	e)	
pidemiolo	gical an	d microbi	ologic	cal information					
UI ID: UI-382	Country/ In	nstitution/ Role	e: ECDC	Disease: verotoxigenic Escher	ichia coli infection P	athogens: verotoxigen	ic Escherichia coli	N Open	map
ECDC Sumr	nary								
A cluster of verocyto cases from Austria, t	toxic Escherich hree human ca	ses from France,	, and one I	type XbaI.0162 was detected on 26 Oct human case from Italy as well as one n Icluding three children under the age of	on-human isolate from Austria	and one non-human isola			
				luster are O157 (H non-motile), stx1/vi			type 8, non-sorbitol	fermenting and bet	ta-
_				and investigations on positive food sam					
Urgent ingu	iirv and	resnonse							
Epidemiological	•	-		Authoring information					
Country/	Sector	Modified	Number		and cusposted vehicles		Microbiological inform	nation	
Institution/ Role		Modified	human o		ma suspected venicles		riicrobiological iniorr	ilduon	
ECDC		08/11/2016 07:25 PM	7	France, and one human ca: Austria and one non-human males, three femaes whose children under the age of 6	numan cases from Austria, three from Italy as well as one nor i solate from Sweden. The pai ages range from 1–46 years ol . Symptoms range from asymplest possible links to minced mere e on-going.	n-human isolate from dients are three d including three domatic to HUS.	Shared microbiolog characterisation of the cluster are O15 motile), sbx1/vbx1+ sbx2/vbx2+ (vbx2-), Phage type 8, non-fermenting and bet negative has also be a subset of the isol no antimicrobial refor any of the isolar	the isolates in 7 (H non- (vtx1a) and and eea+, sorbitol a-glucuronidase een reported for ates, and with sistance reported	
Austria	PH	08/11/2016 07:40 PM	3	The 15-months old present recovered well.	d 15 and 20 months, kindergar ed with long-term diarrhea, wa mptomatic. The sample was ta	s not hospitalized and	O157:H non motile eae+, E-hly+, non- fermenting; beta-g	sorbitol	
Austria	FV	08/11/2016 07:45 PM	0		n frozen minced meat which wa on into the origin of the minced		The sample taken f kindergarden was p stx2 and eae (no a susceptibility testin yet).	ositive for stx1, ntibiotic	
Italy	PH	08/11/2016 07:42 PM	1	This is an O157 isolate from	n a man, aged 35 years		eae, vtx1a and vtx antimicrobial resist		
Sweden	FV	08/11/2016 07:46 PM	0				This isolate was ide an own food control a meat processing the meat processed imported, with this being imported frout A RASFF notification has been issued.	Il programme by plant. Most of I at the plant is specific batch n Wonderland.	
United States	PH	08/11/2016 07:48 PM	0				There are no cases PFGE profile in the database.		

Conclusions



- EPIS-FWD has been updated to manage also non-human and joint human/non-human clusters that will be detected through the joint ECDC-EFSA molecular typing database
- The updated EPIS-FWD will be released on 1 December 2016.
- A training for the nominated users from the food safety and veterinary sector is being planned; dates to be confirmed and invitations to be sent out by EFSA.



