Questionnaire

Summary of answers to questionnaire

”Methods, matrices and quality control for *Campylobacter* analyses”

Eva Olsson Engvall, CRL- *Campylobacter*, SVA

Received answers from **26 laboratories in 25 countries:** AT, BE, BU, CH, CY, CZ, DE, DK, EE, FI, FR, GR, HU, IE, IT, LT, LV, NL, NO, PL, RO,SE, SI, SK, and UK

Q3. Do you as NRL perform analyses for *Campylobacter* on the following matrices?

<u>Intestinal/ faecal samples from:</u>

Poultry: **18 NRLs**

Other animals: **17** NRLs (cattle, pig, sheep, goat, turkey, dog, cat, rodent, exotic animals)

<u>Meat samples from</u>

Poultry: **20 NRLs**

Other animals: **12 NRLs** (cattle, pig, sheep, game, (duck, goose, quail), all types of meat)

Q3 continued (matrices)

Other food items

- Milk: **6** NRLs
- Drinking water: **3** NRLs
- Other: **7** NRLs (dairy products, vegetables, fish products, meat preparations, eggs, shellfish, cheese, food items associated with food borne outbreaks)

Environmental samples: **9** NRLs (broiler houses and environment, slaughter houses, hygiene samples of utensils, dust, water, swab and sock samples, etc)

Q4. Do you as NRL perform analyses for *Campylobacter* using the following methods

ISO 10272-1: 2006: **17** NRLs (meat, meat preparations, intestinal/faecal samples, food, poultry skin, poultry meat, drinking water, for all matrices)

NMKL: **5** NRLs (food, meat, vegetables, neck skin samples, faecal material, environmental samples)

Q4 continued
Other methods

- Other ISO (eg for water) and previous or modifications of ISO 10272 methods
- Manual of Clinical Microbiology 8th ed
- OIE Manual 2004
- FDA CFSAN BAM
- In house methods, published and unpublished
- According to own SOPs

(Other published: 11 NRLs

Other in-house: 6 NRLs)

Q4 continued
Molecular methods: **13** NRLs

- Best et al 2003, FEMS Microbiol Lett, 229, 237-241
- Fermér & Engvall 1999, J Clin Microbiol, 37, 3370-3373
- Denis et al 1999, Lett Appl Microbiol, 29, 406-410
- Denis et al 2001, J Appl Microbiol, 91, 255-267
- Korczak et al 2006, IJSEM, 56, 937-945
- Lawson et al 1997, J Appl Microbiol, 83, 375-380
- Linton et al 1997, J Clin Microbiol, 35, 2568-2572
- Lund et al 2003, J Appl Microbiol, 94, 929-935
- Lund et al 2004, J Clin Microbiol, 42, 5125-5132
- Marshall et al 1999, J Clin Microbiol, 37, 4158-4160
- Wang et al 2002, J Clin Microbiol, 40, 4744-4747
- Campynet protocol (PFGE subtyping)
- PulseNet protocol (PFGE subtyping)

Q4 continued
Immunological methods or other: **3** NRLs

- Latex agglutination for confirmation of Campylobacter isolates
- ELISA, for antibody detection in chicken and human sera
- VIDAS, for detecting thermophilic Campylobacter in food samples

Q5. Quantification/enumeration of Campylobacter

ISO 10272-2:2006: **5** NRLs (poultry, poultry skin, chicken caecum)

NMKL: **3** NRLs (meat, poultry meat and carcass rinse samples, faecal material)

Other published: **2** NRLs (ISO 10272-1; modified ISO 10272-2)

In house: **5** NRLs (food, faeces, poultry)

Molecular: **1** NRL (faecal material)

Q6. Enrichment broths

- Preston: **20** NRLs
- Bolton: **16** NRLs
- Exeter: **1** NRL
- Other: **2** NRLs (Tecra, Park and Sanders)

Q6. Selective agars

- mCCDA: **24 NRLs**
- Preston: **9**
- Karmali: **16**
- Skirrow: **11**
- AHB: **3**
- CAT: **3**
- Other: **7** (Campylosel, Gelose Campy Food, Butzler, CampyFood ID, Campy ID)

Q7. Ring tests

- Participate in ring test with Campylobacter: **20 NRLs** (different matrices, mainly food material, faecal material not included in commonly available ring tests)

- Organize ring test with Campylobacter: **7 NRLs** (chicken faeces, meat, milk powder, neck skin, pure cultures)

Proficiency tests (available)

- FEPAS, FAPAS, UK
- NEQAS, UK
- EQAS, (WHO)
- HPA, UK
- VLA, UK
- SLV (NFA), SE
- QM
- Antimicrobial susceptibility tests/Arbao
- Global Salm Surv (WHO strains)

Q8. Quality system

- Certified or accredited: **24 NRLs**
- Almost all NRLs use national accreditation or certifying organisations

Q9. Important issues, points raised by 16 NRLs

- Optimal sampling
- Conditions for transport of samples and strains
- Sample pretreatment, effect of low pH
- Methods, latest developments for detection and enumeration of Campylobacter in food and faeces
- Molecular methods, standardisation

Q9. continued

- Identification, verification of isolates
- Methods for typing of isolates
- Storage of strains
- Ring test
- EU monitoring of Campylobacter in food, incl. water and milk
- Time frame for drafted EU monitoring programmes
- Strategies for control

Where do we start?