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Annual Epidemiological Report

November 2018

Invasive Streptococcus Group B Infection in Ireland, 2017

Key Facts

- In 2017, 75 cases of invasive Group B streptococcal (iGBS) infections were reported
- 43 cases were associated with early-onset disease (EOD) resulting in a rate of 0.69 cases per 1,000 live births
- 32 cases were associated with late-onset disease (LOD) resulting in a rate of 0.52 cases per 1,000 live births
- While the EOD rate has remained stable over the past four years, the LOD rate increased in 2017 (2016, 0.36)
- 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

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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 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 **12th June 2018**.

Data on GBS capsular serotypes and clonal complexes as determined by multi-locus sequence typing were obtained from 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 2017 (n=62,053) were obtained from the Central Statistics Office: http://www.cso.ie/en/releasesandpublications/ep/p-vsys/vitalstatisticsyearlysummary2017/.

Results

In 2017, there were 75 iGBS cases: EOD = 43; rate = 0.69 per 1,000 live births and LOD = 32; rate = 0.52 (Figure 1 and Table 1). The majority of EOD cases (n=35; 79%) presented within the first 24 hours after birth, and none presented more than four days after birth. Six cases presented with meningitis and there was one reported death.

There was a 15% increase in the number of iGBS cases, in particular due to LOD, in 2017 compared to 2016.

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 51% of iGBS cases in 2017 compared with 49% in 2016. Of those cases with no typing data, almost two-thirds were possibly identified by PCR only and hence no isolate was 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 two years (Figure 2) show that CC17 serotype III strains predominate as a cause of both EOD and LOD, with the increase in LOD cases in 2017 associated with this particular strain. The second most common strain was CC23 serotype Ia and together these strains comprised 75% of the total in 2017 compared to 84% in 2016.

Table 1. Breakdown and rates of iGBS cases, by disease syndrome in Ireland, 2012-2017

	EOD		LOD		TOTAL	
Year	**n (%)**	**Rate***	**n (%)**	**Rate***	**n (%)**	**Rate***
2012	57 (75%)	0.80	19 (25%)	0.27	**76**	**1.06**
2013	42 (64%)	0.61	24 (36%)	0.35	**66**	**0.96**
2014	46 (68%)	0.68	22 (32%)	0.33	**68**	**1.01**
2015	43 (62%)	0.66	26 (38%)	0.40	**69**	**1.05**
2016	42 (65%)	0.66	23 (35%)	0.36	**65**	**1.02**
2017	43 (57%)	0.69	32 (43%)	0.52	**75**	**1.21**

EOD, early-onset disease; LOD, late-onset disease

* Incidence rate per 1,000 live births

Live births in the Republic of Ireland (source: www.cso.ie): 2012, 71,674; 2013, 68,954; 2014, 67,295; 2015, 65,909; 2016, 63,897 and 2017, 62,053

Figure 1. **Invasive Group B streptococcal infection by age (in days) and disease syndrome (EOD <7 days and LOD 7-89 days) in Ireland, 2017**

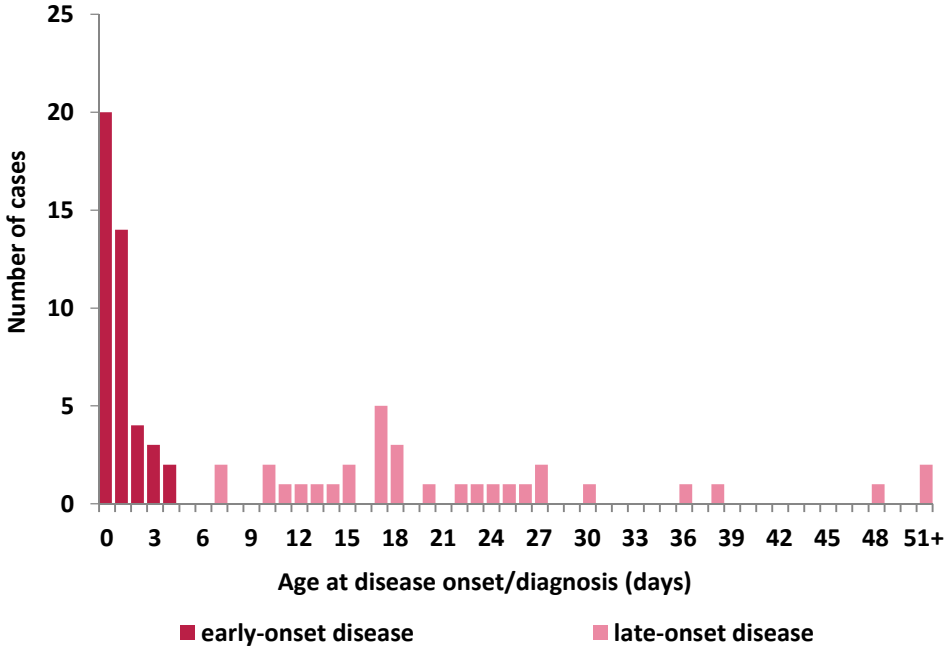
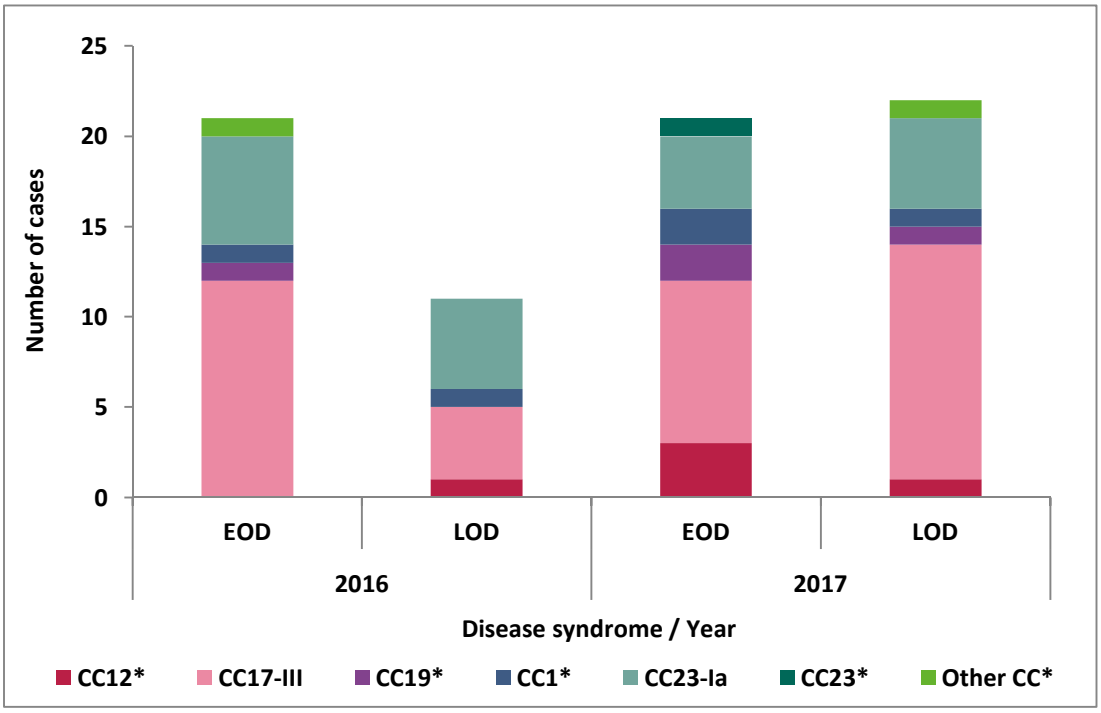


Figure 2. **Distribution of iGBS strains, as determined by MLST and capsular serotyping, by disease syndrome in Ireland, 2016 and 2017**



*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 antibiotic 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. Antibiotic 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

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

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