



EPIET and EUPHEM; Building capacity in the EU

Arnold Bosman, head of public health training, ECDC
EFSA Annual Conference 2015, Milan, Italy

Programme objectives of EPIET path/ **EUPHEM** path



Key elements:

- Strengthen surveillance in EU Member States & EU level
- Develop PH response capacity in and beyond the EU
 - address disease threats / outbreaks through field investigation and control
- Develop a European Network of Field Epidemiologists / **Public Health Microbiologists**
 - using best practise and sharing common objectives;
- Support outbreak detection, investigation and response nationally and internationally
- **Foster future leaders in PH Microbiology in EU**

Training Objectives & Methods

2 year EPIET Fellowship



Objectives

- Surveillance
- Outbreak Investigation
- Population based studies
- Teaching
- Communication (including scientific)

Methods:

- Learning by doing “through service” (80%)
- Supervised ‘apprenticeship’ (10%)
- Specialist courses (10%)

Pathways



- Epidemiology (EPIET) since 1995
 - Core Competencies Intervention Epidemiology (2007)
- Public Health Microbiology (EUPHEM) since 2008
 - Core Competencies PH Microbiology (2011)
- Two distinct specialist profiles
- Same 5 public health functions in training objectives
- Part of communicable disease risk management cycle
- Other disciplines may fit this model

Outputs & outcomes 1995-2015

Modest Numbers



- **EPIET & EUPHEM: 462 Fellows**
 - 70 Cohorts 2014-2015
 - 39 Graduating cohort (2013)
 - 324 Graduated successfully (diploma)
- **International Deployments: 233**
 - 123 Outbreak
 - 39 Surveillance
 - 45 Survey
 - 15 Teaching
 - 11 Others



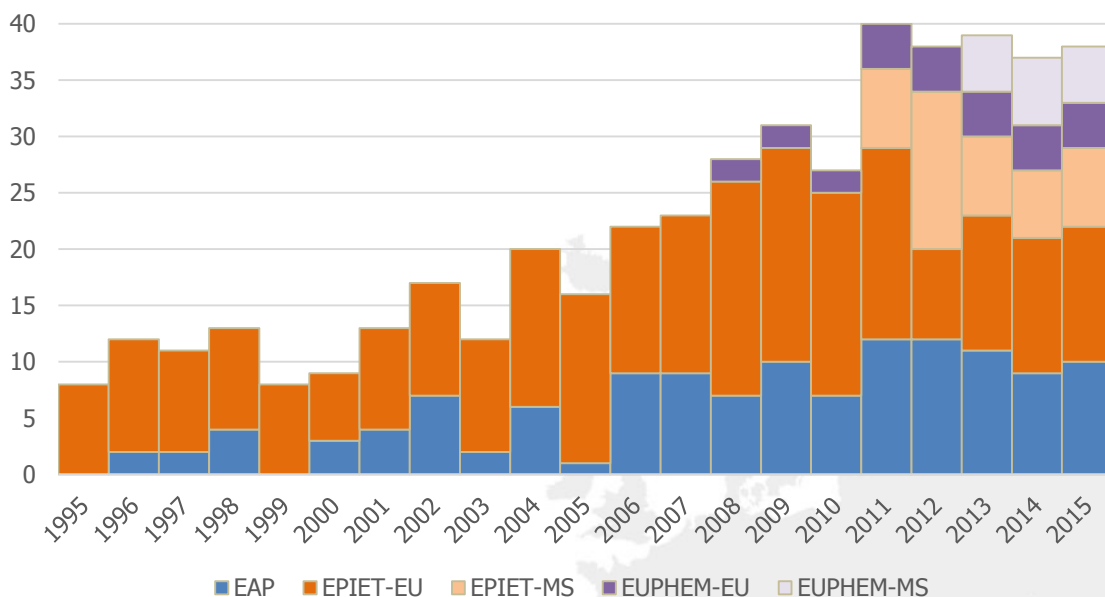
EPIET / EUPHEM and EU-capacity

- EPIET in ECDC (2006)
- EUPHEM (2008)
- MS-track (2011)

- EPIET & EUPHEM:
2 complementary curricula

- EAP, EU- & MS-tracks
share same curriculum

EPIET & EUPHEM Cohort size 1995-2015



Improving surveillance

- ECDC Disease Networks: (2006-2007) fellows in each evaluation team
- National surveillance: fellows evaluate & operate systems (reporting to TESSy)
- Setting up molecular typing platforms for FWD surveillance (as part of TESSy)

Some examples

- Borrelia (in Norway, Finland)
- Lab based CCHF (in Spain, Hungary, Romania, Germany)
- STI in Germany, Hungary, Romania, Finland)
- Entroviruses (Denmark, Finland, Norway, UK)
- Tuberculosis (in Finland)
- Molecular typing platforms for FWD (Spain, Ireland, Denmark, Germany, Finland)



Response capacity in & beyond EU

- Initially via MSF & GOARN
- Increasingly directed from ECDC
- Complex Emergency Situations Course (1 week)

Some examples

- Mortality surveys (e.g. Darfur 2004)
- Tsunami (2004)
- Earthquakes (Pakistan 2005, Haiti 2010)
- Pandemic H1N1 (2009)
- Vaccine coverage surveys
- Ebola Response (2014-2015)

EMLab in the MSF Isolation Center, Gueckedou, Guinea



SURVEILLANCE AND OUTBREAK REPORTS

Multidisciplinary investigation of a multicountry outbreak of *Salmonella* Stanley infections associated with turkey meat in the European Union, August 2011 to January 2013

P. Kiroos^{1,2,3}, L van Alphen^{1,2,3}, J Martinez Urtaza⁴, M Struelens⁵, J Takkinen⁶, D Coulombier⁷, P Mäkelä⁸, S Bertrand⁹, W Matthéus¹⁰, D Schmidt¹¹, E Kanitz¹², V Rücker¹³, K Kristalovska¹⁴, J Pászti¹⁵, Z Szógyényi¹⁶, Z Lancz¹⁷, W Raboch¹⁸, B Pfefferkorn¹⁹, P Hiller²⁰, K Moolman²¹, C Gossner (Celine.Gossner@ecdc.europa.eu)²²



EUPHEM



EPIET

Outbreak



RESEARCH ARTICLES

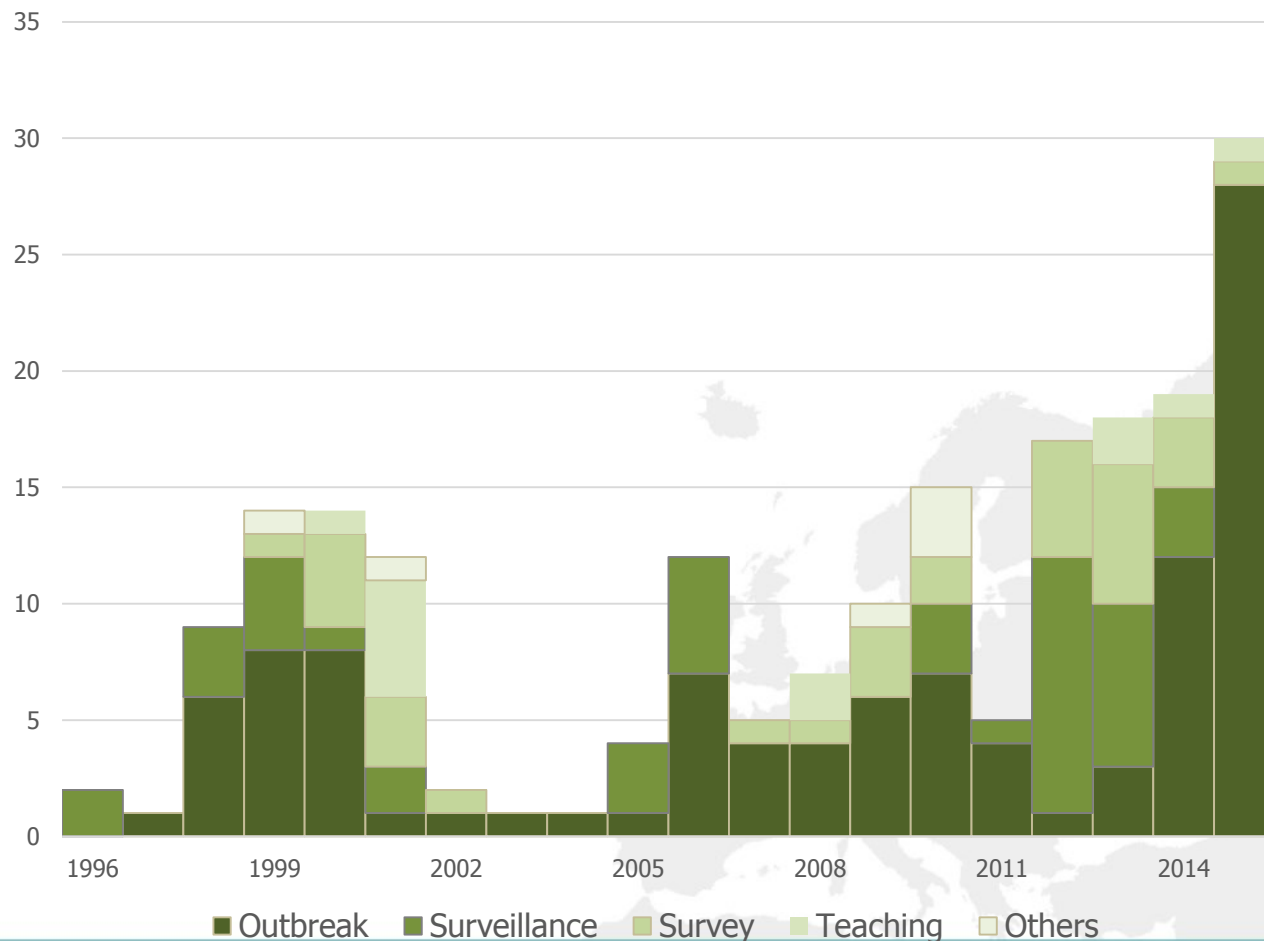
Laboratory-confirmed invasive meningococcal disease: effect of the Hajj vaccination policy, Saudi Arabia, 1995 to 2011

Z Memish (zmemish@yahoo.com)^{1,2}, R Al Hakeem³, O Al Neel⁴, K Danis⁵, A Jassir⁶, D Elhach⁷
1. Public Health Directorate, WHO Collaborating Center for Mass Gathering Medicine, Ministry of Health, Riyadh, Kingdom of Saudi Arabia
2. College of Medicine, Alfaisal University, Riyadh, Kingdom of Saudi Arabia
3. European Programme Intervention Epidemiology Training (EPIET), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
4. Institut de Veille Sanitaire, Paris, France
5. European Public Health Microbiology Training Programme (EUPHEM), European Centre for Disease Prevention and Control (ECDC), Stockholm, Sweden
6. Centre de Biologie et Pathologie Est, Hospices Civils de Lyon, University of Lyon, Lyon, France

Supporting International Response

International Deployments Fellowship

- Fellow & Supervisors
- Not included: alumni
- Mission Controls:
 - WHO 97
 - ECDC 30
 - MSF 26
 - Other 27

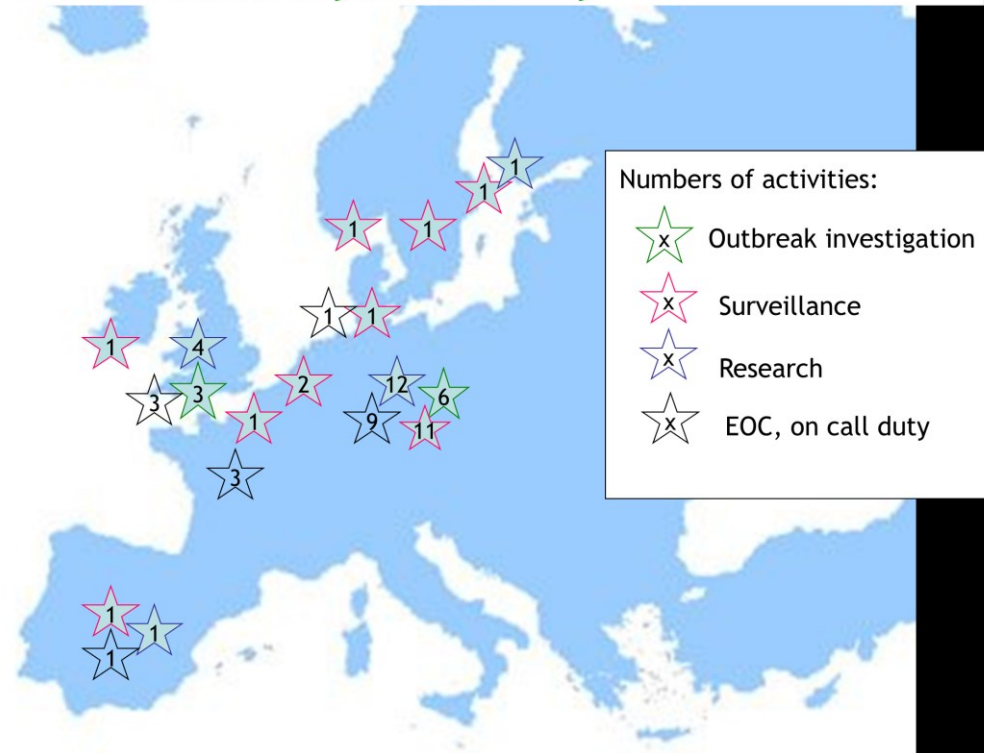


H1N1 pandemic response fellows 2009

Type of involvement	Number N=47	Percent
Surveillance (data management and analysis)		
EOC support, on call duty		
Research (leading and support)		
Contact tracing		
Outbreak investigation		
No involvement		
Unknown		

* More than one answer was possible

Figure: Number of influenza outbreak, research and surveillance activities performed by EPIET-trained fellows by host country



Ebola response 2014-2015

- Ebola Control Teams:
Guinea, Sierra Leone,
Liberia
- Ebola Preparedness:
Mauretania & Burkina
Faso
- Total missions: 40
 - 4 Coordinator/Director
 - 12 EPIET Associated FETP
 - 20 EU-track (4 EUPHEM)
 - 4 MS-track (1 EUPHEM)

Main tasks performed

- Field coordinator
- Field epidemiology
- Public Health Microbiology
- Mortality survey
- Preparedness / training

Food & Waterborne Diseases;

Services provided by fellows



- 21 International Deployments 1995-2015 (N=233)
 - Outbreaks (cholera, amebiasis, cryptosporidiosis, leptospirosis, salmonellosis)
 - Surveillance (Caribbean; hotel industry)
 - Survey, teaching

- 21 Submitted Abstracts ESCAIDE 2015 (N=105)
 - Salmonella 8
 - E.coli (incl. HUS) 5
 - Legionella 2
 - Gastroenteritis 2
 - C.perfringens 1
 - Cryptosporidium 1
 - Norovirus 1
 - Shigella 1

Submitted Abstracts ESCAIDE 2015

Foodborne pathogens (n=19)



- 12 outbreaks
 - 9 'classic' investigations
 - 2 'new methods' (online and WGS)
 - 1 'review'
- 2 surveillance
- 5 'diverse' study questions
 - Yet none linked to food risk assessment

Hepatitis A virus (HAV) outbreaks in 2013-2015



Hep A outbreak	Declared /closed	Countries affected	Geno-type	Associated cases	Vehicle of infection	EPIET involvement	Publications
Nordic Countries	Mar / Sep 2013	DK,FI,NO, SE	IB	77 conf 40 prob	Frozen strawberries	All fellows at national level involved in the investigations	Eurosurv1 (alumna) Eurosurv2 (fellow) ECDC/EFSA RRA
Ex-Egypt	Apr / Aug 2013	DK,EE,FI, FR,DE,IE, LV,LT,NL, NO,SK,SE, UK	IB	21 conf 86 prob	Fresh strawberries	Jussi Sane (EPIET) in ECDC for case control study. Fellows at national level collaborating at the questionnaire and interviewing cases and controls	Eurosurv1 (fellow) Eurosurv2 (fellow) RRA
Multi-state Europe	May 2013 / Jan 2015	AU,BG,FI, FR,DE,DK, IE,IT,NL, NO, PO, SE,UK	IA	361 conf 1228 prob	Frozen mixed berries	Rita da Sousa (EUPHEM) prepared the sequencing protocol – currently proposed at EU level	EFSA report Eurosurv1 Eurosurv2 (fellow) Eurosurv3 (alumnus) ECDC/EFSA RRA

Strawberry pickers and Leptospirosis



Desai, Sarika, et al. "Resurgence of field fever in a temperate country: an epidemic of leptospirosis among seasonal strawberry harvesters in Germany in 2007." *Clinical Infectious Diseases* 48.6 (2009): 691-697.

- Seasonal workers from Poland, Romania
- Among 153 workers; 24 cases
- Risk factors proximity to rodents, yet also eating unwashed strawberries
- Recommendations made, yet not implemented
- **In 2014 similar outbreak, detected in Germany among Polish seasonal strawberry pickers; n=44 (abstract ESCAIDE Nov 2015)**
 - -> **same risk factors identified**

Complex distribution chains



Kivi, M., et al. "A beef-associated outbreak of Salmonella Typhimurium DT104 in The Netherlands with implications for national and international policy." *Epidemiology and Infection* 135.06 (2007): 890-899.

- 10-fold increase S.tn DT104 Sept-Nov 2005 in NL (N=169)
- Case Control: pre-processed raw beef product possible vehicle
- PFGE pattern & MLVA identical to previous Danish outbreak strain
- The same batch of beef was involved

"Could the outbreak in NL have been averted by the recognition of the outbreak in DK? Against this notion is the complexity of the product tracing which stretched the investigation into weeks, thus rendering a rapid intervention as a response to the RASFF alert impossible."

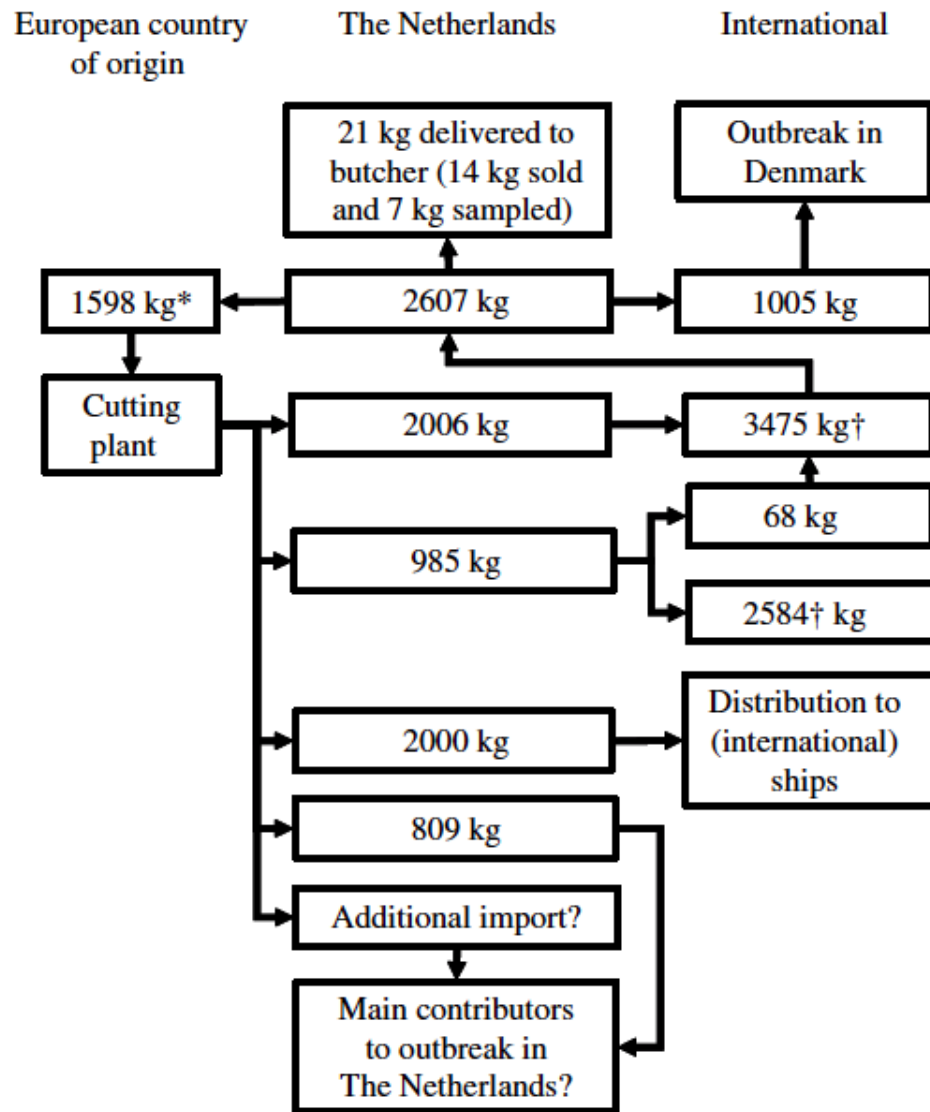
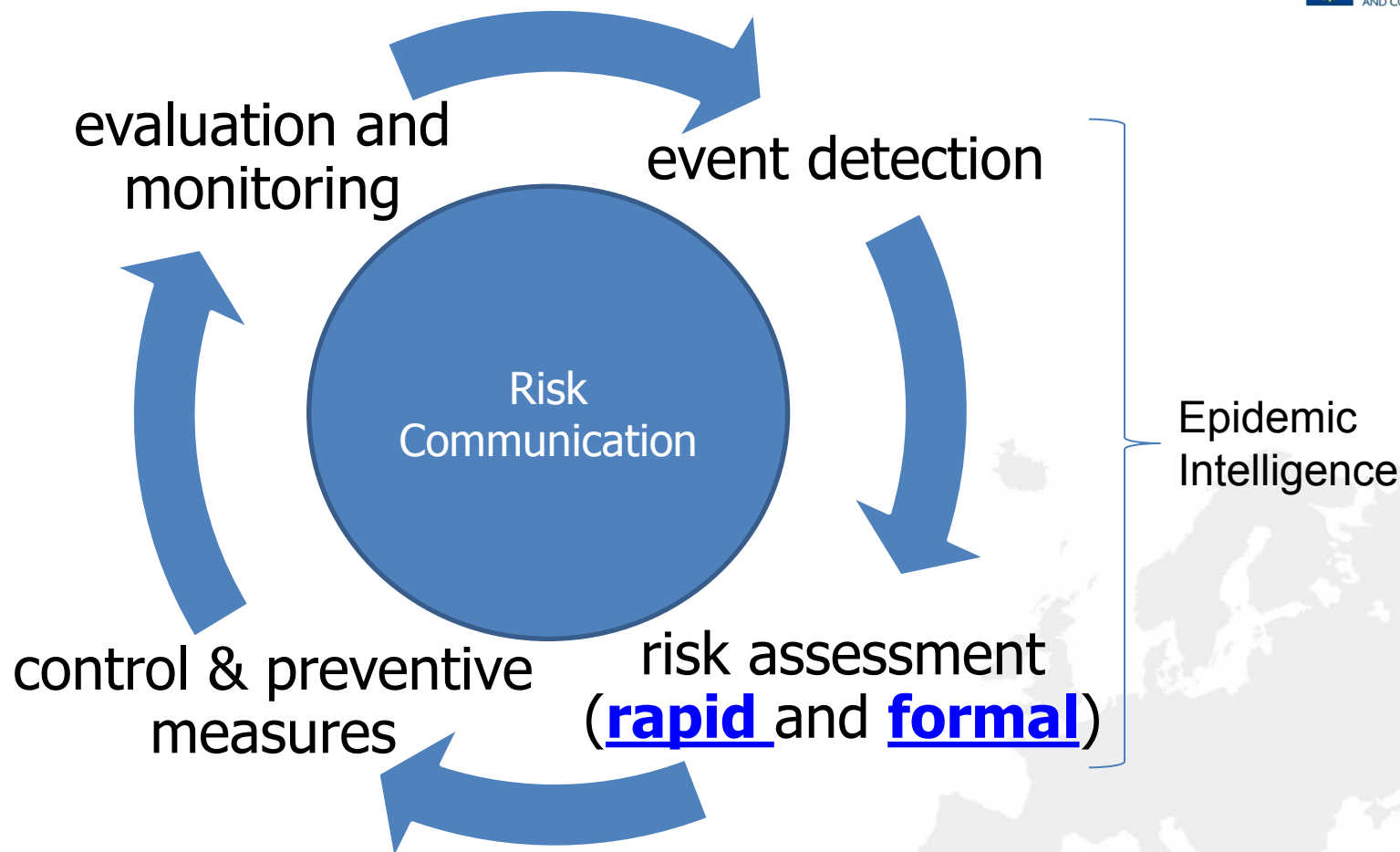
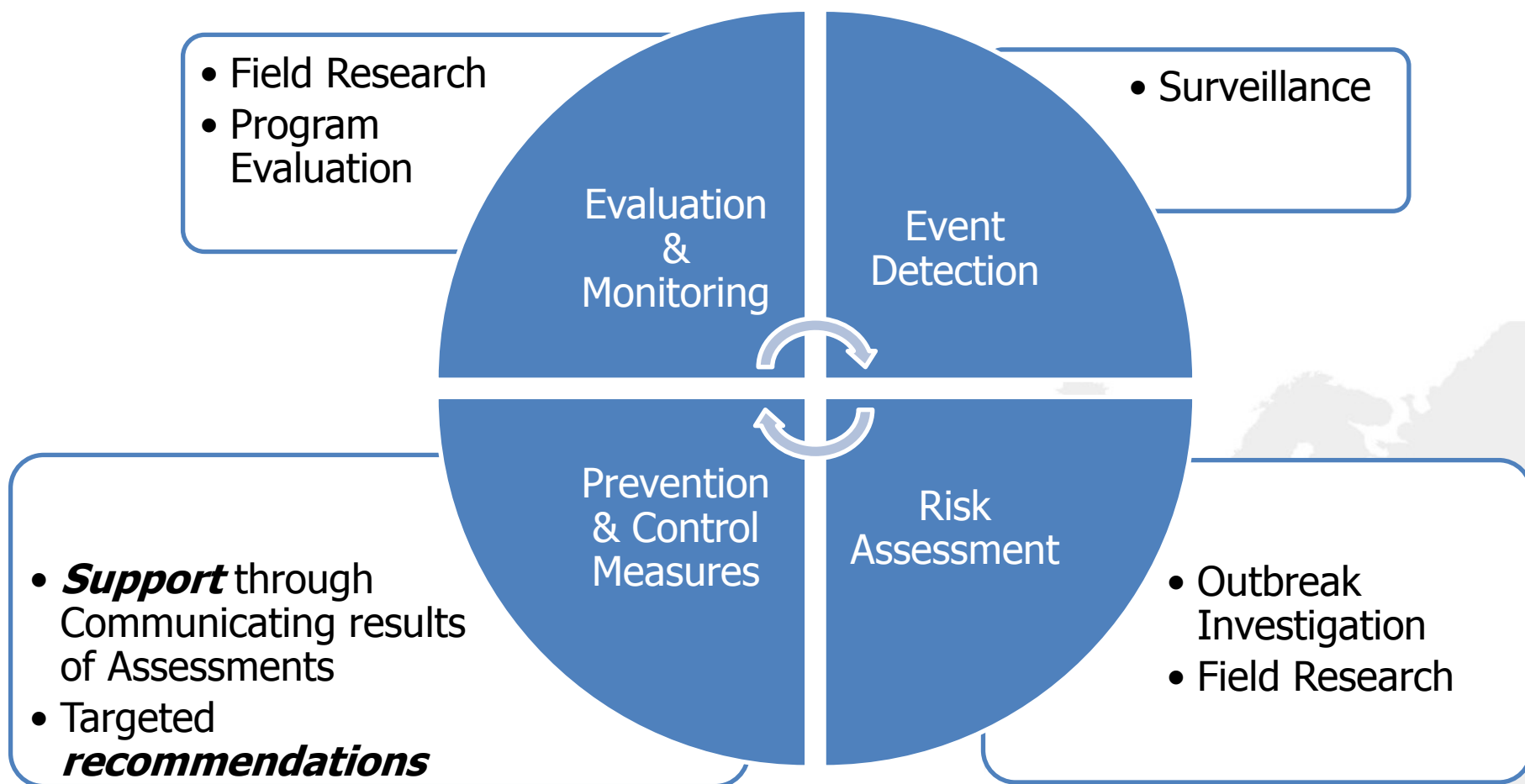


Fig. 2. Distribution routes uncovered by the product tracing, showing the shipment of incriminated beef from the European country of origin to The Netherlands and from there further internationally, May–November 2005.

Risk Management Cycle



Risk Management Cycle & EPIET



Summary and future needs



- EPIET Fellowship trains 40 specialists / year
 - Modest numbers, yet:
 - Covering most EU Member States; network
 - Joint operations epi & lab = asset
 - Surge capacity during international health crises
 - Strengthening PHE detection, threat assessment
- Link to risk management needs strengthening
- Collaboration with Food Safety Risk Assessment?



EUPHEM



Cohort 2014