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Annual Epidemiological Report

July 2019

Invasive Streptococcus Group B Infection in Ireland, 2018

Key Facts

- In 2018, 51 cases of invasive Group B streptococcal (iGBS) infections were reported
- 37 cases were associated with early-onset disease (EOD) resulting in a rate of 0.61 cases per 1,000 live births
- 13 cases were associated with late-onset disease (LOD) resulting in a rate of 0.21 cases per 1,000 live births
- One case was associated with intrauterine death
- While the EOD rate has remained relatively stable over the past four years, the LOD rate decreased in 2018 (2017, 0.52)
- Typing data from the Irish Meningitis and Sepsis Reference Laboratory (IMSRL) indicate that the majority of iGBS cases, both EOD and LOD, are due to one particular strain, clonal complex 17 serotype III

Suggested citation: HSE Health Protection Surveillance Centre. Invasive Streptococcus Group B Infection in Ireland 2018: Dublin HSE HPSC; 2019

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Background

Invasive group B streptococcal (iGBS; *Streptococcus agalactiae*) infections in infants <90 days old or stillborn infants have been notifiable in Ireland since January 2012.

In neonates, two syndromes exist:

- Early-onset disease (EOD; age at onset/diagnosis <7 days)
- Late-onset disease (LOD; age at onset/diagnosis 7-89 days)

Both may include sepsis, pneumonia and meningitis. Stillbirth, or intra-uterine death (IUD), associated with isolation/detection of *Streptococcus agalactiae* from the placenta or amniotic fluid is also notifiable.

Methods

The figures presented in this summary are based on data extracted from CIDR on **1st June 2019**.

Data on GBS capsular serotypes and clonal complexes as determined by multi-locus sequence typing were obtained for iGBS isolates referred to the Irish Meningitis and Sepsis Reference Laboratory (IMSRL), based at Temple Street Children's University Hospital.

Data on live births in 2018 (n=61,016) were obtained from the Central Statistics Office: https://www.cso.ie/multiquicktables/quickTables.aspx?id=vsa02_vsa09_vsa18

Results

In 2018, there were 51 iGBS cases: 37 with EOD (rate = 0.61 cases per 1,000 live births); 13 with LOD (rate = 0.21); and one IUD (Figure 1 and Table 1). The majority of EOD cases (n=19; 51%) presented within the first 24 hours after birth. Seven cases presented with meningitis and, apart from the IUD, no further deaths were reported.

There was a 32% decrease in the number of iGBS cases compared with 2017, with EOD cases falling by 14% and LOD cases falling by 59%.

There are 10 capsular serotypes (designated serotypes Ia, Ib and II-IX) and five major clonal complexes (CC1, CC12, CC17, CC19 and CC23) of GBS. Data from IMSRL indicate that typing results were available for 49% of iGBS cases in 2018 compared with 52% in 2017. Of those cases with no typing data, 50% were possibly identified by PCR only and hence no isolate may have been available for typing. CC17 serotype III strains are considered to be hypervirulent and studies have shown an association with neonatal disease, especially LOD. Data for the past three years (Figure 2) show that CC17 serotype III strains predominate as a cause of both EOD and LOD. In 2016, the second most common strain was CC23 serotype Ia accounting for 34% of all isolates typed. Since then, this strain has declined to 13% in 2017 and 8% in 2018.

Table 1. Breakdown and rates of iGBS cases, by disease syndrome in Ireland, 2012-2018

	EOD		LOD		IUD	TOTAL	
Year	n (%)	Rate*	n (%)	Rate*	n (%)	n	Rate*†
2012	56 (74%)	0.78	19 (25%)	0.27	1 (1%)	**76**	**1.05**
2013	39 (59%)	0.57	24 (36%)	0.35	3 (5%)	**66**	**0.91**
2014	42 (62%)	0.62	22 (32%)	0.33	4 (6%)	**68**	**0.95**
2015	41 (59%)	0.63	26 (38%)	0.40	2 (3%)	**69**	**1.02**
2016	40 (62%)	0.63	23 (35%)	0.36	2 (3%)	**65**	**0.99**
2017	43 (57%)	0.69	32 (43%)	0.52	0 (0%)	**75**	**1.21**
2018	37 (73%)	0.61	13 (25%)	0.21	1 (2%)	**51**	**0.82**

EOD, early-onset disease; LOD, late-onset disease; IUD, intra-uterine deaths

* Incidence rate per 1,000 live births

† Excludes IUDs

Live births in the Republic of Ireland (source: www.cso.ie): 2012, 71,674; 2013, 68,954; 2014, 67,295; 2015, 65,909; 2016, 63,841; 2017, 62,053; and 2018, 61,016

Figure 1. **Invasive Group B streptococcal infection by age (in days) and disease syndrome (EOD <7 days and LOD 7-89 days) in Ireland, 2018**

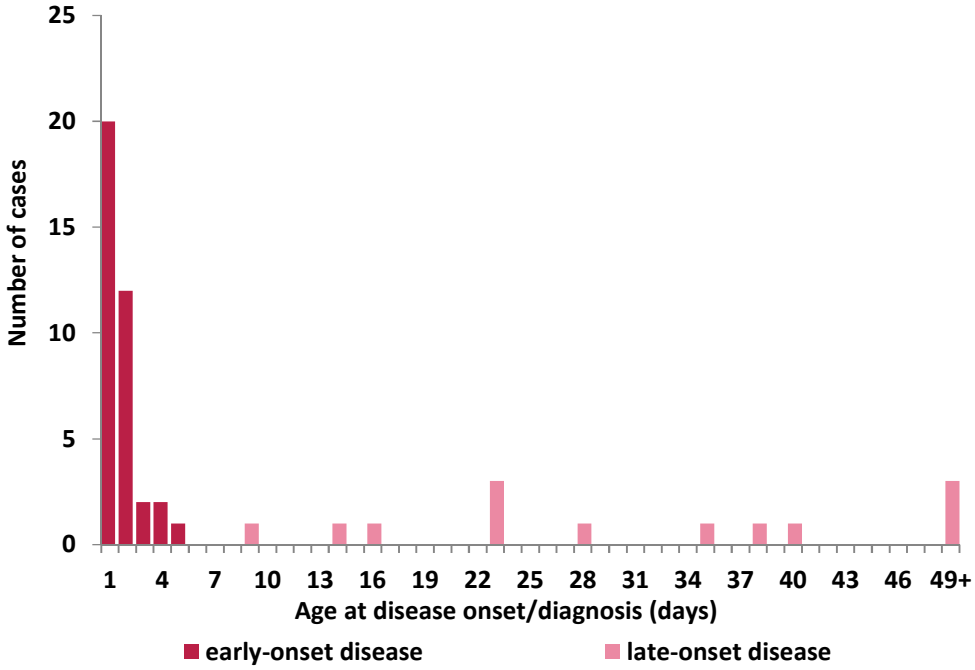
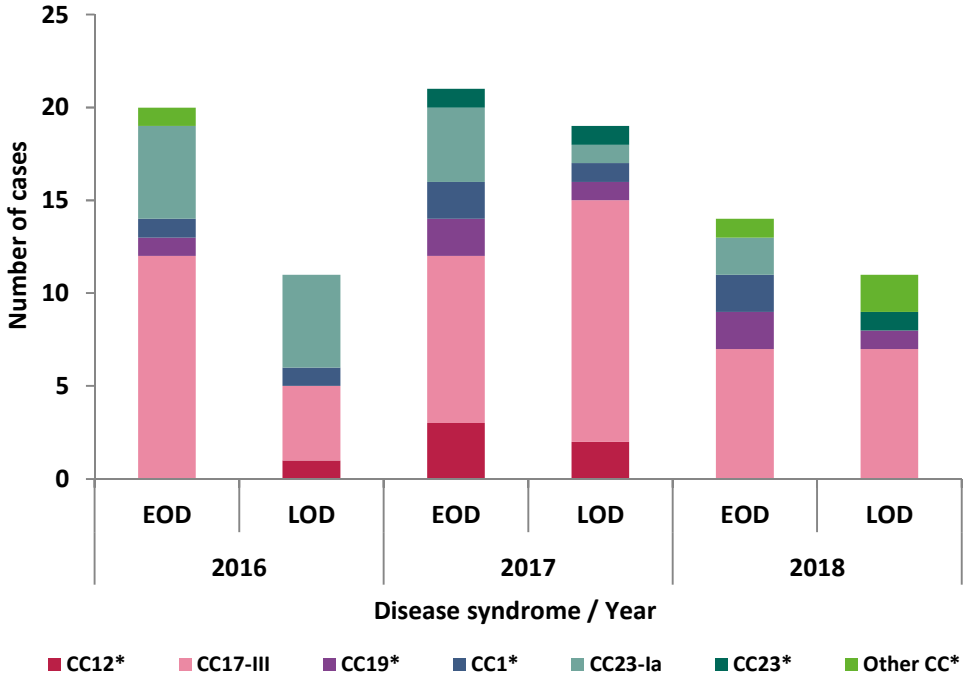


Figure 2. **Distribution of iGBS strains, as determined by MLST and capsular serotyping, by disease syndrome in Ireland, 2016-2018**



*Multiple serotypes associated with these clonal complexes (CC)

Public Health Implications

In addition to neonatal sepsis, GBS is a frequent cause of maternal sepsis and is an emerging cause of sepsis in immunocompromised and elderly populations. The risk of EOD iGBS may be reduced through maternal antimicrobial prophylaxis based on a combination of screening for maternal GBS carriage and identification of maternal risk factors close to the time of delivery. At present, Ireland follows the recommendations of the UK Royal College of Obstetricians and Gynaecologists in relation to prevention of EOD iGBS. Antimicrobial prophylaxis does not reduce the risk of LOD iGBS.

A number of GBS vaccines are at an advanced stage of development, so iGBS infection is likely to become a vaccine-preventable disease in the future. The GBS vaccines in development are targeted against specific GBS serotypes. Thus, data on the distribution of GBS serotypes among iGBS cases in Ireland have important implications on future GBS vaccination strategies.

Further information available on HPSC website

https://www.hpsc.ie/A-Z/Other/GroupBStreptococcalDisease/

Acknowledgements

HPSC would like to thank colleagues in microbiology laboratories and Departments of Public Health for submitting data on iGBS since 2012, and Mary Meehan at IMSRL for provision of GBS typing data.

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