2.3 Invasive Group A Streptococcal Disease

Summary

Number of cases, 2011: 67
Crude incidence rate, 2011: 1.46 per 100,000 population

Notifications

Sixty-seven cases of invasive Group A streptococcal (iGAS) disease were notified in 2011. This corresponds to 1.46 iGAS cases per 100,000 population [95% confidence interval (CI), 1.13 to 1.85 per 100,000], which is similar to 2010 when the iGAS rate was 1.48 per 100,000 population (95% CI, 1.15 to 1.88 per 100,000). Sixty-five cases were confirmed, defined as patients with Group A streptococcus (GAS), or *Streptococcus pyogenes*, isolated from a sterile site. Two 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 67 cases, 28 (42%) were males and 39 (58%) were females, with ages ranging from 3 months to 97 years (mean, 46 years; median, 39 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 2005 to 2011. Of note, the highest number of cases in 2011 occurred in the HSE-East (n=29; CIR, 1.79 per 100,000 population) while the highest CIR occurred in the HSE-South (n=12; CIR, 2.41 per 100,000 population).
In 2011, the peak periods were February/March (17 cases) and May-July (20 cases), which is broadly similar to previous years with the peak occurring during the first half of the year. 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 one to eleven.

Enhanced surveillance data

Enhanced data fields were entered for 61 (90%) of the iGAS cases, which is similar to 2010 (88%, 60 of 68 cases). The source laboratory could be ascertained for all cases. As in previous years, a wide variation in completed fields was observed.

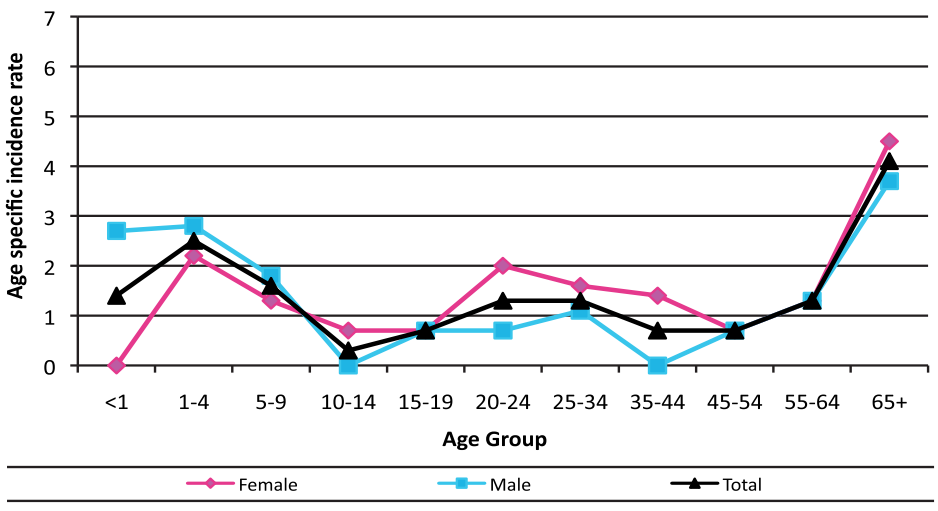

Figure 1. Age and sex specific rates of iGAS disease in 2011

Isolate details
GAS was isolated from a sterile site in 58 of 65 confirmed cases (no data on the source were available for seven cases), primarily from blood cultures (n=53 isolates, 91%), but also deep tissue (n=2), an abscess (n=1), a joint (n=1) and cerebrospinal fluid (CSF) (n=1). For the two probable cases, GAS source was provided for one: as a vaginal swab.

Serological typing data, based on the detection of M and T-proteins, were available on 16 isolates submitted from five laboratories: *emm*/M12 (n=6), M1 (n=5) and M3, M4, M5.3, M63 and M89 (one isolate of each). Of these, enhanced data were available on 13 patients with iGAS, none of whom presented with STSS or necrotising fasciitis.

Clinical details
As in 2010 and previous years, bacteraemia (n=53 cases, including cases where bacteraemia was not specifically stated but GAS was isolated from blood) and cellulitis (n=24) were the most common clinical presentations, followed by pneumonia (n=8), STSS (n=5; one of which was implied based on the information provided on the clinical presentation), necrotising fasciitis (n=3), peritonitis (n=3), septic arthritis (n=2), puerperal sepsis (n=2) and meningitis (n=1). Note that cases could have more than one clinical manifestation of infection.

Risk factors
Risk factors associated with iGAS disease included age ≥65 years (n=22), presence of skin and wound lesions (n=20), diabetes mellitus (n=8), intravenous drug use (IVDU) (n=7), malignancy (n=6), non-steroidal anti-inflammatory drug (NSAID) use (n=1), childbirth (n=5), injecting drug use (n=1), varicella infection (n=3), alcoholism (n=1) and steroid use (n=1). Note that cases could have one or more associated risk factors: 27 cases had one risk factor, 16 had two risk factors, two had three risk factors and one had four risk factors. No risk factors were identified for eight cases. Among the five cases with STSS, skin/wound lesions and age 65 years and over was identified as a risk factor in two, and childbirth in one. No risk factors were identified for the other two STSS cases.

Clinical management
Surgical intervention was required for eight patients ranging in age from 26 to 86 years (compared to 12 in 2010).

Eleven patients ranging in age from 26 to 87 years were admitted to an intensive care unit (ICU) (compared to 13 in 2010). This included two patients with STSS, one patient with necrotising fasciitis and two patients with both STSS and necrotising fasciitis.

Risk factors for patients admitted to an ICU included skin and wound lesions (n=4), age over 65 years (n=2), diabetes mellitus (n=1), childbirth (n=2), alcoholism (n=1), injecting drug use (n=1) and malignancy (n=1). Four patients had one and four had two risk factors. No risk factors were identified in two patients. No risk factor data were available for one patient.

Length of ICU stay was provided for eight cases ranging from one to seven days (mean, 3.3 days; median, 3 days).

Other epidemiological information
Two cases (both bacteraemia, one with necrotising fasciitis and puerperal sepsis and the other with peritonitis) were reported as hospital-acquired, compared to three in 2010.

As in 2010, no outbreaks of iGAS were notified in 2011.

Outcome
Outcome at seven-days following GAS isolation was reported for 43 cases:
- 37 were still alive
- Six patients died: GAS was the main or contributory cause of death for five patients

Table 1. Numbers (n) and Crude Incidence Rates (CIRs) per 100,000 population of iGAS disease by HSE Area, 2005-2011

HSE Area	2005		2006		2007		2008		2009		2010		2011	
	n	CIR	n	CIR	n	CIR	n	CIR	n	CIR	n	CIR	n	CIR
HSE-E	19	1.27	37	2.47	28	1.87	31	2.07	32	1.98	22	1.36	29	1.79
HSE-M	1	0.40	2	0.79	0	0.00	0	0.00	2	0.71	2	0.71	5	1.77
HSE-MW	3	0.83	2	0.55	2	0.55	3	0.83	5	1.32	6	1.58	6	1.58
HSE-NE	3	0.76	5	1.27	3	0.76	10	2.54	3	0.68	7	1.59	1	0.23
HSE-NW	3	1.27	1	0.42	3	1.27	3	1.27	1	0.39	8	3.10	2	0.77
HSE-SE	1	0.22	4	0.87	10	2.17	8	1.74	8	1.20	5	0.75	7	1.05
HSE-S	1	0.16	3	0.48	4	0.64	5	0.80	5	1.00	12	2.41	12	2.41
HSE-W	18	4.34	7	1.69	7	1.69	10	2.41	4	0.90	6	1.35	5	1.12
IRELAND	49	1.16	61	1.44	57	1.34	70	1.65	60	1.31	68	1.48	67	1.46

CIRs for 2005-2008 calculated using the 2006 census; CIRs for 2010-2011 calculated using the 2011 census [note: CIRs for 2009 and 2010 updated from last year's (2010) report]

The seven-day case fatality rate (CFR) for iGAS disease was 12% in 2010, which is similar to that in 2009 (10%).

In addition to the above, the overall outcome was stated for a further 12 cases:
- Three patients were reported to have died but it was not stated if these were directly attributable to iGAS
- Six patients were recovering or recovered
- One patient was still ill

Of the five STSS cases, one patient died due to GAS resulting in a CFR of 20%. One other patient with STSS died but GAS was not identified as the cause of death.

Antimicrobial susceptibility
Antimicrobial susceptibility data were reported on 42 iGAS isolates (39 from blood, two from wounds and one from a joint) by 14 laboratories in 2011 (note: these were reported via the EARS-Net Antimicrobial Resistance Surveillance Network, of which 38 (90%) were also notified to public health via CIDR). All isolates tested were susceptible to penicillin (n=41), clindamycin (n=13) and vancomycin (n=31). Resistance to erythromycin was reported in four (10%) of 41 isolates and to tetracycline in one (6%) of 16 isolates.

Conclusion
In 2011, iGAS infection 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. Between 2006 and 2011, the number of cases of iGAS has fluctuated from 57 to 70, while the incidence has fluctuated from 1.3 to 1.65 per 100,000 population. Over the last two years (2010 and 2011), the number of cases and incidence of iGAS have stabilised at 67 cases and 1.5 per 100,000 population, respectively. 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
- to submit all iGAS isolates to the Epidemiology and Molecular Biology Unit (EMBU) at the Children's University Hospital, Temple Street for emm-typing
- 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 5th October 2012.