



# NEONATAL INVASIVE GROUP B STREPTOCOCCAL INFECTIONS IN EUROPE



XVIII LISSSD 2011

Pierrette Melin<sup>1</sup>, Reinhard Berner<sup>2</sup>, Baharak Afshar<sup>3</sup>, Lucilla Baldassarri<sup>4</sup>, Antoaneta Detcheva<sup>5</sup>, Manuel de la Rosa<sup>6</sup>, Androulla Efstratiou<sup>3</sup>, Markus Hufnagel<sup>2</sup>, Mogens Kilian<sup>7</sup>, Mirjam Kunze<sup>2</sup>, Paula Kriz<sup>8</sup>, Graziella Orefici<sup>4</sup>, Laurence Seidel<sup>1</sup>, John Telford<sup>9</sup> on behalf of the DEVANI Consortium Team

1. University Hospital of Liège, Belgium; 2. University of Freiburg, Germany 3. Health Protection Agency, London, United Kingdom; 4. Istituto Superiore di Sanita, Rome, Italy; 5. National Centre for Infectious Diseases, Sofia, Bulgaria; 6. University Hospital of Granada, Spain; 7. Aarhus University, Denmark; 8. National Public Health Institute, Prague, Czech Republic; 9. Novartis Vaccines and Diagnostics, Siena, Italy

## OBJECTIVES

To describe clinical characteristics and capsular type of GBS isolates responsible of invasive infections in infants from Belgium (BE), Bulgaria (BU), Czech-Republic (CZ), Denmark (DK), Germany (DE), Italy (IT), Spain (ES) and United Kingdom (GB), representing one of the main objectives of the **DEVANI (DES**ign of a **V**accine **A**gainst **N**eonatal **I**nfections) project.

## MATERIAL AND METHODS

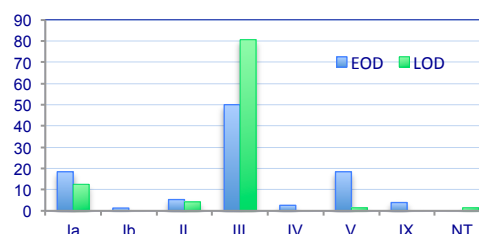
- Surveillance of invasive GBS infections (*GBS positive blood culture or CSF*) in infants was performed from mid-2008 through December 2010 in 8 European countries BE, BU, CZ, DK, DE, IT, ES and GB.
- For each case, a standardized DEVANI case report form was filled.
- Samples from cases were processed using local procedures.
- GBS isolates were characterised in national central labs using a standardised type-specific (Ia, Ib-IX) latex agglutination (SSI, DK) and molecular typing methods.
- Data captured online in a web-database
- Data analysis with SAS Software

## RESULTS

Data on 159 infants with invasive infection were analysed: 82 (51.6%) early onset diseases (EOD), 73 (45.9%) late onset diseases (LOD) and 4(2.5%) not defined.

|                                    | GBS EOD (5.1% death)                | GBS LOD (1.5% death)      | P value            |
|------------------------------------|-------------------------------------|---------------------------|--------------------|
| Age at onset                       | 9.5h (0-96)                         | 42.2 d (6-294)            |                    |
| Birth weight                       | 3.1kg (1-4.9)                       | 2.7kg (0.7-4.1)           | 0.048              |
| Gestational age < 37 weeks         | 37.7 wks (26-42)<br>21.5%           | 36.3 wks (24-43)<br>35.7% | 0.055              |
| Birth in twins                     | 5.1%                                | 15.7%                     | 0.033              |
| Sex M/F                            | 1.16                                | 0.89                      | 0.42               |
| Predominant manifestation at onset | Respiratory distress (38% of cases) | Fever (63% of cases)      | <0.0001<br><0.0001 |
| Type of infection:                 |                                     |                           |                    |
| -Bacteremia without focus          | 26.8%                               | 11%                       |                    |
| -Sepsis & sepsis shock             | 70.7%                               | 75.3%                     |                    |
| -Meningitis                        | 8.5%                                | 30.1%                     | 0.0006             |
| -Pneumonia                         | 13.4%                               | 2.7%                      | 0.017              |
| -Other                             | 2.4%                                | 8.2%                      |                    |

Distribution of capsular serotypes (% phenotype)



Late-prenatal screening cultures were obtained from 51% of cases' mothers: only half of these were positive for GBS and less than 40% of GBS positive mothers received intrapartum antibiotics. Intrapartum fever, rupture of membrane (>18h) and non-elective C-section were more frequent in EO-cases' mothers versus healthy babies' GBS-positive mothers.

## CONCLUSIONS

- Clinical presentations were associated with age at onset of infection.
- Serotype III highly predominates in neonatal infections; serotypes Ia and V are at 2<sup>nd</sup> rank for EOD.
- Prenatal screening was not universal in mothers of cases and neither sensitive as only half of mothers were identified as positive. Furthermore, most of the positive mothers did not received any intrapartum prophylaxis.

Study funded through the European Commission Seventh Framework