STEC O104:H4 outbreak, activities at EU level

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EU RL for E. coli, Rome, 4 November 2011

Detection of the outbreak in Germany

- 19.5; a call from Hamburg to Robert Koch Institut
  – A cluster of three HUS cases among children

- 20.5; RKI team travelled to Hamburg
  – First in depth interviews: also adult HUS cases
  – Case numbers were rising
  => Outbreak investigation initiated immediately

Case-control studies in Germany

Case-control studies

- **Two case-control studies in Hamburg**
  - Salads, cucumbers and tomatoes most likely vehicle of infection
  - Results communicated on 25 May; joint press release RKI-BfR
- **Canteen study in Frankfurt**
  - Cases were more likely to have bought salad in the canteen
  - Multivariate OR 6,57 (95% CI 1,37 – 31,39)
- **Matched case-control study in Lübeck, Bremerhaven and Bremen**
  - Matched by age, gender and place of residence
  - Matched OR for having eaten sprouts 4,35 (95% CI 1,05 – 18,0)

Source: Robert Koch Institute. Report: Final presentation and evaluation of epidemiological findings in the EHEC O104:H4 outbreak, Germany 2011. Berlin 2011.

Cohort studies in disease clusters

Over 30 cohorts investigated since June 1, 2011 to identify the vehicle of infection and further cases, e.g.

⇨Cohort studies of **travel groups** (in cooperation with foreign authorities)

⇨Cluster analysis of different **restaurant-associated outbreaks**

⇨Analysis of **billing data of guests** at an affected canteen; results published on June 3, 2011 (press release RKI-BfR)

⇨ **„Recipe-based restaurant cohort study“**

- Relative risk for sprouts 14,2 (95% CI 2,40 – infinite)

Source: Robert Koch Institute, 20.6.2011

Size of the outbreak in Germany

3842 cases

2987 non-HUS STEC	855 HUS
18 deaths (0.6%)	35 deaths (4.1%)

Incubation period:
-Median 8 days (25% 6 d, 75% 10 d)

Time between diarrhoea and HUS:
- Median 5 days (25% 4d, 75% 7 d)

Of HUS cases
- 68% women
- Median age 42 years (0-91 years)
- Bloody diarrhoea in 79%

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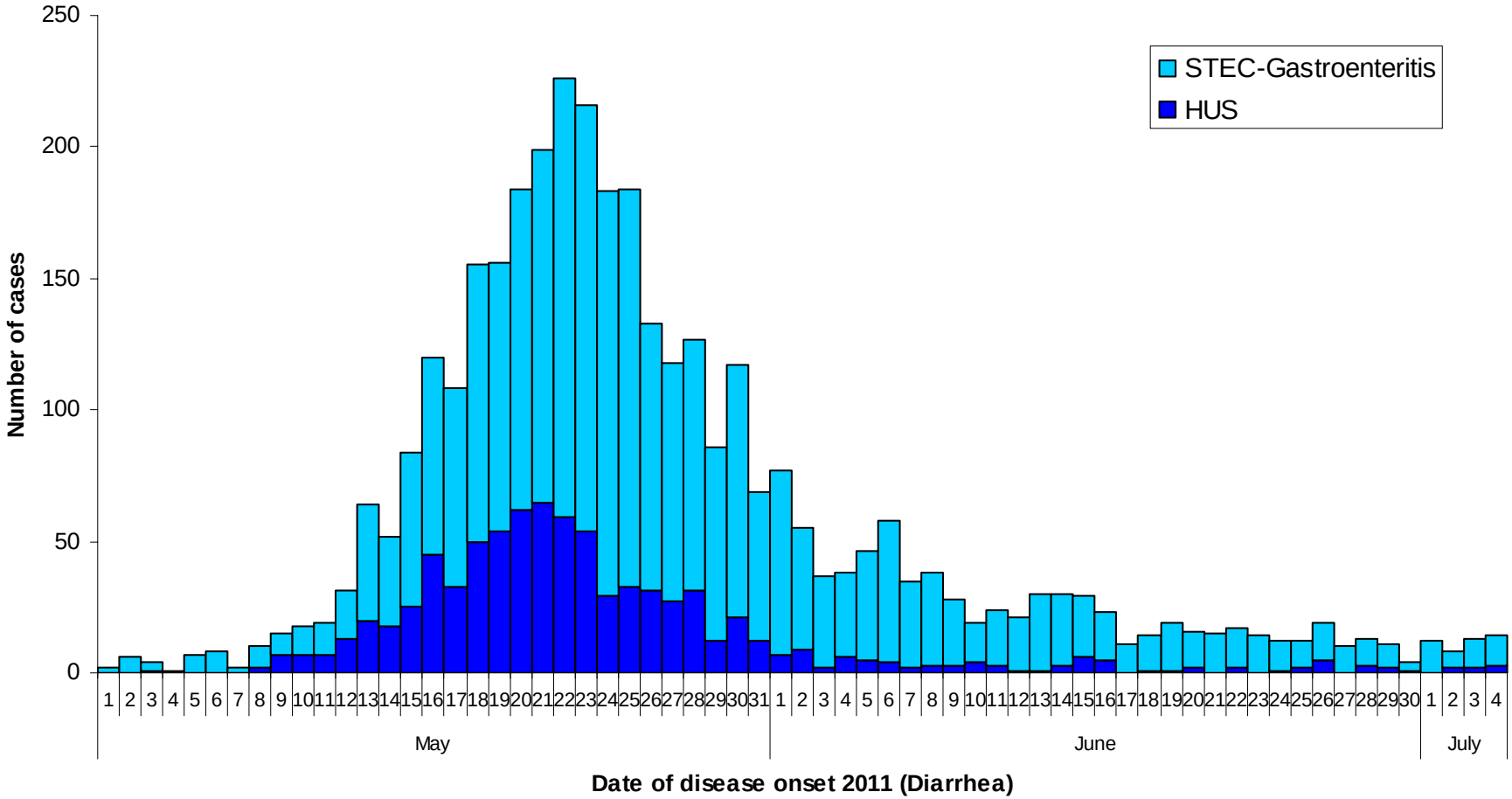
Epicurve of the STEC O104:H4 outbreak, Germany 2011



Source: Robert Koch Institute. Report: Final presentation and evaluation of epidemiological findings in the EHEC O104:H4 outbreak, Germany 2011. Berlin 2011.

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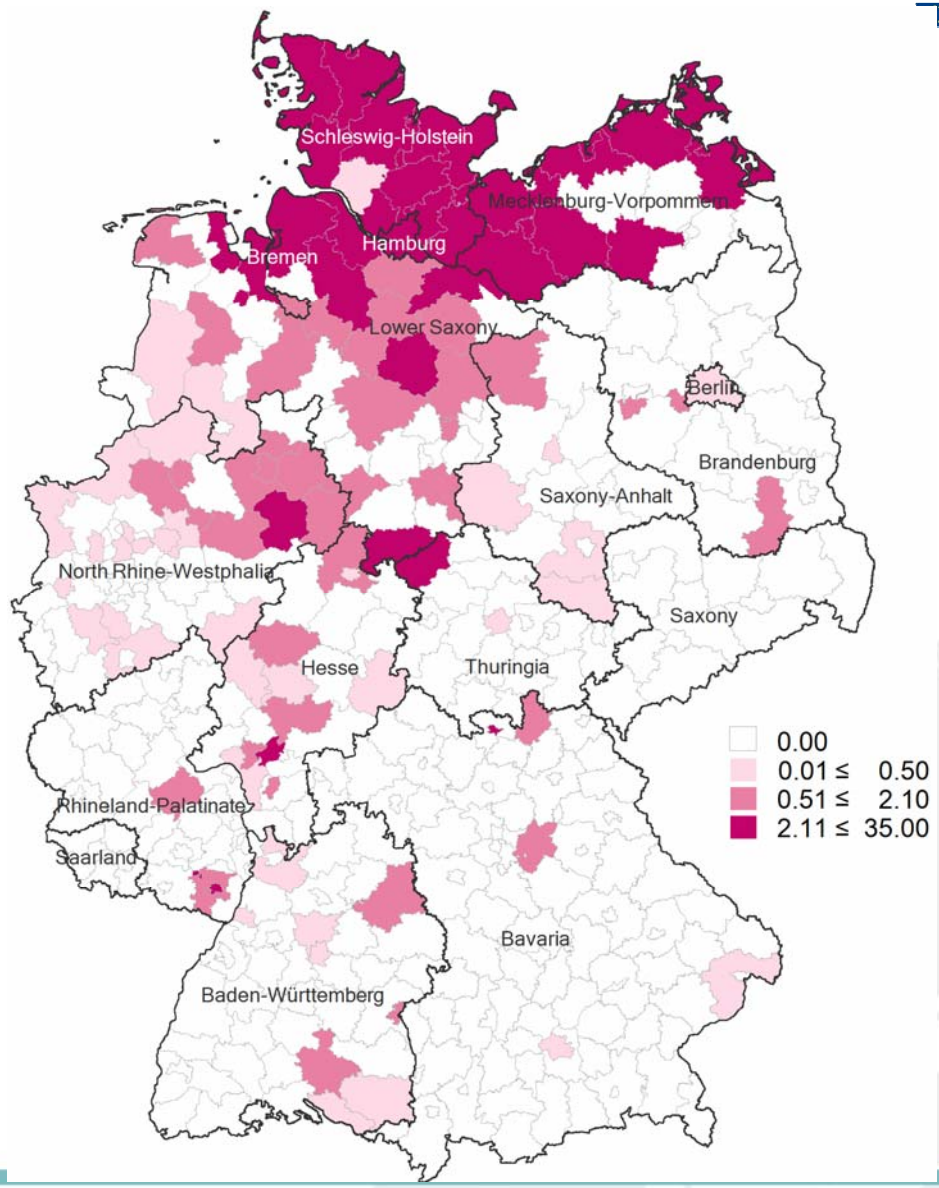
Incidence of HUS during the STEC O104:H4 outbreak by county, Germany 2011

(German cases /100,000 population*)



*cases known to be associated with intra-German travel are counted in the county of infection

Source: Robert Koch Institute. Report: Final presentation and evaluation of epidemiological findings in the EHEC O104:H4 outbreak, Germany 2011. Berlin 2011.

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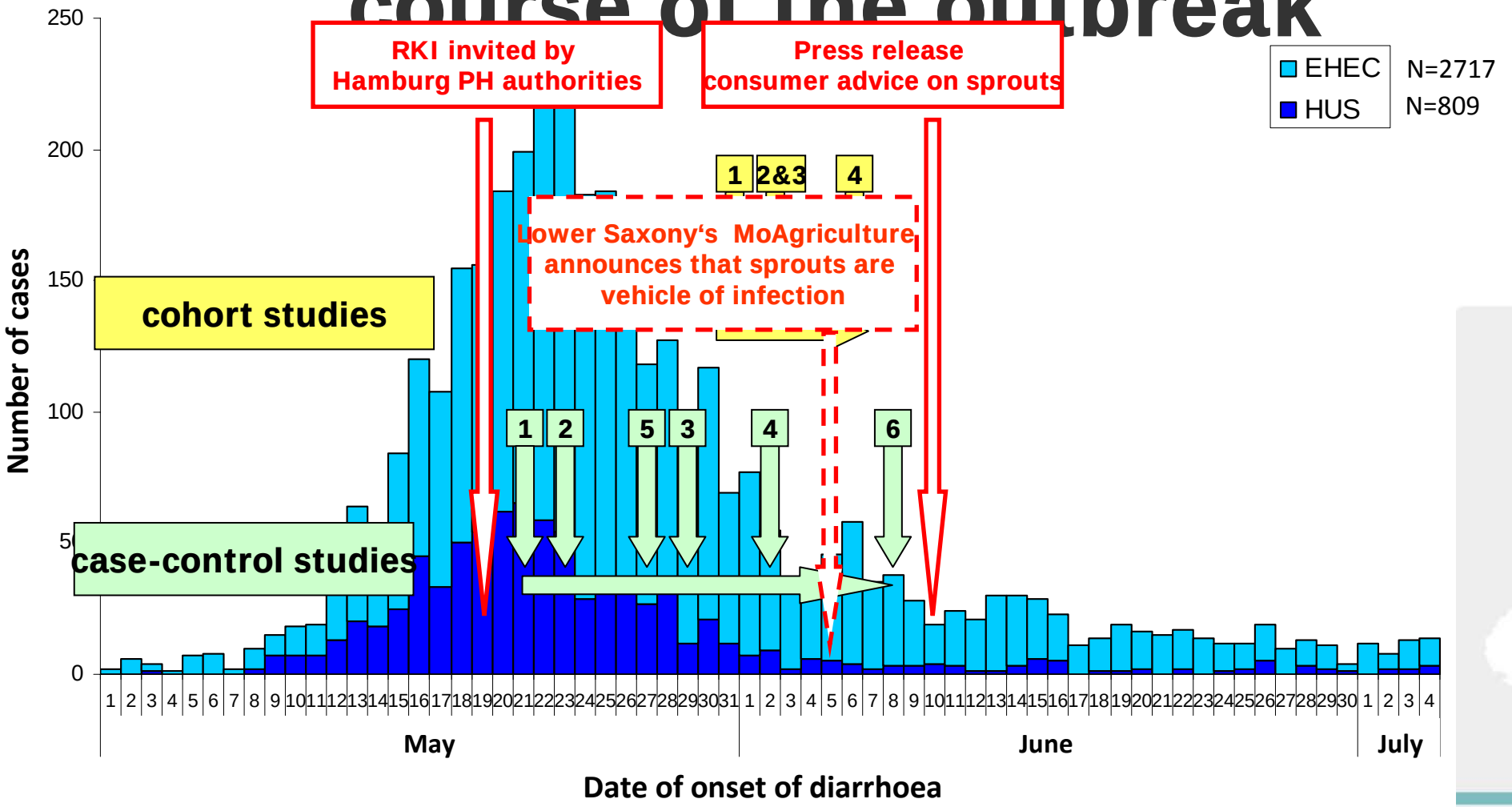
Epidemiologic investigations in the course of the outbreak



Notification to ECDC by Germany

EWRS on 22 May

Reporting Member

Name	Germany Gerard Krause
Institution	Robert Koch-Institut

Event Information

Posted on:	22/05/2011
Message Content:	Other information
Reporting Reason:	A3*Have epidemiologically-linked cases of the same disease been detected/reported recer*
Syndrome / Disease:	HUS
Pathogen	
Country of Occurrence	Germany
Date of onset/detection	19/05/2011
Mail Sent to	European Commission, Public Health Authorities and ECDC
Accessibility	This message is accessible to WHO

MESSAGE:

In Germany, there has been an increase in the number of patients presenting with Haemolytic Ura (STEC) with more than 30 possible cases reported since the second week of May. New cases cont on current knowledge mainly the Northern federal states of Germany are affected but cases have a females predominating, but cases occurred also in children of school age.

Urgent inquiry on 24 May

ECDC Extranet | EPIS Epidemic Intelligence Information System

Epis

Epis > Urgent Inquiries > HUSSTEC outbreak among adults in Germany

Urgent Inquiries : HUSSTEC outbreak among adults in Germany

EI General

Ad Hoc

Listeria monocytogenes se[...]

FWD

- Network Announcements
- For Information
- Urgent Inquiries
- Campylobacteriosis
- Listeriosis
- Salmonellosis
- Shigellosis
- STEC/VTEC
- Yersiniosis
- Other

Urgent Inquiries

ECDC Summary

June 7, 2011, 11:00
Update since 6 June - 11:00, Germany reported 12 new HUS cases and 82 new non-HUS STEC case
Germany. Poland has reported one additional HUS case affecting a child who did not have tra
including 7 deaths were reported so far (see table 1 and figure 1).

Germany reports an ongoing outbreak of HUS/STEC with 642 HUS cases and 15 deaths due to HUS

Responses

Date	Country	Has Cases	Cases	Epidemiological Information	Suspected Sources
02/06/2011 10:34	Germany	Yes	80	UPDATE 27.5.2011: The case count of HUS or suspected HUS now stands 276 cases (8am today) - the majority is still in northern Germany, still in adults, and still in women. You can find a preliminary report on the outbreak "Large and ongoing outbreak of haemolytic uraemic syndrome, Germany, May 2011" at http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19878 We would like to inform about a HUS/STEC outbreak in	UPDATE 27.5.2011: A Ham cucumbers. No details abo whom are known and it re can explain the entire out 26.5.2011: A case-control Tuesday overnight into W associations between the cucumbers and leafy sala eaten together, it's hard culprit. Clearly this produ

First questions:

- How common is serotype STEC O104:H4 in humans?
- How common is serotype STEC O104:H4 in animals/food?

TESSy human data from 2009:
- No cases of STEC O104:H4 reported

Scheutz/Enter-net data:
- Two cases in Germany in 2001
- One case in France in 2004

ECDC-EFSA joint report 9 June:
- One case in Finnish traveller in 2010 (Egypt)
- No animal/food isolates reported
- Literature; one case in Korea in 2005

Additional info from CDC, US:
-Strains isolated from two patients during an unconfirmed outbreak of HUS in the Republic of Georgia in 2009

EFSA/ECDC joint public health advice on preventive food safety measures

First version on 3 June
- update on 11 June 2011

Prevention measures

Public health advice on prevention of diarrhoeal illness with special focus on Shiga toxin - producing Escherichia coli (STEC), also called verotoxin - producing E. coli (VTEC) or enterohaemorrhagic E. coli (EHEC)

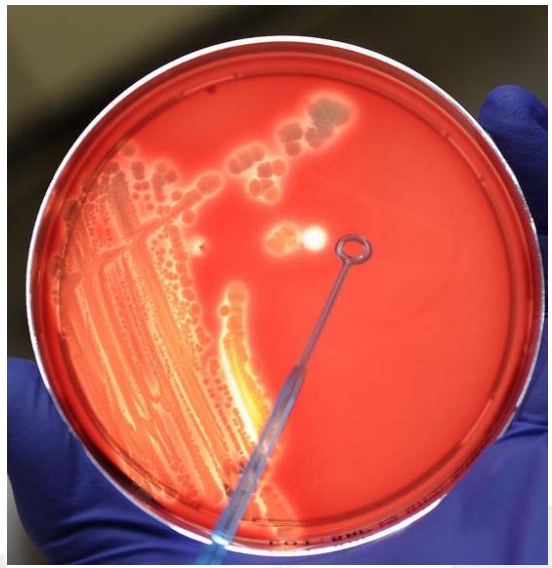
UPDATED joint statement by the European Centre for Disease Prevention and Control (ECDC) and the European Food Safety Authority (EFSA), 3 June 2011

On 22 May 2011, Germany reported a significant increase in the number of patients with haemolytic uremic syndrome (HUS) and bloody diarrhoea caused by Shiga toxin-producing E. coli (STEC). Since 2 May, over 400 HUS cases and over 1000 STEC cases been reported in Germany. Additional HUS and STEC cases linked to the outbreak have been reported in several other EU/EEA countries; Austria, Czech Republic, Denmark, France, the Netherlands, Norway, Poland, Spain, Sweden, and United Kingdom. While HUS cases are usually observed in children under 5 years of age, over 80% are adults in this outbreak, with a clear predominance of women (about 68%).

Public health laboratory support

National reference laboratory survey on 2 June

- 83% (25/30) laboratories replied
- 48% countries: **no detection** of non-O157 available in **any** clinical laboratory
- 56% of laboratories capable of diagnosing outbreak strain



Der Tagespiegel

=> 19 laboratories willing to receive diagnostic support:

- A set of control strains (from WHO-CC)
- Antisera K9 and O104

Rapid risk assessments (RRAs) and epidemiological updates

25 May – By request from DG SANCO following EWRS on 22 May

26 May – Daily summaries of epidemiological situation

27 May – Update with more info from RKI and isolation of STEC in cucumbers

14 June – Update, seven other countries had reported cases, sprouts confirmed

24 June – EWRS from FR: cluster of HUS in Bordeaux, sprouts suspected

29 June – First joint EFSA/ECDC RRA: EFSA task force on food trace-back investigations

8 July – Update on ECDC/EFSA RRA: overall EU assessment
- Asymptomatic carriers among persons in one German cluster: 18/30 positive
- No significant person-to-person transmission
- Outbreak ceasing

26 July – Last epidemiological update

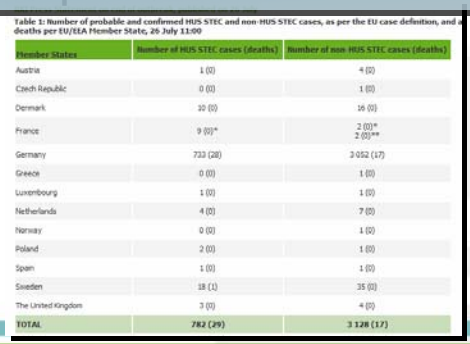


Table 1: Number of probable and confirmed HUS STEC and non-HUS STEC cases, as per the EU case definition, and deaths per EU/EEA Member State, 26 July 11:00

Member States	Number of HUS STEC cases (deaths)	Number of non-HUS STEC cases (deaths)
Austria	1 (0)	4 (0)
Czech Republic	0 (0)	1 (0)
Denmark	10 (0)	16 (0)
France	9 (0)*	2 (0)* 2 (0)**
Germany	733 (28)	3 052 (17)
Greece	0 (0)	1 (0)
Luxembourg	1 (0)	1 (0)
Netherlands	4 (0)	7 (0)
Norway	0 (0)	1 (0)
Poland	2 (0)	1 (0)
Spain	1 (0)	1 (0)
Sweden	18 (1)	35 (0)
The United Kingdom	3 (0)	4 (0)
TOTAL	782 (29)	3 128 (17)

Support to clinicians

Teleconference among clinicians coordinated by ECDC on 9 June

Podcast of Dr. Jan Kielstein

Severe renal and neurological complications, seizures and coma

EU mission to Germany to assist in investigation

- ECDC sent liaison officer to RKI
- EU delegation of EFSA, ECDC and the Commission to Germany in early June
- EFSA assisted federal food authorities in Germany with trace back investigation 5-16 June

EFSA Task Force report on 5 July 2011

efsa
European Food Safety Authority

TECHNICAL REPORT OF EFSA

Tracing seeds, in particular fenugreek *(Trigonella foenum-graecum)* seeds, in relation to the Shiga toxin-producing *E. coli* (STEC) O104:H4 2011 Outbreaks in Germany and France[1]

European Food Safety Authority[2,3]

European Food Safety Authority (EFSA), Parma, Italy

KEY WORDS

Shiga toxin-producing *E. coli* (STEC), VTEC, EHEC, sprouts, seeds, trace-back, trace-forward.

1 On request from EFSA, Question No EFSA-Q-2011-00817, issued on 05 July 2011.

2 Correspondence: emrisk@efsa.europa.eu

3 Acknowledgement: EFSA wishes to thank the members of the Task Force; Karen Jebousek (Austria / Bundesministerium für Gesundheit), Annick Lenglet (European Centre for Disease Prevention and Control), Denis Coulombier (European Centre for Disease Prevention and Control), Kris de Smet (European Commission, DG SANCO), Van Dyck Koen (European Commission, DG SANCO), Jean Michel Poirson (Food and Agriculture Organization of the United Nations), Claudine Muckensturm (France / Direction générale de la concurrence, de la consommation, et de la répression des fraudes), Jean-Louis Gerard (France / Direction générale de la concurrence, de la consommation et de la répression des fraudes), Jean-Luc Angot (France / Ministère de l'agriculture de l'alimentation de la pêche de la ruralité de l'aménagement du territoire), Petra Luber (Germany / Bundesamt für Verbraucherschutz und Lebensmittelsicherheit), Kathrin Heusler (Germany / Bundesamt für Verbraucherschutz und Lebensmittelsicherheit), Gaia Scavia (Italy / Istituto Superiore della Sanità), Giancarlo Belluzzi (Italy / Ministero della Salute), Rosa Peran i Sala (The Netherlands / Voedsel en Waren Autoriteit), Milagros Nieto (Spain / Ministerio de Sanidad, Política Social e Igualdad), Mats Johansson (Sweden / Livsmedelsverket), Philip Randles (United Kingdom / Food Standards Agency), James McLauchlin (United Kingdom / Health Protection Agency), Hilde Kruse (World Health Organisation Europe), Danilo Lo Fo Wong (World Health organisation), Andrea Ellis (World Health Organisation / The International Food Safety Authorities Network) for the preparatory work on this scientific output, Matthias Greiner, Weiser Armin, Stefan Groß, Anika Schielke (Germany / Bundesinstitut für Risikobewertung) Paul Cook, Darina O'Flanagan and Yvonne van Duyhoven, for their contributions, and EFSA staff Andrea Altieri, Davide Arcella, Saghir Bashir, Pierre-Alexandre Beloeil, Stef Bronzwaer, Hubert Deluyker, Andrea Gervelmeyer, Tilemachos Goumperis, Jose Angel Gomez Ruiz, Ernesto Liebana Criado, Olaf Mosbach-Schulz, Saadia Noorani, Mattia Ragnoli, Jane Richardson, Tobin Robinson, Laura Smillie, Marco Spizzi, Didier Verloo, for the support provided to this scientific output.

5

May June July

Cases in other countries

- In 15 countries mainly travel related cases detected
- Totally 83 STEC cases and 54 HUS cases
  - 2 deaths among HUS
- 75 cases in the EU
  - 35 in Sweden
  - 16 in Denmark

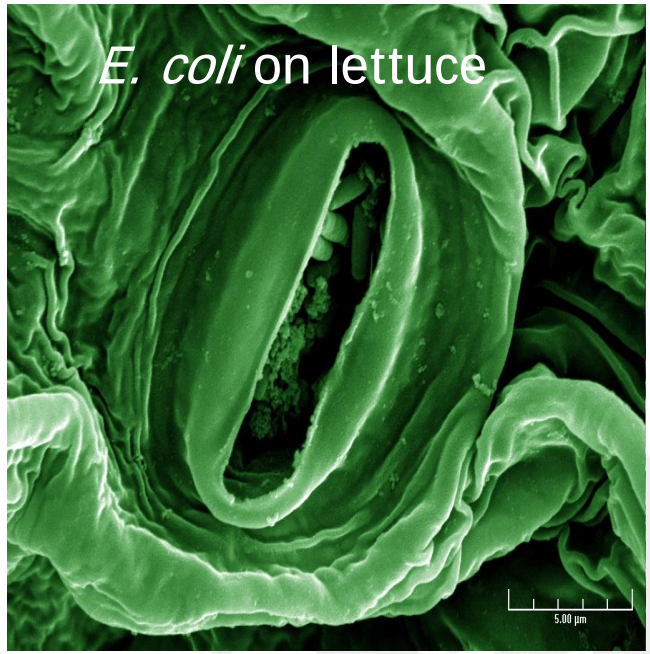


Photo: Texas AgriLife Research

Lessons learned

- Risk assessment and risk management authorities need intensive and close collaboration throughout an outbreak
- Collaboration at EU level worked well but can be further improved
- Joined training at EU level on investigations of foodborne outbreaks would enhance the preparedness for future events
- Risk communication is challenging and requires good coordination both at national and international level

THANK YOU!