

Update on human listeriosis in England and Wales.



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Contents



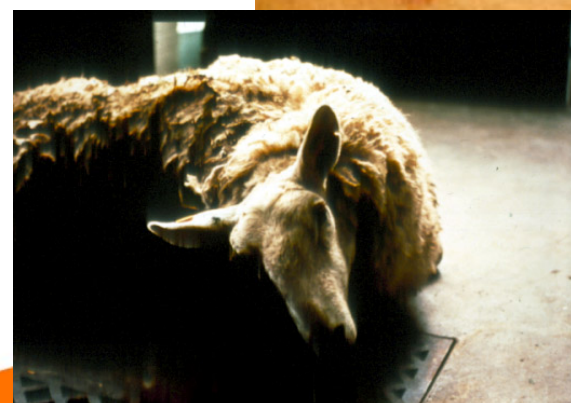
- Background
- England & Wales, 2007
- HPA activities
 - patient exposure in relation to *L. monocytogenes* subtypes
 - Interpretation
- Conclusions



Background I



- Affects the unborn/newly delivered & the immunocompromised/elderly
- Primarily presents as abortion, septicaemia or CNS infections
- High case fatality rate
- Predominately foodborne

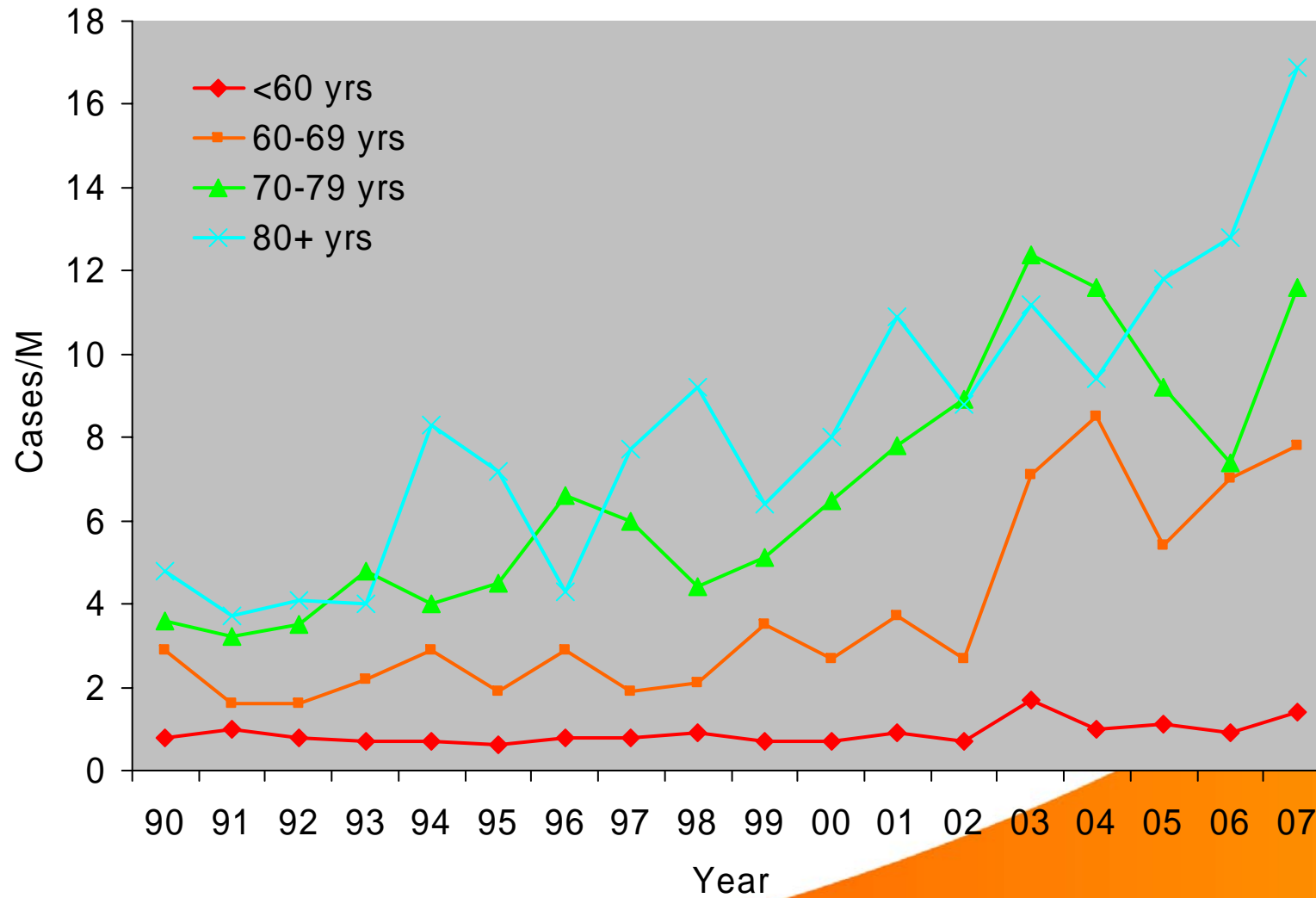


Background II

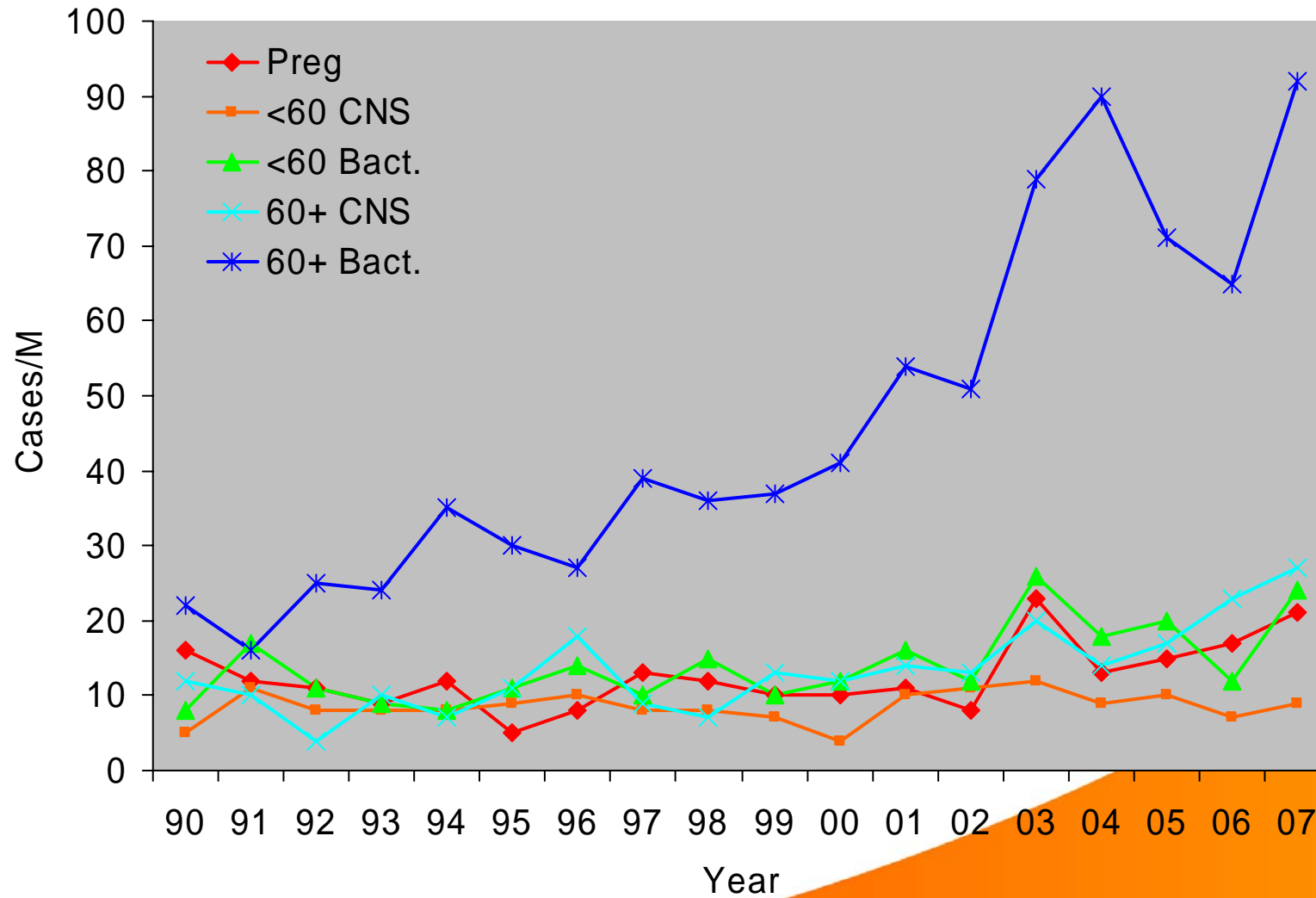


- Increase in England & Wales 2000-2004
 - sporadic cases >59 years
 - bacteraemia in the absence of CNS involvement
- Independent of:
 - Gender Region
 - Season Underlying condition
 - *L. monocytogenes* subtype
- Not thought to be artefactual
- Similar increases in other European countries

Listeriosis incidence in Q1-3. England and Wales 1990-2007.



Listeriosis incidence in Q1-3. England and Wales 1990-2007.



Surveillance questionnaire



Developed and introduced in 2005

Travel (10)

Food habits (12)

Food from shops (20)

Beef (11)

Pigmeat (14)

Poultry (11)

Fish and shellfish (15)

Milk & Dairy (23)

Sandwiches (22)

Salad, veg & herbs (21)

Fruit (9)

Food shopping (26)

Food purchasing habits (7)

Where ()=Number of questions



Food isolates (N=1301)



Referred since 2004

Food class	Common food descriptions
Poultry	Cooked chicken/turkey/duck; sliced chicken/turkey/duck; chicken pate
Red meat/meat products	Ham; cooked ham; sliced ham; tongue; roast beef; cooked beef; pate; cooked pork; boiled ham;
Fish/shellfish	Smoked salmon; smoked salmon pate; fish; fresh prawns; smoked fish; crawfish tails; dressed crab; fish cake; smoked mackerel pate
Salad, vegetables & fruit	Salad; washed spinach; mixed salad; lettuce; sauté potatoes; onion
Sauces	Mayonnaise; chablis sauce
Desserts	Tiramisu
Milk/milk products	Ice cream; butter; cheese; choc ices
Miscellaneous	Ham sandwiches; egg sandwiches; meat; tuna sandwiches; custard slices; egg mayonnaise; prawn sandwiches; cooked meat; cream tea; game pate; cheese sandwiches; chicken sandwiches
Eggs	Boiled egg; omelette
Rice	Rice; pilau rice
Unknown	Information not provided; swab; food

- Main ingredient (e.g. beef, fish etc)
- Sandwich
- Salad



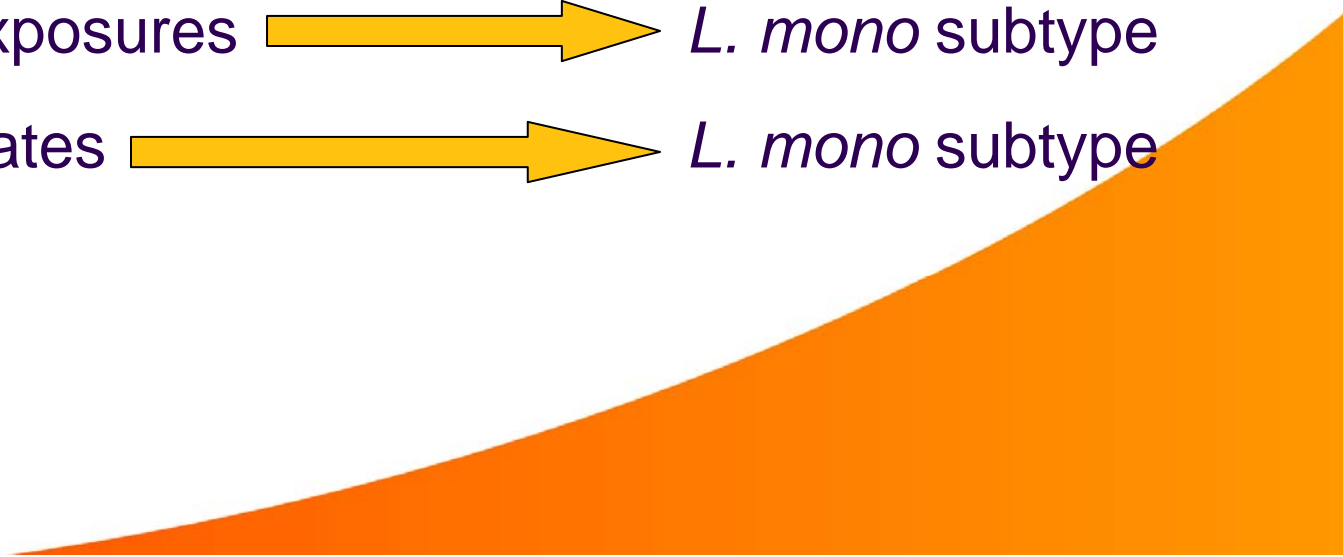
Analysis



- Response 18%, 28% and 63% in 2005, 2006 & 2007
- 'Questionnaire' cases similar to all cases in terms of age group, gender and *L. mono* subtype, but less likely to have died.
- Analysis has focussed on:

Patient exposures  *L. mono* subtype

Food isolates  *L. mono* subtype



Serotype 4b (N= 67) – patient exposures



Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Pregnancy vs. non pregnancy	2.80	0.97	8.00	0.06
Bakers shop	2.16	0.93	5.00	0.07
Burger bar	3.77	0.86	.	0.08
Hotel	3.06	0.84	11.03	0.09
Cold cooked beef	3.33	1.16	9.53	0.03
Dairy spread	1.91	0.92	3.94	0.08
Hard cheese sandwich	4.80	1.36	16.78	0.01

Serotype 4b (N= 301) - food



Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Food class:				
Rice	10.08	1.44	.	0.01
Red meat	1.27	0.97	1.67	0.08
Main Ingredient:				
Butter	23.84	3.81	.	0.00
Rice	10.08	1.44	.	0.01
Beef	1.81	1.16	2.80	0.01

1/2a (N=38) - patient exposures



Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Food Habits:				
Avoid pate	0.23	0.05	1.01	0.05
Avoid raw fish	0.21	0.00	1.05	0.06
Avoid smoked fish	0.17	0.03	0.91	0.04
Avoid pre-cut/pre-packed fruits	0.15	0.03	0.83	0.03
Avoid soft/blue cheese	0.09	0.00	0.68	0.01
Avoid sliced uncooked meats	0.07	0.00	0.50	0.00

1/2a (N=38) – patient exposures cont.



Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Coffee shop	3.13	1.38	7.06	0.01
Tongue	5.68	1.20	.	0.03
Chicken pies	11.14	2.49	.	0.00
Mackerel	4.03	1.13	14.32	0.03
Smoked mackerel	3.17	1.02	9.82	0.05
Smoked salmon	2.68	0.89	8.03	0.08
Goats cheese	7.31	1.00	.	0.05
Blue cheese	2.98	1.02	8.70	0.05
Other soft cheese	2.95	1.10	7.90	0.03
Beef sandwich	5.40	1.21	23.71	0.03
Salmon sandwich	5.09	0.93	27.24	0.06
Any salad/vegetable/herbs	3.44	1.01	11.57	0.05
Gherkins	9.73	1.38	.	0.02
Dill	5.07	1.02	.	0.05
Basil	4.31	1.06	17.41	0.04
Radishes	3.21	0.86	11.92	0.09

1/2a (N=677) – Food



Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Food class:				
Fish/shellfish	2.44	1.53	3.89	0.00
Salad/vegetables/fruit	1.68	0.96	2.96	0.07
Miscellaneous	1.33	1.06	1.67	0.01
Main Ingredient:				
Custard	3.42	1.02	11.43	0.05
Shellfish	2.34	1.05	5.25	0.04
Salad	1.95	1.05	3.61	0.03
Fish	1.87	1.32	2.65	0.00
Sandwiches/Salads:				
Salad	2.00	1.36	2.95	0.00

AFLP types



- On the whole, less revealing in isolation
- Smaller range of food items identified as significant exposures:
 - Less statistical power
 - Better source attribution
- However...



AFLP type V (N=15) - patient exposures



Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Listeria type:				
Pregnancy vs. non pregnancy	3.32	1.04	10.79	0.04
Fish/shellfish:				
- Smoked trout	8.17	1.31	51.05	0.02
- Smoked salmon	3.60	1.01	13.05	0.047
Food purchase:				
Indian grocers	7.11	1.74	29.62	0.00
Chinese grocers	5.47	0.98	31.47	0.05

AFLP type V (N=32) - food







Exposure	Odds Ratio	95% CI		P value
		Lower	Upper	
Food class:				
Rice	13.46	0.00	97.67	0.00
Main Ingredient:				
Rice	13.46	0.00	97.67	0.00
Fish	2.55	1.15	5.68	0.02
Sandwiches/salads:				
Salad	2.18	1.09	4.38	0.03

Sero-AFLP types



Associations were detected between:

Sero-AFLP type	Patient exposures	Food
4b I	Beef and dairy products	
4b V	Smoked fish	
1/2a IX/XIV	Smoked fish and mould-ripened cheese	 



Conclusions



Hypothesis:

- Specific food types give rise to infection with specific *L. monocytogenes* subtypes
- More data are required:
 - Levels/origin for food isolates
 - A longer time-series for human cases
- Members are invited to provide views on:
 - Activity in investigating the surveillance and epidemiology of listeriosis
 - Control and intervention measures