

***Listeria monocytogenes* outbreak in Sweden 2013-14**

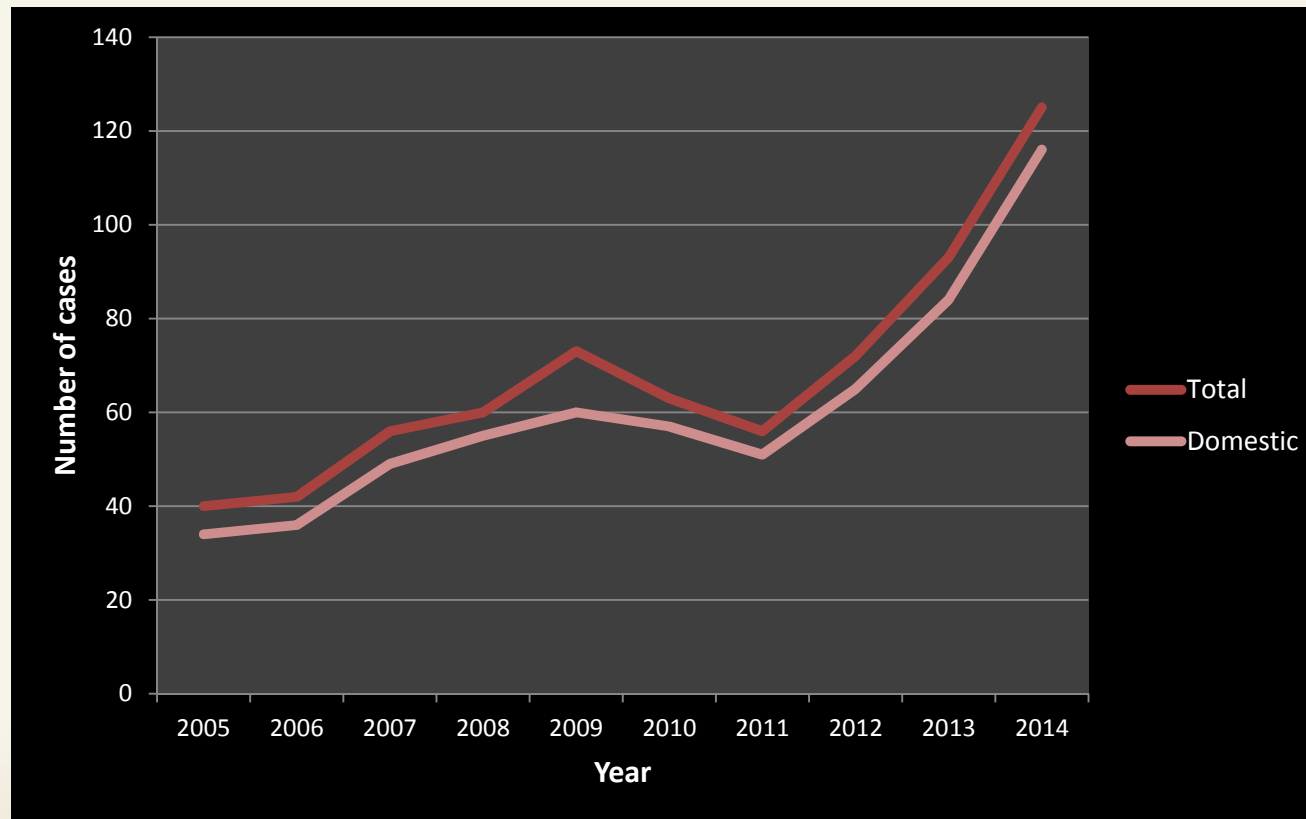
ANSES Lm Workshop March 25-27, 2015

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National Food Agency, Sweden

Listeriosis cases notified in Sweden 2005-2014



National data on Lm in RTE foods in Sweden 2010

- the Swedish part of the EU-wide survey
- the national survey

A total of 1665 samples

Number of samples analysed and Lm positives

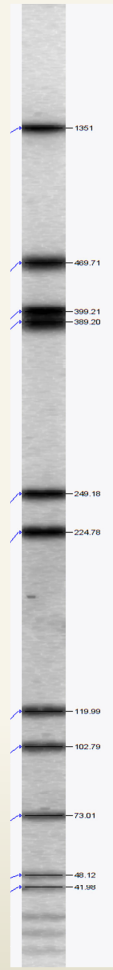
| | No of samples | |
|--------------|---------------|-------------|
| | Total | Lm positive |
| Fish | 633 | 80 13 % |
| Cheese | 525 | 2 0.4 % |
| Meat product | 507 | 6 1.2 % |
| $\Sigma =$ | 1665 | 88 |

Lm pulsotypes at five different fish plants

Profiles

| Food type | At arrival | At Use by date | Plant |
|---------------------|------------|----------------|-------|
| Cold smoked salmon | - | 3 | a |
| Cold smoked salmon | 13 | - | a |
| Gravad salmon | - | 13 | a |
| Gravad salmon | 3 | 3 | a |
| Gravad salmon | 13 | 3 | a |
| Cold smoked salmon | 7 | 7 | b |
| Cold smoked salmon | 7 | 7 | b |
| Gravad salmon | 7 | 7 | b |
| Cold smoked salmon | 2 | 2 | c |
| Cold smoked rainbow | 2 | - | c |
| Gravad salmon | - | 2 | c |
| Cold smoked salmon | 2 | - | c |
| Gravad salmon | 24 | 2 | c |
| Gravad salmon | 8 | 8 | c |
| Gravad salmon | 2 | - | d |
| Gravad salmon | 23 | 23 | d |
| Cold smoked salmon | - | 10 | e |
| Warm smoked salmon | 5 | 5 | e |

| Plant Profile | |
|---------------|----------|
| a | 3, 13 |
| c | 2, 8, 24 |
| b | 7 |
| d | 2, 23 |
| e | 10, 5 |



Lm outbreak in Sweden 2013-14

Start January 2014 –

- Skåne & Västra Götaland notified the Public Health Agency of Sweden
- The Public Health Agency observed an increase on a national level
- 9 cases with symptom onset during 2013
- On 14 January 2014 an outbreak investigation team was formed

Investigation methods

1. Descriptive epidemiology

Case definition, case finding, data collection, data analysis

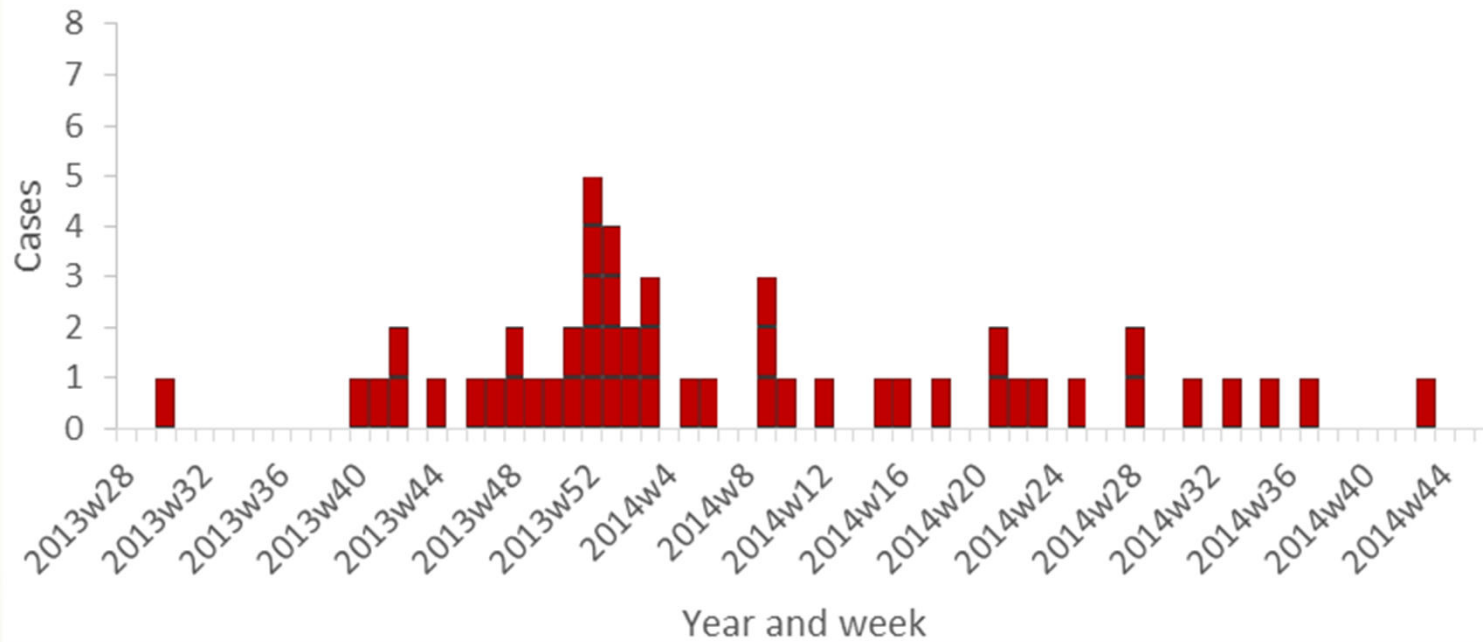
2. Analytical epidemiology

Study design, case definition, selection and definition of controls, definition of exposure, data collection, data analysis

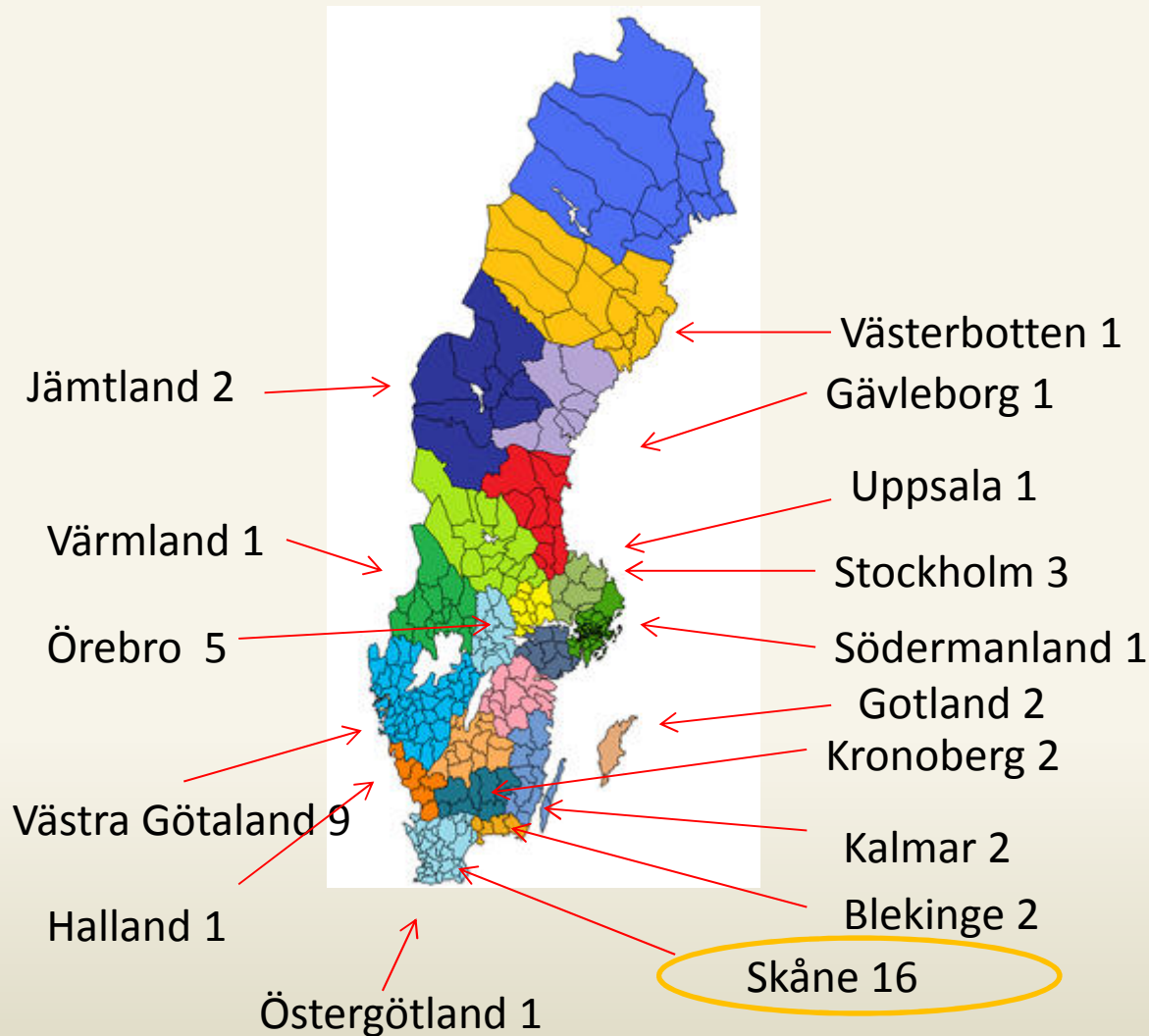
3. Microbiological and environmental investigation

Environmental investigation, laboratory investigation, serotyping, PFGE, whole-genome sequencing

Cases of listeriosis AscI0039 per week of symptom onset, 2013-2014, Sweden



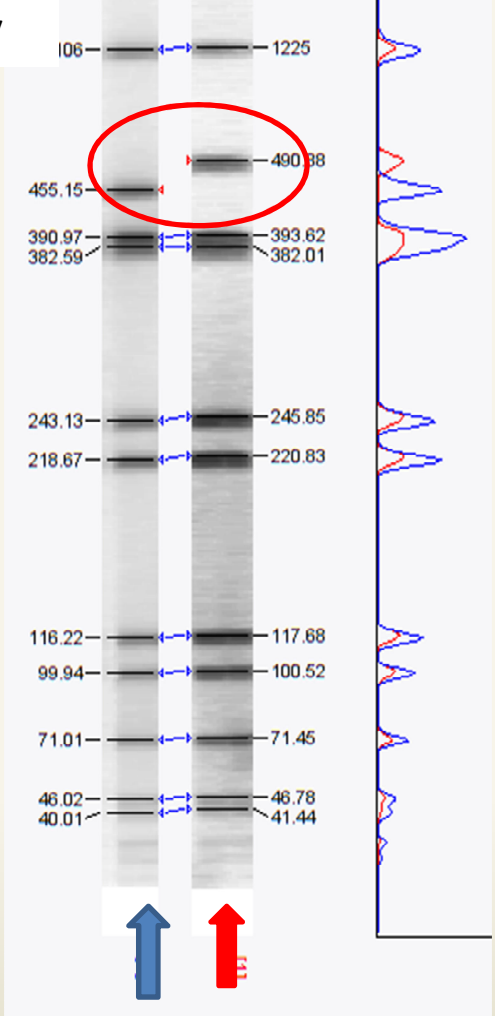
Distribution by county



| County | Cluster cases |
|------------------|---------------|
| Stockholm | 3 |
| Västerbotten | 1 |
| Uppsala | 1 |
| Södermanland | 1 |
| Gotland | 2 |
| Kronoberg | 2 |
| Kalmar | 2 |
| Blekinge | 2 |
| Skåne | 16 |
| Västra Götalands | 9 |
| Örebro | 5 |
| Värmland | 1 |
| Gävleborg | 1 |
| Halland | 1 |
| Östergötland | 1 |
| Jämtland | 2 |
| sum | 50 |

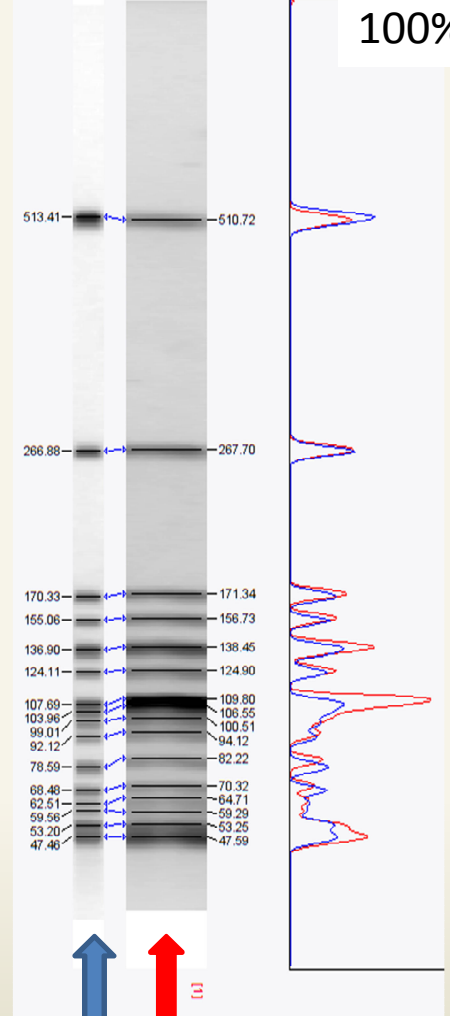
National database

Ascl,
91% similarity



Patient Salmon

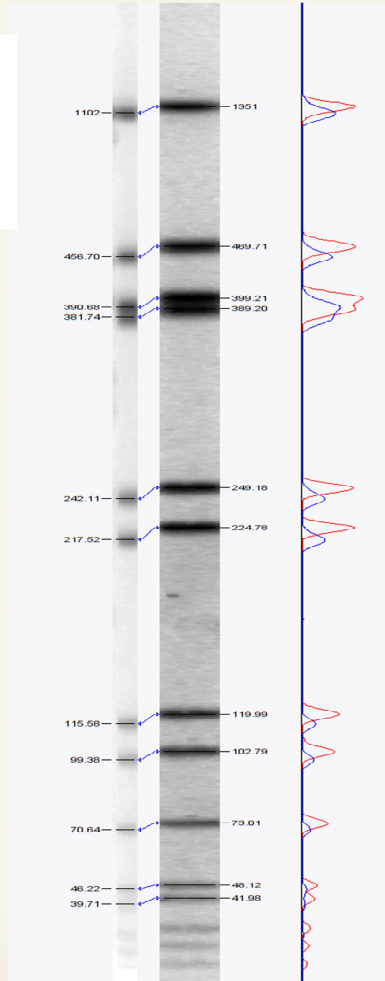
Apal,
100% similarity



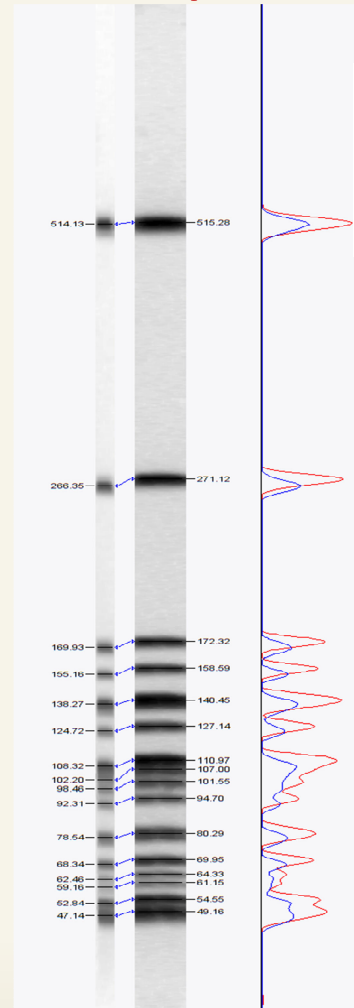
Patient Salmon

EURL european open database

Ascl
100%
similarity



Apal
100%
similarity



1. Cheese
2. Deli-products, sausages
3. Fresh meat cut

.....

**Focus on nationell
meat products**

↑ ↑
Patient Food

↑ ↑
Patient Food

Pressmeddelande 2014-02-07

HKScan återkallar kokt medwurst på grund av påvisad listeria.

HKScan har vid egenkontroll påvisat förekomst av listeria i kokt medwurst producerad den 8 januari. Listerian har påvisats i vår normala processkontroll vid provtagning på bäst-före dag 2014-02-02.

Vi återkallar av säkerhetsskäl alla produkter som producerats på samma linje den 8 januari. Listeria dör vid tillagning över 72 grader.

Vi uppmanar snarast våra konsumenter, via medieutskick samt blogg, att kassera aktuella produkter eller lämna tillbaka dem till butiken eller att kontakta HKScans konsumentkontakt, tfn: 020-59 59 77 eller e-post matforum@scan.se

Följande produkter med bäst-före-dag enligt nedan berörs av återtaget:

| <u>Bäst-före-dag</u> | <u>Artikelnr</u> | <u>Varumärke</u> | <u>Produktnamn</u> |
|-----------------------|-------------------|------------------|--------------------------------|
| 2014-01-31 | 644047 | SCAN | LEVERPASTEJ FÄRDIGSK 240G |
| 2014-02-02 | 682037 | SCAN | KOKT SKINKA TS 180G |
| 2014-02-02 | 623595 | SCAN | MEDWURST KOKT 220G |
| 2014-02-02 | 623447 | SCAN | KOKT MEDWURST 240G |
| 2014-02-02 | 681693 | SCAN | SKINKA KOKT PH 220G |
| 2014-02-07 | 671737 | SCAN | RÖKT SKINKA TS 180G |
| 2014-02-07 | 671238 | SCAN | RÖKT LÄCKÖSKINKA TS 180G |
| 2014-02-09 | 671837 | SCAN | RÖKT SKINKA 190G |
| 2014-02-09 | 671893 | SCAN | SKINKA RÖKT PH 220G |
| 2014-02-12 | 630495 | SCAN | PRICKIG KORV 220G |



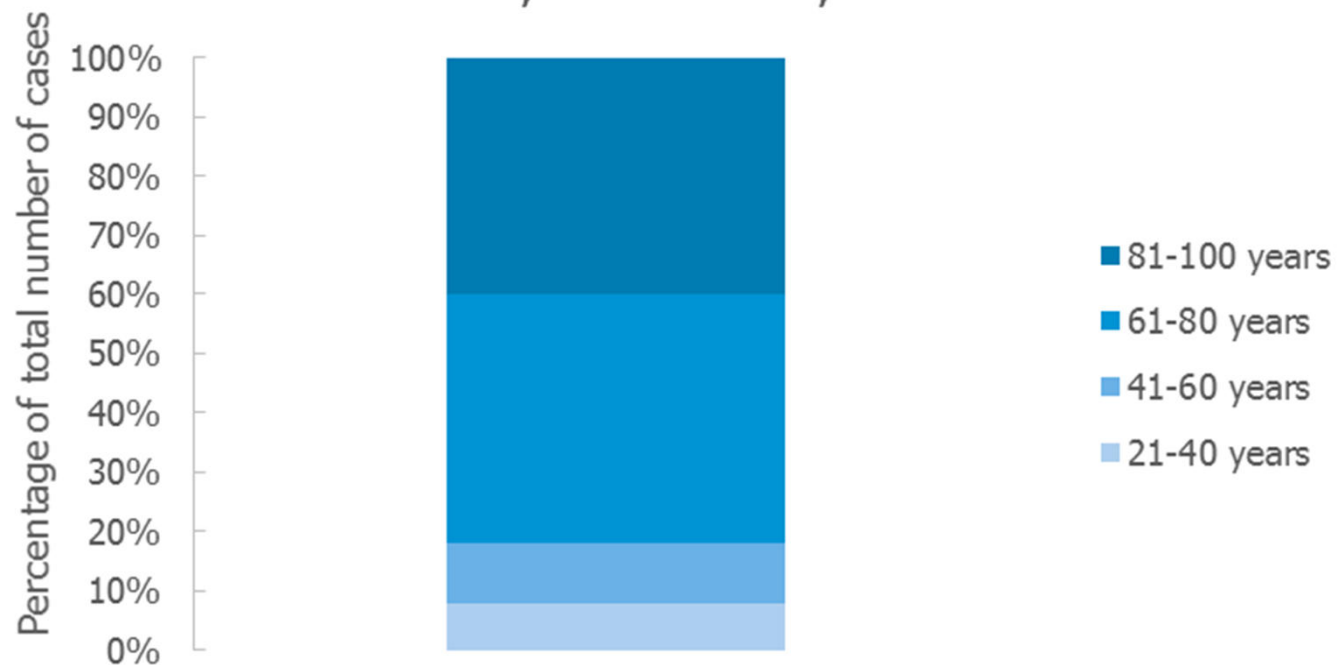
För mer information kontakta Annelie Lundell, kvalitetsdirektör, tfn: 0511-251 94 eller Sara Hoff, tf kommunikationsdirektör, tfn: 044-19 40 25



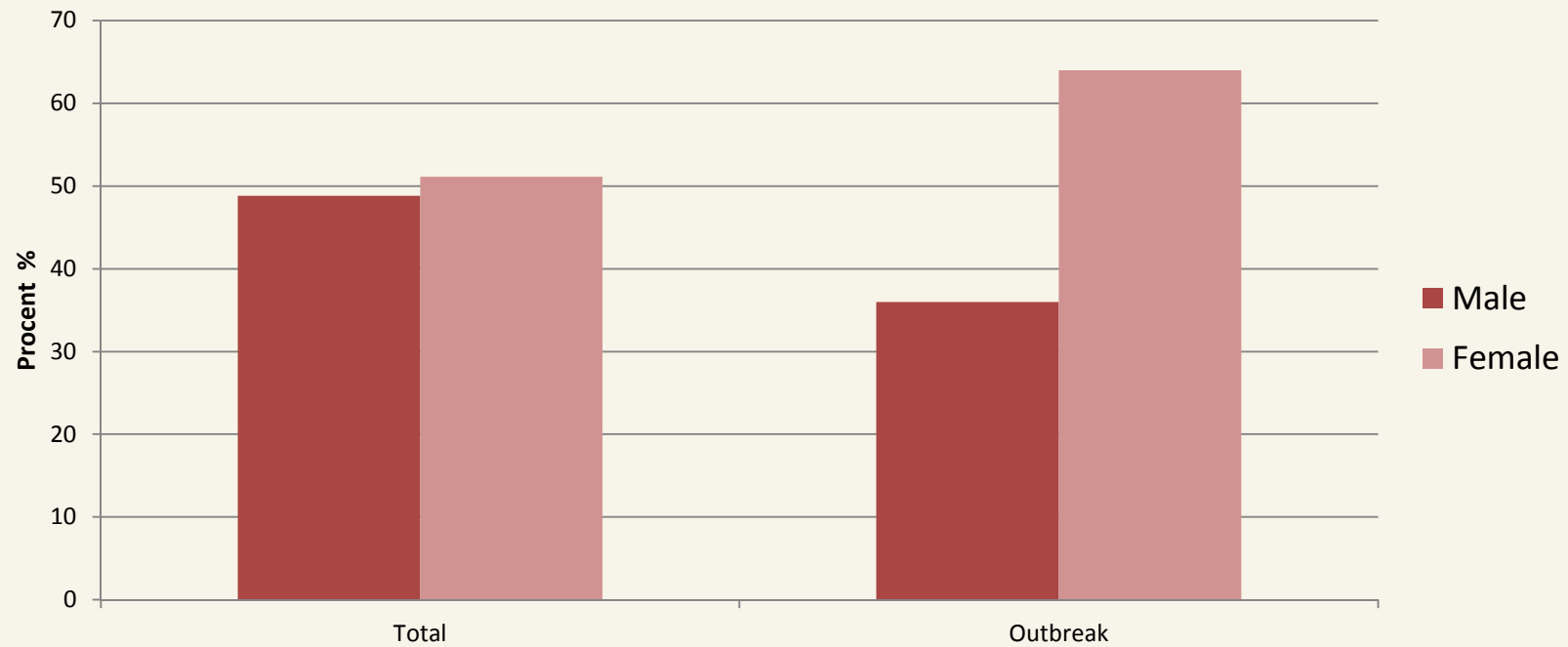
Lm isolates from 3 meat plants

| Plant | Total number of isolates | Food isolate | Environmental isolate | Number of isolates matching the human cluster |
|-------|--------------------------|--------------|-----------------------|---|
| A | 66 | 33 | 33 | 5 |
| B | 4 | 4 | 0 | 0 |
| C | 1 | 0 | 1 | 0 |

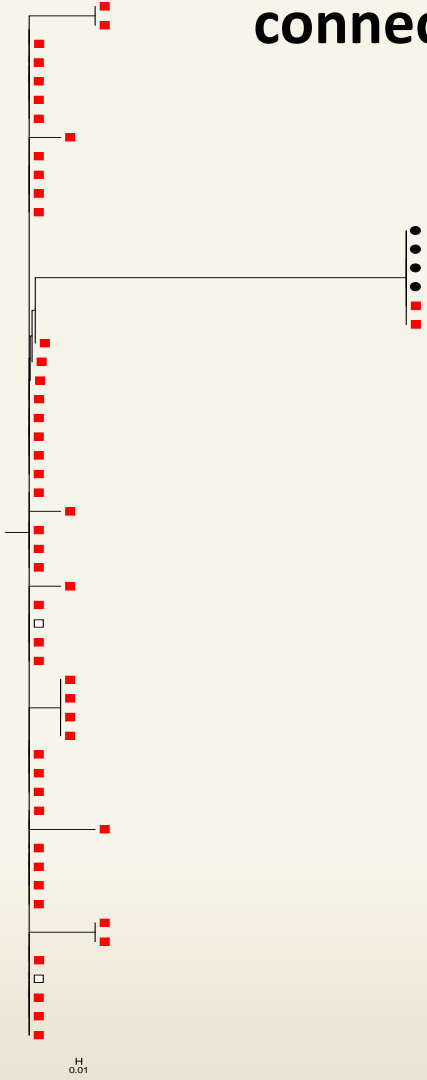
Age distribution of cases of listeriosis AscI0039, 2013-2014, Sweden



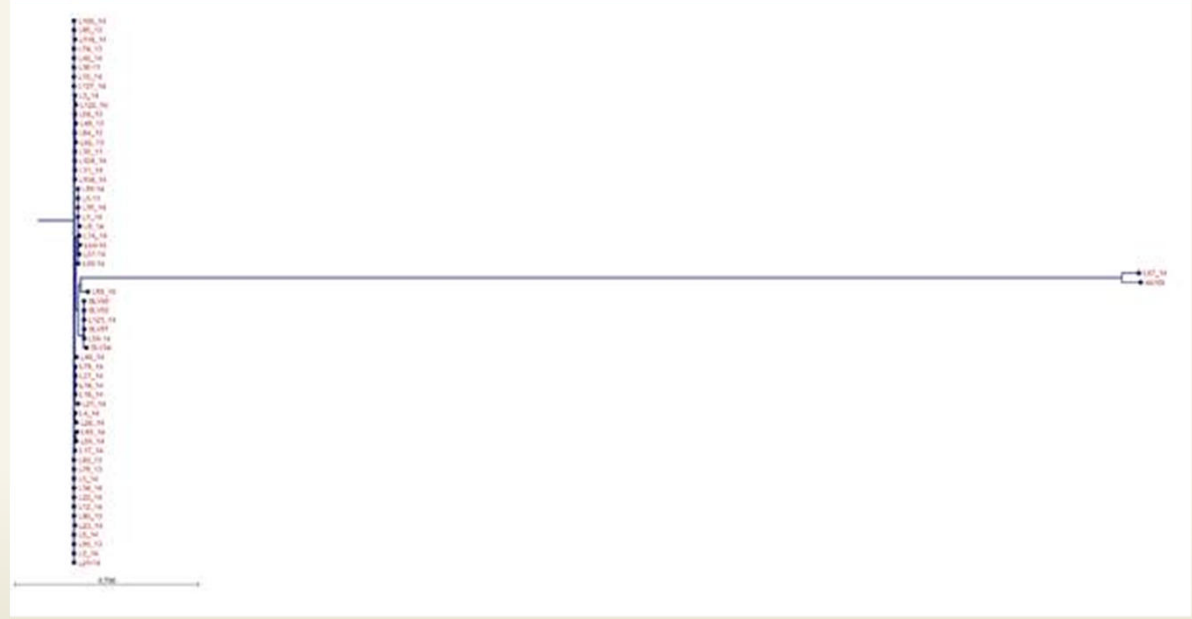
Gender distribution, total and outbreak cases



Patient and food Lm isolates connected to the outbreak



Distance to the nearest isolates with a similar PFGE profile



Results

1. Descriptive epidemiology

- 50 cases
- w 30 2013-w 43 2014 max w 52
- 16 out of 21 counties
- Median age of cases 77 years (range 28-98)
- 82% of cases > 60 years

2. Analytical epidemiology

- 20 cases invited for the case-control study 12 (60%) responded
- 186 controls invited 108 (58%) responded
- All cases had recently eaten ham and/or liverwurst and/or medwurst compared with 72% of controls (p=0.034)



Folkhälsomyndigheten



Livsmedelsverket

National Food Agency

Sliced smoked ham OR 4.6 [1.1-28], 75% exposed
Mixed frozen salad 12 [2.6-62], 64% exposed
Hot dogs 11 [2.4-58], 64% exposed
Red beet salad 9.8 [1.2-68], 27% exposed

Results

3. Microbiological and environmental investigation

- One band difference PFGE-pattern reported from salmon in Sweden in 2010
- Outbreak PFGE-pattern had previously been found in Austria and Germany 2013
- On 7 February 2014 a meat producer with one production facility located in Skåne found Lm in sliced medwurst produced on 8 January 2014
- After cleaning Lm was found in liverwurst, smoked ham and medwurst sausage
- Production was not restarted after the stop on 7 February 2014
- Production line was scrapped
- Whole-genome sequencing showed

Conclusions

- We investigated a nation-wide outbreak of listeriosis
- The outbreak was associated with cold cuts
- Lm of the outbreak profile was found in products from a production line where cold cuts were produced
- The outbreak continued after the production line was closed making the association with this particular facility uncertain

Recommendation

Risk groups reminded that cold cuts can be associated with Listeria