Inventory of activities and methods available at the EU National Reference Laboratories (NRLs) for VTEC

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Aims of the Inventory

• To provide the CRL-VTEC and the Commission with the knowledge of the potential capacity existing in the different EU countries for:
  – analytic activities
  – interventions in the case of emergency.

• To prepare a catalogue of the NRL capabilities and activities

• To calibrate the capacity building program towards NRLs
Methods

Self administered questionnaire

Community Reference Laboratory for E.coli
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QUESTIONNAIRE
ON THE ACTIVITIES, EXPERTISE, AND FACILITIES OF NATIONAL REFERENCE LABORATORIES (NRLS) FOR Escherichia coli, INCLUDING VEROTOXIGENIC E. coli (VTEC) IN THE EU MEMBER STATES

Member State:

1. NATIONAL REFERENCE LABORATORY (NRL) DESCRIPTION
Name
Address:

Contact person and contact details (email, tel, fax):
Name
Tel: Fax: E-mail:

Deputy Contact person and contact details (email, tel, fax):
Name
Tel: Fax: E-mail:

Legal status of the Institution:
☑ Governmental ☐ Academic ☐ Other

• General information
• Field of activity
• Diagnostic methods
• Monitoring activities
• Expertise
• Facilities
• Data-Base
• Publications
• Needs
National Reference Laboratories (NRL) for *E.coli*

22 EU countries + Norway Romania have designated 30 NRLs
Inventory of the European NRLs for *E. coli*

**Legal status of the Institutions (NRLs)**

- **Veterinary Institutions:** 11
- **Public Health Institutions:** 6
- **Food Safety Institutions:** 11

7 Institutions are also the national representatives in Enter-net.
Inventory of the European NRLs for *E.coli*

Questionnaires were received from **22 NRLs**

- **20 NRLs from 19 EU countries + Norway and Romania**

Response Rate: **73%**
Inventory of the European NRLs for *E.coli*

Analytical activities of the NRLs (22 Labs)

- Foodstuffs: 21 Labs
- Animal samples: 12 Labs
- Environmental samples: 8 Labs
- Human samples: 6 Labs

Confirmation and Typing of VTEC strains isolated by peripheral Labs: 10 Labs
Inventory of the European NRLs for *E.coli*

Activity of the NRLs (22 labs)

Approx. No. of samples examined per year

- **foodstuffs:** 5428 (median value: 75)
- **animal samples:** 4896 (median: 124)
- **human samples:** 4696 (median: 20)
- **environmental samples:** 1545 (median: 12)

- **Number of strains received for Confirmation and Typing:** 927 (median 30)
Inventory of the European NRLs for *E.coli*

**Origin of the samples or the strains**

- Routine surveillance: 14
- Survey: 10
- Outbreak investigation: 11

**Accreditation according to EN ISO/IEC 17025:2005**

- 19 out of 22 NRLs (86%)
- 2 in progress
Inventory of the European NRLs for \textit{E.coli}

\textbf{VTEC in food}

- Isolation by immuno-separation methods:
  - \textit{E.coli} O157: 17 Labs
  - VTEC non-O157: 3 Labs

- Detection of markers indicating the presence:
  - \textit{E.coli} O157:
    - Immunodetection procedures: 11
    - PCR 10
  - VTEC non-O157:
    - PCR 10
    - VT genes: 10
    - eae gene: 7
Inventory of the European NRLs for *E.coli*

**VTEC in feces**

- **Isolation by immuno-separation methods:**
  - *E.coli* O157: 8 Labs
  - VTEC non-O157: 3 Labs

- **Detection of markers indicating the presence:**
  - *E.coli* O157:
    - Immunodetection proc.: 2
    - PCR: 9
  - VTEC non-O157:
    - PCR: 9
      - VT genes: 9
      - eae gene: 7
Inventory of the European NRLs for *E. coli*

**Identification of VTEC strains**

- **VT production:** 7 Labs
  - Vero cells: 3
  - ELISA or Latex: 5

- **VT genes:** 13 Labs
  - DNA probes: 3
  - PCR: 13
    - Immunodetection procedures: 2
    - PCR: 9

**Identification of VTEC strains by VT production and/or detection of VT genes:**
16 Labs
Inventory of the European NRLs for *E.coli*

Serotyping of VTEC strains (O antigens) - Labs

- O157: 19
- O26: 12
- O111: 11
- O128: 9
- O103: 9
- O145: 7
- O113: 6
- O91: 6
- Other: 6
Inventory of the European NRLs for *E. coli*

Serotyping of VTEC strains (H antigens)

- H7: 9 Labs
- Other H: 2
- H-genotyping 3

Phage-typing of VTEC O157
No Labs!

Molecular typing
PFGE: 10 Labs
Inventory of the European NRLs for *E.coli*

Monitoring Activities of the NRLs

- **Foodstuffs:** 15 labs
  - All VTEC: 10
  - O157 only: 5
- **Human infections:** 7 labs
  - All VTEC: 1
  - O157 only: 6
- **Animals:** 11 labs
  - All VTEC: 6
  - O157 only: 5
- **Environment:** 8 labs
  - All VTEC: 5
  - O157 only: 2
Culture collections at NRLs

- Foodstuffs: 11 Labs
  - O157: 856 strains
  - Non O157: 516 strains

- Human infections: 6 Labs
  - O157: 918 strains
  - Non O157: 926 strains

- Animals: 10 Labs
  - O157: 2608 strains
  - Non O157: 2011 strains

- Environment: 4 Labs
  - O157: 32 strains
  - Non O157: 927 strains
Inventory of the European NRLs for *E. coli*

VTEC strains DataBases

- Identification and typing of VTEC from non-human sources: 12 Labs
- Approx. number of non human VTEC strains in 2005: 1200 Strains
- All available to contribute to a European Database of VTEC strains from non-human sources:
- Most frequent available information on strains:
  - Serogroup
  - VT type
Summary

• Most NRLs have been designated
• Most NRLs:
  – are involved in food analyses
  – are accredited according to EN ISO/IEC 17025:2005
  – perform *E.coli* O157 isolation from food by standardized immuno-separation methods
Summary

- **18 / 22** NRLs are able to make presumptive identification of *E. coli* O157 by slide agglutination
- **17 / 22** NRLs are able to confirm the identification as VTEC by VT production or VT genes
- **14 / 22** NRLs can perform PCR analyses
Summary

- Phagetyping of *E.coli* is not performed in the network
- PFGE is performed in at least 10 NRLs
- The NRLs isolate more than 1000 VTEC strains per year from non-human sources and the information on these isolates could be collected in a DataBase
Grazie per l’attenzione