

Wrap up and take home
messages

Scientific context

- FAO Activities on STEC: pathogenicity assessment and source attribution (TWO REPORTS). Global view on the issue (much needed as the dimension exceeds the single states' boundaries)
- Surveillance in Argentina. Also based on NGS. Impact of the other DEC on the burden of the STEC disease.
- Pathogenic *E. coli* infections in Denmark.
 - The benefit of comprehensive surveillance systems in understanding the impact of the different *E. coli* pathotypes. ExPEC have a great impact in DK and may be transmitted with food. Standardization of pathogenic *E. coli* (other than STEC) methods.
 - NGS, databases and *E. coli* hybrid pathotypes (possible mis-diagnosis, underestimation of the infections caused by cross-over strains)
- Emerging Vehicles: Flour!
 - Outbreaks Canada and USA (probably other countries)
 - Impact of the production process on the contamination of the end product
 - Impact of the use (dough, other uses...)

Monitoring & Molecular typing

- Food/Feed/Animals: Harmonization in the analytical method achieved (>97% of food samples assayed with the ISO TS 13136 in 2017). data still biased by lack of harmonization of the sampling strategies. Legal framework might help in this. Animal testing continue to decrease
- Food/Feed/Animals: Molecular typing of STEC still needs to be improved in terms of data contributed (a few MS sent data to the MTS).

Risk assessment/management

- EFSA WG on revision of STEC pathogenicity assessment (Opinion expected by the end of the year)
 - Discussion may start again at EU level
- National advisory committee for microbiological microcriteria in foods (NACMAF) and JEMRA reports
 - Good exercises. Change in the paradigm of “pathogenic STEC”, Identification of food vehicles (JEMRA, although with limitations)
- Harmonizing the sampling stage for STEC monitoring would greatly increase the value of the data collection. Recommendation by the EC?
- Characterisation the food isolates should be encouraged through reporting of the whole set of results provided by the ISO TS 13136. WGS should be also recommended

Network activities human Sector

- Human: WGS-based implemented at ECDC. Working for Listeria. STEC will follow?
- EQA on serotyping virulence genes asset and cluster detection based on molecular features Good performance in general (24 countries on 2018-2019).
- PFGE and phenotype is being dismissed in favour of NGS??
- Good performance of the labs in typing human STEC
- Stx subtyping: Good performance but improvement is needed as the methodology is tricky for certain subtypes
- Cluster analysis (PFGE or WGS). High performance in general, but harmonization (quality of seqs, allele scheme, burst size....) is still necessary to come to a cluster identification performed in a distributed setting

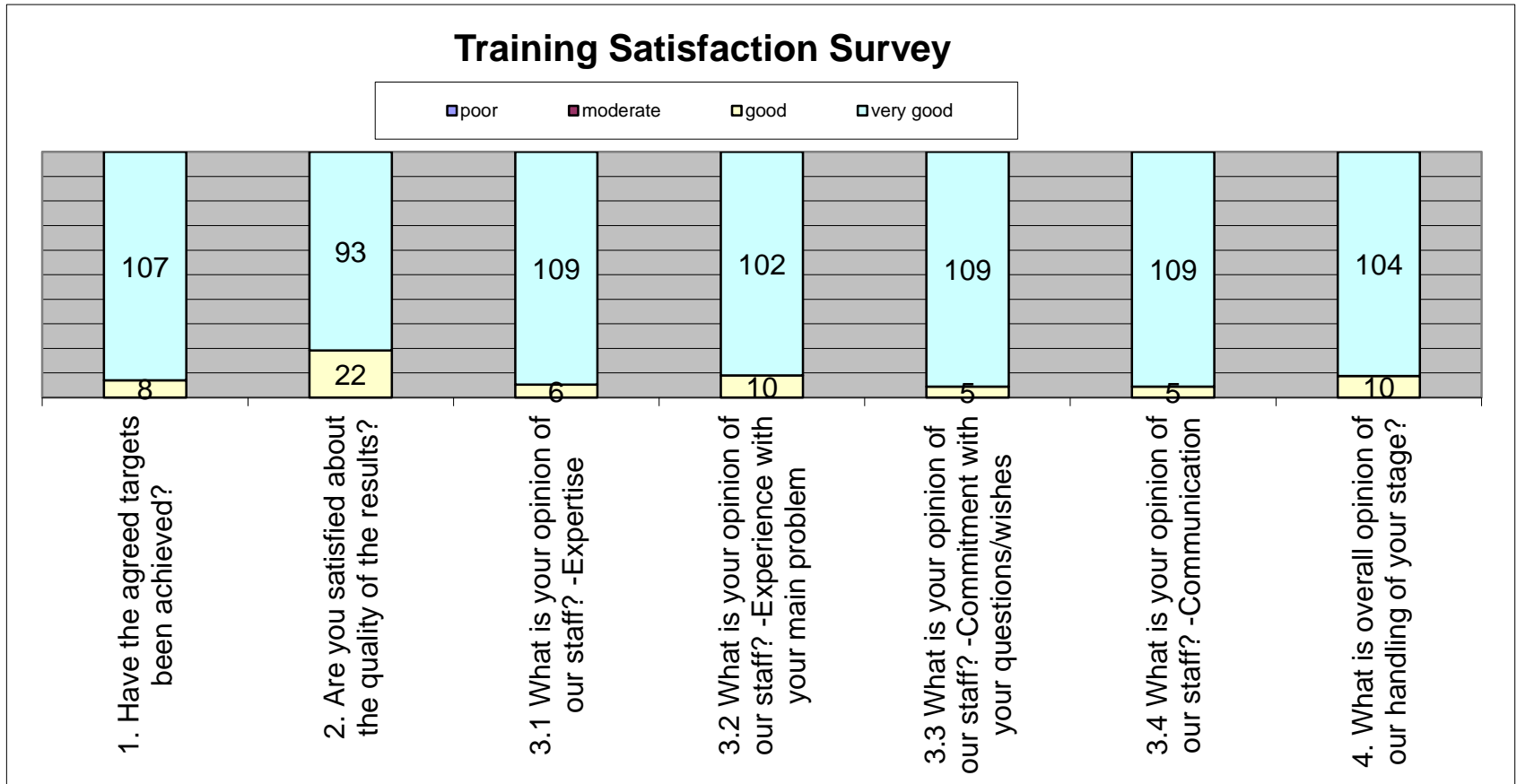
Network activities: EQA and Methods development in the *E. coli* network

- PT22 (sprout spent irrigation water 41.5°). Collaboration in the network. Complex matrix (56 labs). High interest by NRLs. The procedure was refined but it needs to be tested with many couples STEC strain/sprout species.
- PT23 (strain characterisation). 37 labs participated. WGS carried out by about half of the labs. Generally good performance of the network regarding the detection of the main virulence genes of STEC (*eae* and *stx1/stx2*). Other virulence genes may present remarkable difficulty in the detection. *Stx* genes subtyping showed areas of improvement (similarly to what observed for the EQA involving the human labs). WGS performed well but.....

Move the typing strategy to NGS

- Inter EURL WG on NGS. Bringing all the EURLs networks moving with the same pace. Guidance
- Surveys: Promotion still needed. Need to continue building the capacity in all networks. Joint training started.
 - Organization of a workshop to promote and stimulate the adoption of the NGS(WGS) in the EU. Funded by MVN. Participation of the EC, Agencies and all the stakeholders

145 scientists trained 2011-2019



Revision of the ISO TS 13136

- Standard in two parts has been consolidated.
- The draft of **part 1** is going towards the conclusion but still an issue with the detection of *eae* (a document is being prepared but the release of the EFSA opinion may untangle the open issue).
- Acid shock for vegetables informative. Other specifications for other food commodities (e.g. Flour)??
- **Strain characterization in part 2**
- Serogroups (flexible, primers informative)
- Adhesion genes
- Stx subtypes
- WGS recommended
- Request to register a NWIP for the detection of pathogenic *E. coli* (*Not STEC*) to CEN

**Discussion expected to be intense Tomorrow
(TAG 18 meeting)**

News from the network: NRLs

(not to mention the posters)

- **1st report of a STEC O26 outbreak in Iceland.** 24 Cases, 5 HUS. Link with an Ice cream factory (calf) at a farm through WGS. Isolation from cattle. NOT GOOD TO DO SOMETHING FOR THE FIRST TIME IN THE MIDDLE OF AN OUTBREAK!
- **Culture independent methods: Austrian** surveillance of STEC infections. Importance of collecting and analysing data from surveillance
- **Poland:** A five years study of prevalence on animal populations confirmed the role of cattle and pig and the related meats in the epidemiology of STEC. Also, the isolation of STEC from food and animal samples is an area of improvement. Most of the strains were stx2+ regardless the source
- **Germany. More Flour...**39% of positive samples (PCR) in a study and isolation from 19% regardless the grain species. Rates linked with specific mills (importance of the production process). Many STEC isolated during the official control including strains related with human cases (O157). Persistence confirmed. Germany Switzerland Austria Hungary...If you look for STEC in flour you'll get STEC from flour
- **The Netherland. Stx2f-producing *E. coli* in food.** Stx2f PCR in 1% poultry. Isolates here and there in 2016, 2017 and 2018. All Stx2f strains from vegetables: Connection with a reservoir? Connection with human disease needs to be investigated
- **Italy. STEC O80:H2.** The French clone appears to be more widespread. These STEC are really virulent and should be studied more in depth with respect evolution and pathophysiology of HUS

See you in 2020!!

- Thank you all for the pleasant and fruitful times we had in these two days

- Have a safe journey back home!

