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## BACKGROUND & OBJECTIVES

Since 2003, intrapartum antimicrobial prophylaxis (IAP) based on a universal screening for GBS colonization at 35-37 weeks' gestation is recommended in Belgium: a decrease of the incidence of GBS early onset disease (EOD) among newborns was observed whereas incidence of GBS late onset disease (LOD) has remained unchanged. The Belgian National Reference Centre (NRC) routinely performs surveillances of GBS invasive strains.

This study refers to GBS neonatal invasive diseases reported to the Belgian NRC from 2013 to mid-2016.

- To provide clinical and some demographic description of GBS EOD and LOD cases
- To report the distribution of capsular types of GBS causing neonatal EOD and LOD.
- To describe some cases' maternal characteristics.

## STUDY POPULATION AND METHODS

In Belgium, GBS invasive infection is not a notifiable disease; but a regular surveillance of diseases and characterization of GBS isolates is performed by the Belgian National Reference Centre (NRC) for *Streptococcus agalactiae* (GBS).

### Population:

- Overall through 2013 to mid-2016, on a voluntary base, laboratories belonging to the national surveillance network sent to the NRC a total of **157 GBS strains** isolated from bloodculture or cerebro-spinal fluid of newborns with invasive disease.
- Laboratories were asked to fill a Case Report Form for each reported case and data were extracted from questionnaires for statistical analysis

### Identification and CPS Typing (types Ia, Ib, II to IX)

- Identification**, upon reception, GBS identification was confirmed (MALDI-TOF) and stored at -80°C.
- Serotyping**, Latex agglutination (Strep B Latex, Statens Serum Institut, Denmark)
- Genotyping**, PCR.
  - Multiplex PCR, Types Ia, Ib, II to VIII, Poyart, C. et al. 2007 J. Clin. Microbiol. 45, 1985-8
  - PCR type IX, Kong, F. et al. 2008 J. Clin. Microbiol. 46, 2745-50.

## RESULTS

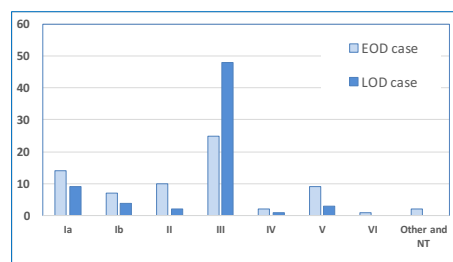
### Epidemiology, clinical and biological characteristics

- A total of 157 GBS neonatal invasive diseases were reported to the NRC GBS and all the corresponding isolates were also sent to the NRC GBS.
- A minimum of data were available for 137 cases. According to age at onset there were 70 (51%) EOD and 67 (48.9%) LOD cases
- Considering the incidence of GBS neonatal infections in Belgium, this collection represented about 40% of GBS invasive diseases.
- The main clinical and biological characteristics were available for 68 cases, see in **Table 1**

	GBS EOD N=28	GBS LOD N=40	P value
Age at onset (day)	0 (0-1)	28 (16.5-45.5)	< 0.001
Birth weight (g)	3,320 (3,047-3,657)	3,080 (1,850-3,455)	0.096
Gestational age (weeks)	39 4/7 (38-40 4/7)	38 (33 1/7-39.6 6/7)	0.009
Birth in twins (%)	3.5	15	NS
Sex M/F	1.33	1.16	NS
Breast feeding (%)	50	57.5	NS
Predominant manifestation at onset			
- Fever	32.5%	87.5%	<0.0001
- Respiratory distress	17.8%		
Type of infection:			
-Bacteremia without focus	32.1%	35%	NS
-Sepsis& sepsis shock	57.1%	45.5%	NS
-Meningitis	10.7%	32.5%	0.039
-Pneumonia	7.1%	5%	
-Other	0%	10%	
Neonatal Intensive care	32.1%	37.5%	NS
Reported mortality, n (%)	1 (3.6)	1 (2.5)	NS

**Table1** : Overview of the main clinical and biological characteristics of GBS EOD and LOD cases in Belgium, through 2013 to mid-2016.

### Distribution of CPS types among GBS isolated from neonatal EOD and LOD



**Figure 1**: Distribution of CPS types of 137 GBS strains isolated from newborns with invasive disease: 70 EOD and 67 LOD. (Y axis: number of cases)

### Maternal characteristics and risk factors of GBS neonatal infections

	GBS EOD N=28	GBS LOD N=40	P value
Age of mother (year)	30.5 (25-36.25)	29 (27-35)	0.59
GBS antenatal screening	85.7% (24/28)	67.5% (27/40)	
GBS negative	33.3% (8/24)	62.9% (17/27)	
GBS positive	41.4% (10/24)	25.9 (7/27)	
Intrapartum antibioprophylaxis (IAP)	32.1% (9/28). (6 GBS +/10)	35% (14/40). (4 GBS +/7)	
Type of delivery			
- Vaginal	78.5%	55%	
- Emergency C-section	21.4%	15%	
- Elective C-section	-	17.5%	
Intrapartum fever	14.2%	7.5%	
GBS Bacteriuria during pregnancy	7.1%	2.5%	

**Table2**: Overview of risk factors for GBS EOD and LOD cases in Belgium, through 2013 to mid-2016.

## DISCUSSION & CONCLUSION

- During a 42 months period, the 157 reported cases of GBS neonatal infection represent approximately 40% of the estimated total number of cases from all over the country. The proportions of reported EOD (51%) and LOD (49%) were closed to national expectations for Belgium.
- Clinical presentation were associated to age at onset.
- CPS type III predominated in neonatal infections ; CPS type Ia, II and V are 2<sup>nd</sup> and 3<sup>rd</sup> rank for EOD.
- Antenatal screening was not totally universal in mothers of cases; predictive values were not worst than expected but only 60% of known positive mothers of EOD case get an IAP.