2.3 Invasive Group A Streptococcal Disease

Summary

Number of cases, 2010: 68
Crude incidence rate, 2010: 1.60 per 100,000

Notifications
Sixty-eight cases of invasive Group A streptococcal (iGAS) disease were notified in 2010. This corresponds to 1.60 iGAS cases per 100,000 population [95% confidence interval (CI), 1.25 to 2.03 per 100,000] and represents an increase since 2009 when the iGAS rate was 1.42 per 100,000 population (95% CI, 1.08 to 1.82 per 100,000).

Sixty-five cases were confirmed, defined as patients with Group A streptococcus (GAS), or *Streptococcus pyogenes*, isolated from a sterile site. Three cases were probable, defined as patients with streptococcal toxic shock syndrome (STSS) and GAS isolated from a non-sterile site (e.g. throat, sputum, vagina).

Patient demographics
Of the 68 cases, 36 (53%) were males and 32 (47%) were females, with ages ranging from 3 months to 97 years (mean, 49 years; median, 49 years). iGAS was more common in young children and older adults (Figure 1).

Geographic spread and seasonal variation
Table 1 outlines the numbers and crude incidence rates (CIRs) of iGAS disease by HSE area from 2004 to 2010. Of note, the highest number of cases in 2010 occurred in the HSE-East (n=22; CIR, 1.47 per 100,000 population) while the highest CIR occurred in the HSE-North West (n=8; CIR, 3.37 per 100,000 population). As in 2009, the peak period in 2010 occurred between April and July accounting for 29 cases, with other peaks in January (n=7) and October (n=6). Note, the number of monthly cases (based on the date the case was positive for GAS and not the date the case was reported) is small, ranging from three to nine.

Enhanced surveillance data
Enhanced data fields were entered for 57 (84%) of the iGAS cases, which is similar to 2009 (83%, 50 of 60 cases). The source laboratory could not be ascertained for three of the cases. As in previous years, a wide variation in completed fields was observed.

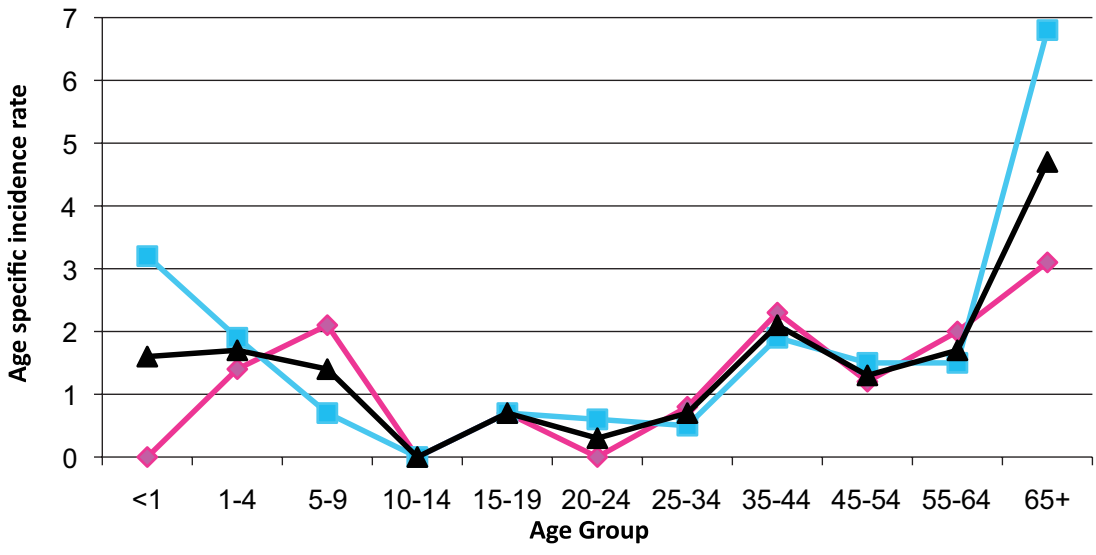

Figure 1. Age and sex specific rates of iGAS disease in 2010

Isolate details
GAS was isolated from a sterile site in 53 of 65 confirmed cases (no data on the source were available for 12 cases), primarily from blood cultures (n=51 isolates, 96%) but also deep tissue (n=1) and a ventriculoperitoneal shunt tip (n=1). For the three probable cases, GAS source was provided for two of these: vaginal swab (n=1) and caesarean section wound (n=1). The third probable case was from a patient with meningitis.

Serological typing data, based on the detection of M and T-proteins, were available on only nine isolates from five laboratories: *emm*/M3, M11, M12, M13, M25, M28, M48, M49 and M78 (one isolate of each, respectively). Of these, enhanced data were available on eight patients with iGAS, two of whom presented with STSS (emm/M12 and M25).

Clinical details
As in 2009 and previous years, bacteraemia (n=51 cases, including cases where bacteraemia was not specifically stated but GAS was isolated from blood) and cellulitis (n=20) were the most common clinical presentations, followed by pneumonia (n=10), STSS (n=9; one of which was implied based on the clinical presentation given), necrotising fasciitis (n=4), puerperal sepsis (n=3), myositis (n=2), septic arthritis (n=2), meningitis (n=1) and peritonitis (n=1). Note that cases could have more than one clinical presentation.

Risk factors
Risk factors associated with iGAS disease included age 65 years and over (n=22), presence of skin and wound lesions (n=16), diabetes mellitus (n=8), intravenous drug use (IVDU) (n=6), malignancy (n=6), non-steroidal anti-inflammatory drug (NSAID) use (n=5), childbirth (n=4), alcoholism (n=3), steroid use (n=2) and varicella infection (n=2). Note that cases could have one or more associated risk factors: 31 cases had one risk factor, 10 had two risk factors, five had three risk factors and two had four risk factors. No risk factors were identified for seven cases. Among the nine cases with STSS, all of whom had at least one risk factor recorded, NSAID use was identified as a risk factor in three cases, age 65 years and over was identified in two cases, and alcoholism in two cases.

Clinical management
Surgical intervention was required for 12 patients (compared with 8 in 2009) ranging in age from one to 71 years, including the four cases that presented with necrotising fasciitis.

Thirteen patients ranging in age from two to 72 years were admitted to an intensive care unit (ICU) (compared to 16 in 2009). This included three patients with pneumonia, three with STSS, one with necrotising fasciitis, one with STSS and necrotising fasciitis, one with STSS and septic arthritis and one with STSS, necrotising fasciitis, septic arthritis and puerperal sepsis (some of these cases also presented with bacteraemia and/or cellulitis).

Risk factors for patients admitted to an ICU included skin and wound lesions (n=4), age over 65 years (n=3), diabetes mellitus (n=3), NSAID use (n=3), alcoholism (n=2), childbirth (n=2), steroid use (n=1) and varicella infection (n=1). Six patients had one, three had two, one had three and one had four risk factors. No risk factors were identified in one patient.

Length of ICU stay was provided for nine cases ranging from one to eight days (mean, 4.3 days; median, 3 days).

Other epidemiological information
Three cases (all bacteraemia, including one with cellulitis) were reported as hospital-acquired, which is the same as in 2009.

As in 2009, no outbreaks of iGAS were notified in 2010.

Table 1. Numbers (n) and Crude Incidence Rates (CIRs) per 100,000 population of iGAS disease by HSE Area, 2004-2010

HSE Area	2004		2005		2006		2007		2008		2009		2010	
	n	CIR	n	CIR	n	CIR	n	CIR	n	CIR	n	CIR	n	CIR
HSE-E	25	1.67	19	1.27	37	2.47	28	1.87	31	2.07	32	2.13	22	1.47
HSE-M	0	0.00	1	0.40	2	0.79	0	0.00	0	0.00	2	0.79	2	0.79
HSE-MW	1	0.28	3	0.83	2	0.55	2	0.55	3	0.83	5	1.38	6	1.66
HSE-NE	1	0.25	3	0.76	5	1.27	3	0.76	10	2.54	3	0.76	7	1.78
HSE-NW	0	0.00	3	1.27	1	0.42	3	1.27	3	1.27	1	0.42	8	3.37
HSE-SE	7	1.52	1	0.22	4	0.87	10	2.17	8	1.74	8	1.74	5	1.08
HSE-S	1	0.16	1	0.16	3	0.48	4	0.64	5	0.80	5	0.80	12	1.93
HSE-W	0	0.00	18	4.34	7	1.69	7	1.69	10	2.41	4	0.97	6	1.45
IRELAND	35	0.83	49	1.16	61	1.44	57	1.34	70	1.65	60	1.42	68	1.60

Outcome
Outcome at seven-days following GAS isolation was reported for 30 cases:

- 27 were still alive
- three patients died: GAS was the main or contributory cause of death for all three patients

The seven-day case fatality rate (CFR) for iGAS disease was 10% in 2010, which is the same as in 2009.
In addition to the above, the overall outcome was stated for a further 10 cases:

- one patient (aged three months) was reported to have died but it was not stated if this was directly attributable to iGAS
- seven patients were recovering
- two patients were still ill

Of the nine STSS cases, two patients died resulting in a CFR of 25% (with outcome provided for eight of nine cases).

Antimicrobial susceptibility
Antimicrobial susceptibility data were reported on 64 iGAS isolates (60 from blood, three from tissue and one from an unspecified fluid) by 16 laboratories in 2010 (note: these were reported via the EARS-Net Antimicrobial Resistance Surveillance Network, of which 55 were also notified to public health via CIDR). All isolates tested were susceptible to penicillin (n=60) and vancomycin (n=43). Resistance to erythromycin was reported in seven (12%) of 58 isolates, to clindamycin in one (4%) of 24 isolates and to tetracycline in three (12.5%) of 26 isolates.

Conclusion
iGAS disease remains an uncommon but potentially severe disease in Ireland. Ongoing surveillance is essential, specifically completion of the enhanced data questionnaire, to gain a greater understanding of iGAS, to enable early detection of clusters/outbreaks, to ensure prompt implementation of infection prevention and control precautions and appropriate management of contacts. The incidence of iGAS has increased since it first became notifiable in 2004: from 0.8 per 100,000 population in 2004 to 1.6 per 100,000 population in 2010, which most likely reflects increased notifications rather than a true increase in incidence. Antimicrobial susceptibility data confirm that iGAS remains susceptible to penicillin and that penicillin should continue to be the first line treatment where iGAS is suspected.

HPSC would like to thank participating microbiology laboratories for their contribution to iGAS enhanced surveillance scheme.

All microbiology laboratories are encouraged to return enhanced iGAS surveillance forms for all patients with iGAS and to submit antimicrobial susceptibility data on all iGAS cases along with their EARS-Net quarterly returns.

The enhanced surveillance form can be downloaded from the HPSC web site at:
http://www.hpsc.ie/hpsc/A-Z/Other/GroupAStreptococcalDiseaseGAS/SurveillanceForms/
Further information on iGAS disease in Ireland, including factsheets for patients and contacts and national guidelines, is available at: http://www.ndsc.ie/hpsc/A-Z/Other/GroupAStreptococcalDiseaseGAS/
The figures presented in this summary are based on data extracted from the Computerised Infectious Diseases Reporting (CIDR) System on 2nd September 2011.