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CURRENT NOTES

Avian flu cases in North Wales

41/2101 Human cases of the Influenza A/H7N2 have been identified following the discovery of this low pathogenicity avian flu at a smallholding near Corwen in North Wales.

Key messages:

- The illness people are experiencing is, for the most part, not serious. No one is seriously ill.
- Preliminary investigations indicate that we cannot exclude person-to-person spread having occurred in this outbreak. Person to person spread would be very unusual but limited spread of this type has been seen elsewhere in the past in some cases of bird flu. As a precautionary measure the NPHS is continuing to offer people who have had contact with individuals with this illness antiviral medication to minimise the risk of spread.
- Experience of this particular bird flu virus in humans is limited so NPHS are actively managing the public health response.
- The risk to the health of the general public is assessed to be low.

By 3pm on Sunday 27 May, 12 avian flu contacts had been identified who have or have had symptoms of a flu-like illness or conjunctivitis. No one is reported as seriously ill. [Source: National Public Health Service for Wales Press Statement, 28 May 2007. http://www.wales.nhs.uk/sites3/news.cfm?orgid=719&contentid=6796]

While there are no immediate implications for Scotland, poultry keepers are reminded of the importance of maintaining good biosecurity and remaining vigilant for signs of disease. Any suspicion should be reported to the local animal health office.

As a precautionary measure gatherings of ducks and of chickens across Great Britain have been banned. [Source: Scottish Executive News Release, 24 May 2007. http://www.scotland.gov.uk/News/Releases/2007/05/25110821]

Measles outbreak in the traveller community

41/2102 As of 18 May, the Health Protection Agency has confirmed 20 cases of measles in the traveller community with onset since the 25 March 2007. There have been 13 confirmed cases in London, six in the East of England, and a single case in the South East. The cases, are all in unvaccinated individuals and aged between 1 and 21 years, have been reported from many travellers' sites in these regions. The majority of cases occurred following a gathering in South East London over the Easter holidays. Cases of suspected measles in the traveller-community are also being investigated in several regions within England, including London, East of England, and the South East. Four cases in Norway associated with this outbreak have also been notified to the Health Protection Agency Centre for Infections. So far, 13 cases linked to this current outbreak in the travelling-community have been typed as D4 strains (MVs/Enfield.GBR/14.07/) and are identical to each other.

Further details concerning the cases reported in Norway have been issued in the current *Eurosurveillance* weekly release (at http://www.eurosurveillance.org/ew/2007/070524.asp#1).

[Source: *Health Protection Report*, 25 May 2007. http://www.hpa.org.uk/hpr/archives/2007/news2007/news.htm#21]

Salmonella contamination in basil

41/2103 On 25 May, the Food Standards Agency (FSA) issued an alert advising people against eating certain batches of packaged fresh basil bought from ASDA, Sainsbury's and Somerfield stores not to eat them. This is because of possible *Salmonella* contamination, which can cause diarrhoea and sickness.

Some of the 'display until' and 'best before' dates on the affected packets will have expired and the product will have reached the end of its shelf life. The affected basil is also labelled as 'wash before use'. It is, however, possible that people may still have some affected batches at home. For example, they may have used the basil to make fresh pesto sauce or used it as an ingredient in other uncooked foods. Also some people may have frozen the herb.

Sainsbury's and Somerfield have informed the Agency that they have withdrawn all their potentially affected basil stocks with a best before date up to and including 28 May. ASDA has told the agency that the only affected batches sold through its stores are those with a display until date up to and including 18 May.

Agency advice is that people who have bought basil from Sainsbury's and Somerfield with a best before date up to and including 28 May should take it back to the store where they bought it. People who bought basil from ASDA with a display until date up to and including 18 May should also return it to the store they bought it from.

The contamination came to light from a fresh herb survey being conducted by the Health Protection Agency (HPA) and the Local Authorities Coordinators of Regulatory Services (LACORS). The FSA is conducting further urgent investigations into the possible source of this problem, along the supply chain to ensure that no further contamination has occurred. [Source: FSA Press Release, 25 May 2007. http://www.food.gov.uk/news/newsarchive/2007/may/warningbasil]

The HPA is currently carrying out an investigation into a rise in the number of human cases of *Salmonella* Senftenberg. Twenty six cases have been reported to the Agency from England and Wales since the beginning of April 2007. This compares to fewer than ten cases in the same time periods in 2006 and 2005.

This is the same serotype of *Salmonella* that has been identified in one sample of fresh basil for which the Food Standards Agency has issued the food alert. Molecular typing has demonstrated that at least some of the strains of *Salmonella* Senftenberg from patients are the same as that from the basil. [Source: HPA Press Statement, 25 May 2007. http://www.hpa.org.uk/hpa/news/articles/press_releases/2007/070525_salmonella.htm]

Protocol for the management of rabies

41/2104 HPS has issued *Protocol for the Health Protection Management of Rabies*. This is an amended version of the HPA *Duty Doctor Joint Protocol for Rabies Queries* as updated in January 2007, and has been agreed by the Zoonoses Network for Scotland.

The guidance covers the following areas:

- Categories of rabies enquiries to HPS
- Post-exposure treatment
- Assessment of exposure to terrestrial animals (e.g. dogs, cats, rodents)
- Assessment of bat exposures
- Immune status of the individual
- Vaccines and human rabies immunoglobulin (HRIG) indications
- Rabies Vaccine and Human Rabies Immunoglobulin (HRIG) Availability
- Risk by country

The document has been added to the SHPIR system but can also be accessed at http://www.documents.hps.scot.nhs.uk/giz/rabies/protocol-management-rabies-2007-05.pdf.

Blue-green algae (Cyanobacteria) in inland and inshore waters

41/2105 On 30 April, the Scottish Executive Health Department published *Blue-green algae (Cyanobacteria) in inland and inshore waters: assessment and minimisation of risks to public health*. This is the first revision of a guidance document originally published under the same title in 2002.

The approach advocated for managing the risks to human and animal health of exposure to blue-green algal toxins continues to centre on production and implementation of 'Local Action Plans'. These should be co-ordinated by the NHS boards in Scotland and should be agreed by the various stakeholders identified.

This document includes guidance on the content and structure of these Local Action Plans and should be regarded as a resource to assist in their production, as well as fulfilling the requirements of Article 8 (Cyanobacterial risks) of the Bathing Waters Directive (2006/7/EC).

The Scottish Executive Health Department (SEHD) proposes to review and, if necessary, re-issue this guidance document every five years. However, it is recognised that the value of this guidance lies in its practical implementation. The SEHD would therefore welcome feedback, which should be addressed to the SEHD's Scientific Adviser at St Andrew's House, Edinburgh EH1 3DG. Should this feedback indicate a specific need, then a further version of this guidance will be issued sooner.

The guidance can be accessed at http://www.scotland.gov.uk/Publications/2007/04/20145428/0 while hard copy can be ordered from Blackwell's Bookshop, 53 South Bridge, Edinburgh EH1 1YS (tel: 0131 622 8283/8258; fax: 0131 557 8149; email: business.edinburgh@blackwell.co.uk.

Agreement reached on influenza virus sharing

41/2106 The World Health Assembly (WHA), the supreme decision-making body of the World Health Organization (WHO), wrapped-up its sixtieth session on 23 May, reaching last-minute agreement on two key resolutions on pandemic influenza preparedness and public health, innovation and intellectual property. More than 2400 people from WHO's 193 Member States, nongovernmental organizations and other observers attended the meeting, which opened on 14 May.

The Assembly approved the largest-ever budget for the WHO and adopted a record number of resolutions on public health issues and on the technical and administrative work of WHO. Member States agreed a resolution which will help

all countries better prepare for the global public health threat which an influenza pandemic presents. The resolution, *Sharing of Influenza viruses and access to vaccines and other benefits*, restates the general principles of the necessity of sharing both in the preparations for an influenza pandemic and the benefits that will flow from improved international cooperation and preparation, such as greater quantities of and equitable access to H5N1 and pandemic vaccines.

The resolution requests WHO to establish an international stockpile of vaccines for H5N1 or other influenza viruses of pandemic potential, and to formulate mechanisms and guidelines aimed at ensuring fair and equitable distribution of pandemic-influenza vaccines at affordable prices in the event of a pandemic.

It also tasks an interdisciplinary working group with drawing up new Terms of Reference (TORs) for the WHO Influenza Collaborating Centre Network, and its H5 reference laboratories, for the sharing of influenza viruses. The new TORs will take into account the origin of influenza viruses going into the WHO Global Influenza Surveillance Network, and will make their use more transparent. Once finalized, these TORs will be submitted to a special Intergovernmental Meeting of WHO Member States and regional economic organizations.

The Assembly reached a last-minute agreement on public health, innovation and intellectual property. The resolution expressed appreciation to the Director-General for her commitment to the process of the Intergovernmental Working Group on the issue and encouraged her to guide the process to draw up a global strategy and plan of action. The resolution also requested the Director-General to provide technical and policy support to countries.

A summary of additional decisions and issues discussed at the 60th World Health Assembly can be accessed at http://www.who.int/mediacentre/news/releases/2007/wha02/en/index.html.

Erratum: In last week's published Statutory Notification of Infectious Diseases (Week ended 11 May 2007, table by NHS board) there were errors in the column 'Total from 1st week of year 2007'. These have now been corrected in all electronic editions.

Gastro-intestinal and foodborne infections

Prepared by: Alison Smith-Palmer and Susan Brownlie

Overseas outbreaks of infectious intestinal disease

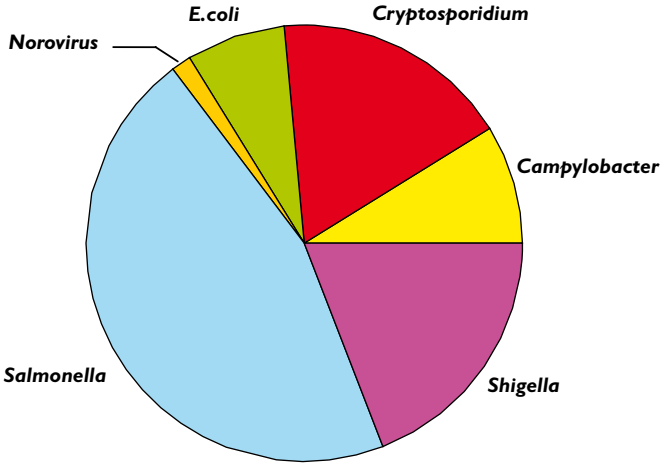
This report presents information on the surveillance system that HPS uses to collect and disseminate information on outbreaks of infectious intestinal disease believed to have been acquired abroad. A potential outbreak of infectious intestinal disease occurring abroad is defined as two or more confirmed cases of infection, or at least one confirmed case where others are alleged to have been ill. Such outbreaks are usually reported to HPS by the NHS board public health teams. They may also, however, be identified by the reference laboratories. This is particularly the case where phage types or molecular profiles rarely seen in Scotland are involved and/or where the individuals affected are resident in disparate regions of Scotland.

Information on the organism responsible, number positive, number of others suspected to be affected, country, town/resort, hotel or other accommodation, catering (full board/half board/ self catering) holiday start and end dates, date of first onset, tour operator, flight details (if applicable) and any other relevant information, is disseminated by HPS to the NHS board public health teams in Scotland, so that other linked cases can be identified. Where possible information is also sent directly to the national surveillance centre in the country where infection is thought to have been acquired, enabling them to facilitate any investigations or control measures they believe to be necessary. Information is also copied to the Scottish Executive to be forwarded to the Department of Health, International Division if appropriate. A copy of the information is also sent to EnterNet in order that the outbreak can be linked to any others that may have been identified in other EnterNet countries due to infected persons returning from the same resort.

EnterNet is an international collaboration comprising mainly national surveillance centres and national reference laboratories covering a wide geographical area including a large proportion of Europe and also Australia, Canada, Japan and South Africa.

During 2006, information was circulated concerning 68 reported outbreaks of infectious intestinal disease in persons returning to Scotland from abroad; this is a decrease on 2005 when 81 such outbreaks were circulated but is an increase on 2004 when details of 53 overseas outbreaks were disseminated.

FIGURE 1: Organisms reported in outbreaks of infectious intestinal disease, where infection was acquired abroad, during 2006 (n=68)



Spain, including the Balearic Islands, was the country most frequently reported, associated with 22 (32%) outbreaks. The second most frequently identified country was Egypt, associated with 14 outbreaks (21%). Turkey was reported in nine outbreaks (13%), Tunisia and Dominican Republic were each associated with four outbreaks (6%), two outbreaks were associated with Greece and Bulgaria, and eleven countries were reported on just one occasion (Table 1).

TABLE 1: Countries reported in outbreaks of infectious intestinal disease, where infection is acquired abroad, 2006.

Country	Number of outbreaks
Bulgaria	2
Dominican Republic	4
Egypt	14
Greece	2
Hungary	1
Italy	1
Kenya	1
Lebanon	1
Malta	1
Morocco	1
Nepal	1
Romania	1
South Africa	1
Spain and Balearic Islands	22
Tanzania	1
The Maldives	1
Tunisia	4
Turkey	9
Total	68

Thirty-one of the outbreaks reported in 2006 were associated with *Salmonella* spp., accounting for 46% of the outbreaks, 19% of outbreaks were associated with *Shigella* spp, 18% with *Cryptosporidium*, 9% with *Campylobacter*, 7% with *E. coli* and 2% with norovirus.

Of the 31 outbreaks of *Salmonella*, eleven were due to *S.* Enteritidis, within which Phage Type 14b was the most common, identified in four outbreaks. *Salmonella* Typhimurium was the second most frequently identified serogroup, reported from four of the *Salmonella* outbreaks. In 2006, thirteen overseas outbreaks associated with *Shigella* were reported, eight of which were due to *S. sonnei*, two of *S. flexneri*, and one of *S. boydii*; two outbreaks were reported as *Shigella* spp. To date in 2007, information has been received on five overseas outbreaks, two each of *Salmonella* and *Shigella*, and one of *Cryptosporidium*. Two of these were associated with travel to Egypt, and one each with South Africa, Turkey and India.

E. coli O157 infection believed to have been acquired outside Scotland

Due to the potentially serious complications associated with *E. coli* O157 infection, HPS operates a similar system to that for outbreaks of infectious intestinal disease for single cases of *E. coli* O157 infection who report travel outside Scotland in the 14 days prior to the onset of symptoms.

During 2006, information was disseminated on 26 cases. Three cases reported travel to more than one country. Spain, Malta and Turkey were each reported by three cases; two cases reported travel to England and 12 other countries were reported by one case each.

To date in 2007 information has been disseminated on five cases (four of *E. coli* O157 and one non-O157 infection) with travel reported to England, India, Italy, Ghana and a Mediterranean cruise.

HPS should like to thank all the consultants in public health medicine, infection control nurses, environmental health officers and microbiologists who contribute to these systems. Further information on the overseas outbreak surveillance system can be obtained from John Cowden or Alison Smith-Palmer.

TABLE 2: Selected gastro-intestinal infections, Scotland: laboratory reports, weeks 2007/1-20

Organism	Number of reports				Total for period	Cumulative total to:	
	07/17	07/18	07/19	07/20	07/17-20	07/20	06/20
Campylobacter	83	70	69	36	258	1239	1172
E. coli O157	2	2	0	3	7	26	42
Shigella sonnei	3	2	2	1	8	33	14
Rotavirus	79	103	72	57	311	734	1144
Norovirus	74	41	28	47	190	1030	1755
Cryptosporidium	6	8	14	6	34	138	160
Giardia	4	8	1	4	17	70	64
Yersinia	2	1	0	0	3	11	16

TABLE 3: *Salmonella* infections, Scotland: laboratory identifications, weeks 2007/1-20

Salmonellas	Number of reports				Total for period	Cumulative total to:	
	07/17	07/18	07/19	07/20	07/17-20	07/20	06/20
S. Enteritidis PT4	2	2	1	1	6	20	5
S. Enteritidis (other PTs)	2	5	2	9	18	59	60
S. Typhimurium DT104	0	0	0	0	0	12	5
S. Typhimurium (other PTs)	1	0	2	0	3	45	27
Other *Salmonellas*	2	11	4	6	23	137	89
Total excl (*S.* Typhi & *S.* Paratyphi)	7	18	9	16	50	273	186

TABLE 4: Viral gastroenteritis and hepatitis A, Scotland: laboratory reports, weeks 2007/1-20

Organism	Number of reports				Total for period	Cumulative total to:	
	07/17	07/18	07/19	07/20	07/17-20	07/20	06/20
Adenovirus	35	31	18	29	113	571	478
Sapovirus	1	1	0	0	2	9	9
Astrovirus	0	1	0	0	1	14	10
Hepatitis A	2	1	0	0	3	16	9

The last Gastro-intestinal and foodborne infections Surveillance Report was in Issue 07/17
The next Gastro-intestinal and foodborne infections Surveillance Report will be in Issue 07/25

Antimicrobial resistance of *Salmonella* in Scotland, 2005 (excluding *S.* Typhi and *S.* Paratyphi)

LM Browning, DJ Brown, JE Coia, J Cowden and H Mather

Resistance typing of *Salmonella* isolates allows for the detection of emerging resistant-clones within particular serotypes or phage types, and enables monitoring of these organisms as they are transmitted from animals to humans and vice versa. The epidemiological information generated can also be used to track acquired resistance over time within particular serotypes.

Resistance typing has evolved considerably at SSRL since the introduction of testing for chloramphenicol resistance in the late 1970's. By 1988, breakpoint sensitivity testing was adopted as the method of choice. This involves the antibiotics being dissolved in agar and poured into Petri-plates. Suspensions of *Salmonella* are inoculated onto the surface of the plates and the presence of vegetative growth following incubation is taken to indicate resistance to the antibiotic at this concentration. This well established technique is extensively validated by internal quality control and external quality assurance schemes. At that time SSRL tested all strains of *Salmonella* submitted against ampicillin, chloramphenicol, gentamicin, kanamycin, streptomycin, sulphonamide, tetracycline, and trimethoprim. In 1989 the scheme was extended to include nalidixic acid, netilmicin, and spectinomycin. This was extended further with the addition of ciprofloxacin and the veterinary antibiotic furazolidone in 1990. Concerns regarding increased treatment failures in salmonellosis patients treated with ciprofloxacin resulted in the additional testing for this antibiotic at a lower level (0.125µg/ml). Finally in 1998 cefotaxime was added at the request of the European Network for *Salmonella* and VTEC laboratories (Enter-Net). The antibiotics tested, their abbreviations and concentrations are shown in Table 1.

TABLE 1. Antimicrobial agents tested against *Salmonella*

Ap	Ampicillin	50 µg/ml
Cf	Cefotaxime	1 µg/ml
Cl	Chloramphenicol	20 µg/ml
Cp	Ciprofloxacin	0.5 µg/ml
Fz	Furazolidone	20 µg/ml
Gm	Gentamicin	20 µg/ml
Ka	Kanamicin	20 µg/ml
Na	Naladixic acid	40 µg/ml
Ne	Netilmicin	20 µg/ml
Sp	Spectinomycin	100 µg/ml
St	Streptomycin	20 µg/ml
Su	Sulphonamide	100 µg/ml
Tc	Tetracycline	10 µg/ml
Tm	Trimethoprim	2 µg/ml
Lc	Ciprofloxacin (low level)	0.125 µg/ml

Most recently, due to the detection of increased resistance to ciprofloxacin and its significance in therapeutic treatment of extra-intestinal *Salmonella* infections, it was decided to monitor the MIC of these strains using E-Tests (Bio-Stat). This will give a more accurate measurement of resistance, allowing for better epidemiological examination of any changes in resistance over time.

Human *Salmonella* in Scotland 2005

The numbers of reports of human infection with *S.* Enteritidis, *S.* Typhimurium and the ten most frequently reported other serotypes are shown in Table 2.

The percentage of isolates (by source) resistant to antimicrobial agents is shown in Table 3.

TABLE 2: *Salmonella* serotypes in Scotland, 2005 (human laboratory reports)

Serotype	Total
Total	1127
S. Enteritidis	523 (46.4%)
S. Typhimurium	205 (18.2%)
S. Gold-coast	41 (3.6%)
S. Virchow	39 (3.5%)
S. Newport	22 (2.0%)
S. Saintpaul	21 (1.9%)
S. Hadar	18 (1.6%)
S. Stanley	15 (1.3%)
S. Corvallis	14 (1.2%)
S. Agona	13 (1.2)
S. Mbandaka	12 (1.1%)
S. Infantis	10 (0.9%)
S. Java	10 (0.9%)
Others (77 serotypes)	184 (16.3%)

TABLE 3: Percentage of human, animal and environmental isolates of *Salmonella enterica* in Scotland 2005 found to be resistant to antimicrobial agents.

Antibiotic	Human (n=1127)	Animal (n=367)	Environmental (n=565)
Ap	16.1	12.3	3.7
Cf	0.2	0.0	0.0
Cl	10.2	11.4	0.4
Cp	2.5	1.7	0.9
Fz	0.9	0.0	0.2
Gm	1.9	0.0	0.2
Ka	1.9	0.3	0.4
Na	20.1	8.4	12.7
Ne	0.6	0.0	0.0
Sp	13.0	12.8	9.4
St	18.2	13.6	7.6
Su	18.5	13.9	31.3
Tc	19.8	15.0	9.2
Tm	6.3	2.7	28.7
Lc	21.0	9.5	12.7

Human *Salmonella*

Most (605/1127 – 62%) of human *Salmonella* infections in Scotland in 2005 were fully sensitive to all antibiotics tested.

Antimicrobial resistance profiles for *S.* Enteritidis, *S.* Typhimurium and other serotypes commonly reported are detailed in the following tables. Antibiotics shown in brackets refer to intermediate resistance.

Antimicrobial resistance in *Salmonella* Enteritidis (human)

Just under half (46%) of cases of *Salmonella* were due to *S.* Enteritidis. Three hundred and sixty one out of a total of 523 (69%) isolates of *S.* Enteritidis from people were found to be fully sensitive to all antibiotics tested. Multi-resistance (resistance to four or more antibiotics) was demonstrated in only 15 (2.9%) of *S.* Enteritidis isolates. Resistance to nalidixic

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acid and low level ciprofloxacin (NaLc) was demonstrated in 27.7% of *S.* Enteritidis isolates, of which 38.6% indicated foreign travel as a possible source of infection. The resistance profiles of *S.* Enteritidis isolates are shown in Table 4.

TABLE 4: Antimicrobial resistance in *S.* Enteritidis, 2005 (human isolates)

Total	**523**
Fully Sensitive	361
(Cp)NaLc	1
Ap	4
ApNaLc	6
ApNaSpStSuTeLc	1
ApNaStTeLc	3
ApNaTeLc	3
ApStSuTe	1
CpNaLc	5
NaLc	123
NaSpStSuTeTmLc	1
NaStSuLc	1
NaStTeLc	1
SpStSu	1
SpStSuTeTm	4
Su	2
SuTeTm	2
SuTm	1
Te	1
TeTm	1

As seen in Scotland each year since 2003, Phage Type 1 was the most commonly identified phage type of *S.* Enteritidis in Scotland in 2005 (Table 5). The majority (67%) were resistant to NaLc (of which 34.5% indicated foreign travel as a possible source of their infection) and 28% were fully sensitive (Table 6).

TABLE 5: Commonly reported phage types of *S.* Enteritidis, 2005 (human)

Phage Type	**Total**
Total	523
PT 1	129 (24.7%)
PT 4	115 (22.0%)
PT 21	47 (9.0%)
PT 14b	45 (8.6%)
PT 8	42 (8.0%)
PT 6	30 (5.7%)
PT RDNC	30 (5.7%)
PT 1c	13 (2.5%)
PT 6a	13 (2.5%)
PT Untypable	10 (1.9%)
Others (16 types)	49 (9.4%)

TABLE 6: *S.* Enteritidis PT 1 resistance profiles (human)

Total	129
Fully sensitive	36
ApNaLc	3
CpNaLc	2
NaLc	87
TeTm	1

The majority (88.7%) of phage type 4 isolates were fully sensitive and 9% were resistant to NaLc (Table 7). 38.3% of cases indicated foreign travel as a possible source of infection.

TABLE 7: *S.* Enteritidis PT4 resistance profiles, 2005 (human)

Total	115
Fully Sensitive	102
CpNaLc	1
NaLc	10
NaStSuLc	1
SpStSu	1

Of the remaining 279 isolates of phage types other than PT1 and PT4, 80% were fully sensitive and 9.3% were resistant to NaLc. All isolates of phage types PT11 (n=7), PT15 (n=3), PT29 (n=5), PT31 (n=2), PT34 (n=5), PT44 (n=6), PT9b (n=1), PT4b (n=1), PT5c (n=3) were fully sensitive to all antibiotics tested. In addition 29/30 isolates of PT6 and 41/42 isolates of PT 8 were sully sensitive.

Antibiotic resistance in *S.* Typhimurium, 2005 (human)

S. Typhimurium was reported in 209 (18.2%) of human cases of *Salmonella* in 2005. Antimicrobial resistance and multi-resistance has been relatively common in *S.* Typhimurium and in 2005, only 25.4% of isolates from people were fully sensitive (Table 8).

TABLE 8: Antimicrobial resistance in *S.* Typhimurium, 2005 (human)

Total	**205**
Fully Sensitive	52
Ap	1
ApCfClGmKaSpStSuTeTm	1
ApCfClStSuTe	1
ApClCpFzGmKaNaSpStSuTeTmLc	2
ApClCpNaSpStSuTeLc	1
ApClCpSpStSuTeTmLc	1
ApClFzSpStSuTe	2
ApClGmKaNeSpStSuTe	1
ApClKaSpStSuTm	1
ApClNaSpStSuTeLc	10
ApClNaSpStSuTeTmLc	1
ApClSpStSuTe	63
ApClSpStSuTeTm	19
ApGmKaNeSpStSuTeTm	2
ApKaStTe	1
ApNaStSuTmLc	1
ApNaStTeLc	1
ApSpStSuTe	1
ApStSuTe	10
ApStSuTeTm	1
ApStTe	1
ApSuTe	1
ApTe	2
ApTeTm	1
ClCpGmKaNaSpStSuTeTmLc	1
ClSpStSuTe	1
CpStSuTeLc	2
GmKa	1
Ka	1
KaSpStSuTeTm	1
NaLc	3
SpStSu	6
SpStSuTm	1
StSu	1
StSuTe	4
StSuTeTm	1
SuTm	2
Te	2

Multi-resistance was demonstrated in 62% of *S.* Typhimurium isolates (compared to 2.9% of isolates of *S.* Enteritidis). Only 17 (8.3%) were resistant to NaLc. The most common resistance pattern observed in *S.* Typhimurium was ApClSpStSuTc (30.7%). This pattern in classically associated with isolates of the DT104 complex (DT104, 104b, U302 and U310). The most common phage types of *S.* Typhimurium are shown in Table 9.

TABLE 9: Commonly reported phage types of *S.* Typhimurium, 2005 (human)

Total	**205**
DT 104	86 (42.0%)
DT RDNC	38 (18.5%)
PT U302	13 (6.3%)
DT 104b	10 (4.9%)
DT 120	10 (4.9%)
PT Untypable	10 (4.9%)
DT 1	4 (2.0%)
DT 12	4 (2.0%)
DT 40	4 (2.0%)
DT 56 Var	4 (2.0%)
Others (15 types)	22 (10.7%)

The most common phage types belong to the DT104 complex of which only 6 isolates (5.5%) were fully sensitive (Table 10). 85.4% were multi-resistant. Multi-resistant strains constituted 87.2% of DT104, 70% of DT104b, 86% of U302 and 100% (n=1), of U310 isolates.

TABLE 10: *S.* Typhimurium DT104 complex (DT104, 104b, U302 & U310) resistance profiles (human).

Total	110
Fully Senstive	6
ApClCpFzGmKaNaSpStSuTeTmLc	1
ApClCpNaSpStSuTeLc	1
ApClFzSpStSuTe	2
ApClNaSpStSuTeLc	10
ApClNaSpStSuTeTmLc	1
ApClSpStSuTe	53
ApClSpStSuTeTm	15
ApGmKaNeSpStSuTeTm	2
ApSpStSuTe	1
ApStSuTe	6
ApStTe	1
ClCpGmKaNaSpStSuTeTmLc	1
NaLc	2
SpStSu	6
SpStSuTm	1
StSuTe	1

A number of different resistance profiles were seen in the other commonly reported *S.* Typhimurium phage types and are shown in Tables 11-.22. All phage type DT10 (n=1), DT17 (n=1), DT180 (n=1), DT2 (n=1), DT40 (n=4), DT49 (n=2), DT56Var (n=4), DT8 (n=3), DT85 (n=2), DT99 (n=1) isolates were fully sensitive.

Antibiotic resistance in serotypes other than *S.* Enteritidis or *S.* Typhimurium

Of the other 'top ten' serotypes – *S.* Gold-coast, *S.* Virchow, *S.* Newport, *S.* Saintpaul, *S.* Hadar, *S.* Stanley, *S.* Corvalis, *S.* Agona, *S.* Mbandaka, *S.* Infantis and *S.* Java – 60% of isolates were fully sensitive. All isolates of *S.* Gold-coast (n=41) and *S.* Mbandaka (n=12) were fully sensitive and 9/10 isolates of *S.* Java were fully sensitive. Multi-resistance was observed in *S.* Agona, *S.* Corvallis, *S.* Hadar, *S.* Newport, *S.* Saintpaul, *S.* Stanley and *S.* Virchow. The resistance patterns are shown in Tables 14.

TABLE 11: *S.* Typhimurium RDNC resistance profiles (human)

Total	**38**
Fully Sensitive	19
ApCfClStSuTe	1
ApClCpFzGmKaNaSpStSuTeTmLc	1
ApClSpStSuTe	3
ApClSpStSuTeTm	2
ApSuTe	1
ApTe	1
ApTeTm	1
CpStSuTeLc	2
GmKa	1
Ka	1
KaSpStSuTeTm	1
StSu	1
StSuTeTm	1
SuTm	1
Te	1

TABLE 12 : *S.* Typhimurium DT120 resistance profiles (human)

Total	10
Fully Sensitive	2
ApStSuTe	4
ApStSuTeTm	1
StSuTe	2
Te	1

TABLE13 : *S.* Typhimurium Phage type Untypable resistance profile (human)

Total	**10**
Fully Sensitive	1
ApCfClGmKaSpStSuTeTm	1
ApClCpSpStSuTeTmLc	1
ApClKaSpStSuTm	1
ApClSpStSuTe	4
ApNaStSuTmLc	1
ApTe	1

TABLE 14: *S.* Virchow resistance profiles (human)

Total	39
Fully Sensitive	9
ApFzGmNaSpStSuTeTmLc	1
ApGmNaSpStSuTeTmLc	1
CpNaSuLc	1
Fz	2
FzNaLc	1
FzNaSuTeTmLc	1
NaLc	17
NaSpStSuTeTmLc	1
NaSpTeTmLc	1
NaStSuTeTmLc	1
NaSuTeTmLc	1
NaSuTmLc	2

TABLE 15: *S.* Newport resistance profiles (human)

Total	**22**
Fully Sensitive	14
Ap	1
ApClCpGmKaNaSpStSuTeTmLc	1
ApClGmNaSpStSuTeLc	1
ApClSuTeTm	1
ApGmSpStSuTe	1
ApStSuTe	1
NaLc	1
StSu	1

TABLE 16: *S*. Saintpaul resistance profiles (human)

Total	**21**
FS	16
ApStTe	1
ClSpStSuTeTm	1
GmKaSpStSuTe	1
StSu	1
Te	1

TABLE 17: *S*. Hadar resistance profiles (human)

Total	**18**
Fully Sensitive	1
ApCpNaStTeLc	3
ApNaLc	1
ApNaStTeLc	7
ApNaTe	1
ApNaTeLc	1
ApTe	1
NaLc	1
NaStTeLc	1
Te	1

TABLE 18: *S*. Stanley resistance profiles (human)

Total	**15**
Fully Sensitive	4
ApClSpStSuTe	1
ApTe	1
ClCpGmKaSpStSuTeLc	1
ClSuTeTm	1
NaSpStSuTeLc	3
NaSpStSuTeTmLc	1
SpStSuTeTmLc	1
StSuTe	1
SuTm	1

TABLE 19: *S*. Corvallis resistance profiles (human)

Total	**14**
Fully Sensitive	6
(Cp)StSuTeLc	1
CpLc	3
CpStSuTeLc	1
CpSuLc	1
StSuTe	1
StSuTeLc	1

TABLE 20: *S*. Agona resistance profiles (human)

Total	**13**
Fully Sensitive	10
NaSpStSuTeLc	1
SpStSuTe	1
SuTeTm	1

TABLE 21: *S*. Infantis resistance profiles (human)

Total	**10**
Fully Sensitive	7
ApSuTm	1
NaLc	1
SuTeTm	1

TABLE 22: *S*. Java resistance profiles (human)

Total	**10**
Fully Sensitive	9
Su	1

Animal isolates of *Salmonella* in Scotland, 2005.

A total of 367 isolates of *Salmonella* were reported from animal sources in Scotland in 2005 (Table 23). Of these 305 (83%) were fully sensitive and 13.1% were multi-resistant. The predominant serotype isolated was *S*. Dublin (43.6%), of which 98% were fully sensitive. The second most commonly reported serotype was *S*. Typhimurium (30.2%) of which 40.5% were multi-resistant and 52.3% were fully sensitive. All isolates of *S*. Montevideo (n=18, source, 16 – ovine, 2- bovine), *S*. Arizonae (n=9, source, 8 ovine, 1 reptile), *S*. Larochelle (n=7, source - monkey), *S*. Jangwani (n=6, source - bovine) were fully sensitive.

TABLE 23: *Salmonella* serotypes in Scotland, 2004 (animal laboratory reports)

Total	**367**
S. Dublin	160
S. Typhimurium	111
Salmonella grp B (monophasic)	23
S. Montevideo	18
S. Arizonae	9
S. Larochelle	7
S. Jangwani	6
S. Binza	4
Others (23 serotypes)	29

TABLE 24: *S*. Dublin resistance profiles (animal)

	Bovine n=150	**Canine n=4**	**Feline n=1**	**Ovine n=4**	**Other n=1**
Fully Sensitive	147	4	1	4	1
CpNaSuTmLc	1	0	0	0	0
SpStSu	1	0	0	0	0
SpStSuTeTm	1	0	0	0	0

TABLE 25: *S*. Typhimurium resistance profiles (animal)

	Avian n=57	**Bovine n=34**	**Canine n=6**	**Feline n=3**	**Ovine n=3**	**Porcine n=6**	**Other n=2**
Fully Sensitive	50	1	3	2	0	1	1
ApCl(Cp)SpStSuTeTmLc	0	0	0	0	1	0	0
ApClCpNaSpStSuTeTmLc	0	0	0	0	0	1	0
ApClCpSpStSuTeTmLc	0	1	0	0	2	0	0
ApClNaSpStSuTeLc	1	22	2	1	0	0	0
ApClSpStSuTe	0	7	0	0	0	1	1
ApClSpStSuTeTm	0	0	0	0	0	2	0
ApStSuTe	0	0	1	0	0	1	0
NaSpStSuLc	0	1	0	0	0	0	0
SpStSu	0	1	0	0	0	0	0
Te	6	1	0	0	0	0	0

TABLE 26: *Salmonella* grp B (monophasic) resistance profiles (animal)

Total	**23**
Fully Sensitive	22
KaSuTm	1

TABLE 27: S. Binza resistance profiles (animal)

Total	**4**
Fully Sensitive	3
SpStSu	1

Salmonella from animal environmental sources in Scotland, 2005

A total of 565 isolates of *Salmonella enterica* were reported from animal environmental sources in 2005 (Table 28).

TABLE 28: *Salmonella* serotypes isolates in Scotland 2005 (animal environmental sources)

Total	**565**
Salmonella grp C4 (non-motile)	269
Thompson	101
Idikan	37
Tennessee	23
Liverpool	18
Mbandaka	18
Eimsbuettel	13
Schwarzengrund	11
Senftenberg	11
Enteritidis	8
Others (23 serotypes)	56

65% of isolates were fully sensitive and 18.8% were multi-resistant. All isolates of *S.* Schwarzengrund, *S.* Senftenberg and *S.* Enteritidis were fully sensitive. Details of antibiotic resistance within the commonly reported serotypes are provided (Tables 29 - 35).

TABLE 29: *Salmonella* grp C4 (non-motile) resistance profiles (environmental)

Total	**269**
Fully Sensitive	248
Ap	1
ApSpStSuTm	1
ApSuTm	1
ClStTeTm	1
SpStSuTe	9
SpStSuTm	1
SuTe	1
SuTm	6

TABLE 30: *S.* Thompson resistance profiles (environmental)

Total	**101**
Fully Sensitive	7
ApNaSpStSuTmLc	3
ApNaSpSuTmLc	1
ApNaSuTmLc	2
CpNaLc	1
CpNaSuTmLc	3
Fz	1
NaLc	9
NaSuLc	1
NaSuTeTmLc	1
NaSuTmLc	39
NaTmLc	2
SuTm	31

TABLE 31: *S.* Idikan resistance profiles (environmental)

Total	**37**
ApSpSuTm	1
SpStSuTeTm	16
SpSuTeTm	14
SuTeTm	1
SuTm	5

TABLE 32: *S.* Tennessee resistance profiles (environmental)

Total	**23**
Fully Sensitive	21
StSu	2

TABLE 33: *S.* Liverpool resistance profiles (environmental)

Total	**18**
Fully Sensitive	2
ApStSu	1
ApStSuTm	1
ApSuTeTm	1
ApSuTm	1
GmKaSpStSu	1
SpStSuTe	1
StSuTm	1
SuTeTm	1
SuTm	8

TABLE 34: *S.* Mbandaka resistance profiles (environmental)

Total	**18**
Fully Sensitive	9
ApSpSuTeTm	1
CpNaLc	1
NaLc	3
SpSt	1
Su	1
SuTm	2

TABLE 35: *S.* Eimsbuettel resistance profiles (environmental)

Total	**13**
Fully Sensitive	9
ApKaStSuTm	1
SuTm	3

L M Browning, J Cowden, Health Protection Scotland, **DL Brown, JE Coia, H Mather**, Scottish *Salmonella* Reference Laboratory

Statutory Notification of Infectious Diseases
Week ended 18 May 2007

A *National Statistics* release

Infectious Disease	Age Group																			
	All ages		Under 1		1 - 4		5 - 14		15 - 24		25 - 34		35 - 44		45 - 64		65 & over		Not known	
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**	**M**	**F**
Anthrax	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bacillary dysentery	2	2	-	-	1	-	-	-	-	-	-	1	-	1	1	-	-	-	-	-
Chickenpox	253	233	20	9	149	140	62	52	12	11	4	10	2	2	1	6		1	3	2
Cholera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diphtheria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Erysipelas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Food poisoning	78	60	1	0	7	5	7	3	8	5	8	6	12	9	25	24	10	8	0	0
Legionellosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptospirosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lyme Disease	3	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	1	-	-	-
Malaria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Measles	-	4	-	-	-	2	-	1	-	-	-	-	-	-	-	-	-	-	-	1
Meningococcal infection	1	2	1	-	-		-	2	-	-	-	-	-	-	-	-	-	-	-	-
Mumps	38	30		-	-	1	6	5	24	19	4	2	2	1	2	2	-	-	-	-
Paratyphoid fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Plague	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poliomyelitis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerperal fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Relapsing fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rubella	2	1	-	-	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Scarlet fever	4	4	-	2	2	1	2	-	-	1	-	-	-	-	-	-	-	-	-	-
Smallpox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toxoplasmosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tuberculosis: resp.	3	1	-	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-	-	-
Tuberculosis: non-resp.	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Typhoid fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Typhus fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Viral haemorrhagic fevers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Viral hepatitis	12	1	-	-	-	-	-	-	3	-	1	1	3	-	5	-	-	-	-	-
Whooping cough	1	2	-	1		1	1	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL	397	341	22	12	161	150	78	64	48	36	20	22	20	13	34	32	11	9	3	3

Infectious Disease	NHS BOARD AREA															Current week	Previous week	Current week last year	Total from1st week of year	
	AC	AA	BR	DG	FF	FV	GR	GG	HG	LN	LO	OR	SH	TY	WI				2006	2007
Anthrax	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bacillary dysentery	-	-	-	-	-	-	1	-	-	-	1	-	-	2		4	2	1	36	52
Chickenpox	-	51	7	23	31	33	56	116	31	38	83		1	13	3	486	550	415	6 601	11029
Cholera	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Continued fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Diphtheria	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Erysipelas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	8
Food poisoning	-	1	2	5	8	6	23	27	6	14	28	2	0	16	0	138	90	133	1 771	1838
Legionellosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	4
Leptospirosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lyme Disease	-	-	-	-	-	-	1	-	-	-	1	-	-	1	-	3	2	1	20	42
Malaria	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	2
Measles	-	-	-	-	1	-	-	1			-	-	-	2	-	4	1	9	116	74
Meningococcal infection	-	-	-	-	-	-	1	1	1	-	-	-	-	-	-	3	-	6	63	73
Mumps	-	2	1	-	1	14	1	17	2	8	10		-	12	-	68	58	69	1 397	1620
Paratyphoid fever	-	-	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-	-	-
Plague	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poliomyelitis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puerperal fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabies	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Relapsing fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rubella	-	-	-	-	-	-	-	1	1	1	-	-	-	-	-	3	2	4	73	55
Scarlet fever	-	-	-	-	-	-	-	2		1	4	-	-	1	-	8	10	10	149	161
Smallpox	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toxoplasmosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Tuberculosis : resp.	-	-	-	1		2	1	-	-	-	-	-	-	-	-	4	7	8	95	84
Tuberculosis : non-resp.	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	1	2	45	43	
Typhoid fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Typhus fever	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Viral haemorrhagic fevers	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Viral hepatitis	-	1	-	3	5	-	2	-	-	-	1	-	-	1	-	13	17	15	441	455
Whooping cough	-	-	-	-	-	1	-	-	-	-	1	-	-	1	-	3	1	3	22	35
TOTAL	-	55	10	32	46	56	86	165	41	62	130	2	1	49	3	738	741	676	10 847	15579

Amendments: None

Source: Health Protection Scotland, National Services Scotland

NHS BOARD ABBREVIATIONS

AC	Argyll & Clyde	DG	Dumfries & Galloway	GG	Greater Glasgow	LN	Lanarkshire	SH	Shetland
AA	Ayrshire & Arran	FF	Fife	GR	Grampian	LO	Lothian	TY	Tayside
BR	Borders	FV	Forth Valley	HG	Highland	OR	Orkney	WI	Western Isles