What's new in group B streptococcus screening and guidelines?

OLD & NEW TOOLS

Pierre'e Melin
National Reference Centre for Group B Streptococci
Clinical Microbiology, University Hospital of Liège, University of Liège

INTRODUCTION & BURDEN

GROUP 19.06.2014 PM

1

CONTENT

Introduction & burden
- History and historical context of perinatal GBS disease
- Early and contemporary epidemiology
- Pathogenesis and risk factors

Prevention strategies
- Maternal intrapartum chemoprophylaxis
- Evolution of policies, effectiveness and concerns
- Towards a European consensus and revised Belgian guidelines
- Maternal immunization

Screening: old and new tools
- Take home messages

INTRODUCTION & BURDEN

INTRODUCTION & BURDEN

80 % EOD
80-90 % occur before 24 h

Group B streptococcal diseases in neonates

- Since the 1970s, leading cause of life-threatening infections in newborns
- Neonatal illness/death
- Long-term disabilities

Take home messages

Streptococcus agalactiae or GBS

Gram positive cocci
- p-hemolytic
- Encapsulated

10 capsular serotypes (Ia, Ib, II-IX)

1887, Noccard-Mollereau, bovine mastitis
1933, Group B Antigen
1964, severe neonatal sepsis, Eickhoff et al N Eng J med
1970, N°1 in neonatal infections

A. Schuchat, Clin Microb Rev 1999;11:497-513
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**Group B streptococcal diseases in neonates**
- Since the 1970s, leading cause of life-threatening infections in newborns
- Neonatal illness/death
- Long-term disabilities

**GLOBAL health major challenge I**
Also in developing countries

**GBS Neonatal Infections**

<table>
<thead>
<tr>
<th>EOD</th>
<th>LOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidence per 1,000 live births</td>
<td>0.3 – 3</td>
</tr>
<tr>
<td>Onset</td>
<td>0 – 6 days (or 0-72 hrs)</td>
</tr>
<tr>
<td>Mean age at onset</td>
<td>12 hrs</td>
</tr>
<tr>
<td>Transmission</td>
<td>Vertical (intrapartum)</td>
</tr>
<tr>
<td>Mortality</td>
<td>&lt; 15%</td>
</tr>
</tbody>
</table>
| Capsular serotypes | IA (96-19), IB (10), II (10-35%), III (10-35%), IV (7-6%)

**Burden of neonatal GBS early onset diseases in European countries**

<table>
<thead>
<tr>
<th>Location</th>
<th>Incidence per 1,000 live births</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Europe</td>
<td>0.2 - 4</td>
<td>Tekle-Haimanot, Pediatric Infect Dis J 2004</td>
</tr>
<tr>
<td>Western Europe</td>
<td>0.3 - 2</td>
<td></td>
</tr>
<tr>
<td>The Netherlands</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Scandinavia</td>
<td>0.76 - 2</td>
<td></td>
</tr>
<tr>
<td>Southern Europe</td>
<td>0.57 - 2</td>
<td></td>
</tr>
</tbody>
</table>

Data assessing more accurately the true burden are needed

**Distribution (%) of capsular types of GBS isolated from 159 neonates, European DEVANI project (2008-2010)**

- 51.6% neonatal EOD; 45.9 neonatal LOD; 2.5% neonatal D

**Distribution (%) of capsular types of GBS isolated in Belgium from different groups of patients (1998-2007)**

- Carriage rate?
- Ethnicity?
- Sub-reporting?
- Systematic diagnostic approach?
- Virulence?

**GBS EOD vertical transmission**

- GBS colonized mothers (10-35% of pregnant women)
  - 60 - 40%
- Non-colonized newborns
  - 40 - 60%
- Colonized newborns

P.Melin, National reference Centre for GBS, CHU Liège, Université de Liège
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**INTRODUCTION & BURDEN**

- **GBS colonized mothers**
  - 60 - 40%
  - Non-colonized newborns
  - 40 - 60%
  - Colonized newborns

- **Asymptomatic**
  - 96 - 98%

**SCREENING**

- **GBS EOD vertical transmission**
  - 2 - 4% GBS EOD (60% no RF)

**CONCLUSION**

- **GBS colonized mothers**
  - Non-colonized newborns
  - Colonized newborns

- **GBS EOD vertical transmission**
  - 40 - 60%
  - 60 - 40%

- **GBS EOD**
  - Septicemia, pneumonia, meningitis, long term sequelae

**Additional Risk Factors for Early-Onset GBS Disease**

- Obstetric factors:
  - Prolonged rupture of membranes,
  - Preterm delivery,
  - Intrapartum fever,
  - GBS bacteriuria
  - Previous infant with GBS disease
  - Immunologic:
    - Low specific IgG to GBS capsular polysaccharide

**Stages in the pathogenesis of GBS neonatal EOD**: Bacterial & individual factors

- **GBS EOD**
  - Septicemia, pneumonia, meningitis, long term sequelae

**GUIDELINES FOR PREVENTION OF GBS PERINATAL DISEASE**

- Universal antenatal screening-based strategy
- Risk-based strategy
- No guideline
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**Stages in the pathogenesis of GBS neonatal EOD: Bacterial & individual factors**

- Colonization: adhesion to epithelial cells (virulence factors: pili, scpB, ...)
- Preventing transmission

---

**Prevention of perinatal GBS EOD**

- Intrapartum antibiotics
  - Highly effective in preventing GBS EOD in women at risk of transmitting GBS to their newborns (≥ 4 h) (clinical trials in late 80s)

---

**Prevention of perinatal GBS EOD**

- Screening-based strategy

  INTRAPARTUM ANTIMICROBIAL PROPHYLAXIS

  - Main goal:
    - To prevent 70 to 80% of GBS EO cases
    - Secondary:
      - To reduce peripartum maternal morbidity

---

**Impact of prevention practices Early- and Late-onset GBS Diseases in the 1990s, U.S.**

- Group B Streptococcus Association formed
- 1st ACOS & AAP statements
- CDC draft guidelines published
- Consensus guidelines
- Screening
- Risk-based
- Case per 1000 live births

---

**Why is Screening more protective than the risk-based approach?**


  - Broader coverage of « at-risk » population
  - Captures colonized women without obstetric RF
  - High level of compliance with recommendations
  - Enhanced compliance with risk-based approach cannot prevent as many cases as universal screening
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**Intrapartum prophylaxis**

For ALL

**Vagino-rectal GBS screening culture** at 35-37 weeks of gestation

For ALL pregnant women

- GBS Neg
  - Not done, incomplete or unknown GBS result
  - [Facultative] Intrapartum rapid GBS test

- GBS POS
  - [Facultative] Intrapartum rapid GBS test
  - [If YES] Intrapartum antibio prophylaxis indicated

**Intrapartum prophylaxis NOT indicated**

**European strategies for prevention of GBS EOD**

- **Intrapartum antibio prophylaxis recommended**
  - Screening-based strategy
    - France, 2001
    - Belgium, 2003, revision ongoing 2013
    - Germany, 1996, revised 2008
    - Switzerland, 2007
  - Risk-based strategy
    - UK, the Netherlands, Denmark
  - No guidelines
    - Bulgaria, ...

**Universal screening-based strategy for prevention of GBS perinatal disease**

- Vagino-rectal GBS screening culture at 35-37 weeks of gestation
  - For ALL pregnant women
  - Unless patient had symptoms related with GBS invasive disease or delivery occurs < 37 weeks gestation

**Intrapartum IV Antibio-Prophylaxis**

(CDC 2010, Belgian SHC 2003)

- **Penicillin G**
  - 5 millions U IV initial dose, then 2.5 to 3 millions U IV every 4 hours until delivery.

- **Ampicilline**
  - 2 g IV initial dose, then 1 g IV every 4 h until delivery.
  - Acceptable: alternative, less broader spectrum, potential selection of R bacteria

- **If penicillin allergy**
  - Patients at low risk for anaphylaxis
    - Cefazolin, 2 g IV initial dose, then 1 g IV every 8 h until delivery.
  - Patients at high risk for anaphylaxis
    - Clindamycin, 900 mg IV every 8 hours until delivery.

- If GBS resistant to clindamycin: use vancomycin

P.Melin, National reference Centre for GBS, CHU Liège, Université de Liège
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

Concerns : Clinically relevant antimicrobial resistance

- Increase of resistance to erythromycin and clindamycin
- Reduced susceptibility to penicillin
  - Very few « not S » isolates recently characterized in Japan
  - Mutation in pbp genes, especially pbp2x
  - MIC= 0.25 -1 mg/L
  - No clinical impact ?
- Very few in the U.S., Canada
- All labs should send to reference lab
  - Any « non-S » isolate for confirmation
  - All invasive isolates for resistance surveillance

Erythromycin and clindamycin resistance among clinical isolates of GBS (Belgian data)

- Denmark 4%
- Spain 29%
- Others 15-35% or even more

Resistance to erythromycin :
Constitutive + Inducible R (≤ 75% CR / 25% IR)
⇒ D-Test recommended

Concerns : Clinically relevant antimicrobial resistance

- Increase of resistance to erythromycin and clindamycin

Other concerns
Potential adverse / unintended consequences of prophylaxis

- Allergies
  - Anaphylaxis occurs but extremely rare
- Changes in incidence or resistance of other pathogens causing EOD
  - Data are complex ...
  - But most studies: stable rates of « other » sepsis
- Changes in GBS antimicrobial resistance

Concerns about potential adverse / unintended consequences of prophylaxis

- Management of neonates
  - Increase of unnecessary evaluation
  - Increase of unnecessary antimicrobial treatments
  - Algorithm for secondary prevention of EOD among newborns
  - Symptoms; maternal chorioamnionitis; prophylaxis; gestational age; time of rupture of membrane
  - CDC revised guidelines 2010
  - DEVANI project, unpublished data 2011

Remaining burden of GBS EOD
Missed opportunities

In spite of universal screening prevention strategy
In spite the great progress
Cases still occur

- Among remaining cases of EOD
  - Some may be preventable cases
  - Missed opportunities for (appropriate) IAP
  - False negative screening

CDC revised guidelines, 2010
DEVANI project, unpublished data 2011
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**INTRODUCTION & BURDEN**

**PREVENTION**

**SCREENING**

**CONCLUSION**

---

**Stages in the pathogenesis of GBS neonatal EOD: Bacterial & individual factors**

- **Colonization**: adhesion to epithelial cells
- **Different virulence factors** (pili, scpB, ...)
- **Ascendant transmission** (amnionitis)
- **β-hemolysin**, **invasins** (pneumonia)
- **Resistance to phagocytose**
  - **Capsule**
  - **C5a peptidase**
- **Phagocytes cells**, **Antibodies**, **Complement**

- **GBS vaccine**: still expected

---

**Background**

- Correlate between maternal low level off CPS type Ab at time of delivery and risk for development of GBS EOD
  - **Baker C et Kasper D, 1976, NEJM**

- **Vaccine for pregnant women**: Likely the most effective, sustainable and cost effective approach

---

**GBS Vaccines, since the 1980s**

- **Challenges**
  - **Capsular polysaccharide vaccines**
  - 10 serotypes
  - Different distributions
    - EOD, LOD, invasives infections in adults
    - Geographically and along time
  - **Conjugated vaccines**
  - **Multivalent vaccines** Ia, Ib, (II), III and V
  - **Clinical studies** (phases 1, 2 and 3)
  - Immunogenicity
  - Safety
  - Efficacy: scheduled/ongoing

- **Reverse vaccinology approach**
  - Knowledge of complete GBS genome

---

**GBS Vaccines**

- **GBS Protein-based Vaccine**
  - **Ag = Surface proteins**
    - Cross protection against different serotypes
    - Better immunogenicity
    - Humoral response T-cell dependent
    - Long lasting immunity

---

**Protein-based Vaccines**

<table>
<thead>
<tr>
<th>Protein</th>
<th>Protective Ab</th>
<th>associated serotypes (in mouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha-like proteins</td>
<td>Yes</td>
<td>Ia, Ib et II</td>
</tr>
<tr>
<td>Alp1</td>
<td></td>
<td>Ia</td>
</tr>
<tr>
<td>Rib</td>
<td>Yes</td>
<td>III</td>
</tr>
<tr>
<td>Alp2</td>
<td>Yes</td>
<td>V, VIII</td>
</tr>
<tr>
<td>Alp3</td>
<td>Yes</td>
<td>V, VIII</td>
</tr>
<tr>
<td>Beta C protein</td>
<td>Yes</td>
<td>Ib</td>
</tr>
<tr>
<td>C5a peptidase</td>
<td>Yes</td>
<td>All</td>
</tr>
<tr>
<td>Sip (1999)</td>
<td>Yes</td>
<td>All</td>
</tr>
<tr>
<td>BPS</td>
<td>Yes</td>
<td>All</td>
</tr>
</tbody>
</table>

- **Sip = Surface Immunogenic Protein (Brodeur, Martin, Quebec)**
- **BPS = Groupe B Protective surface Protein**

---

**Protein-based Vaccines**

- **Reverse vaccinology approach**
  - Knowledge of complete GBS genome
- **Comparison of genomes from 8 different GBS serotypes**
  - 312 surface proteins were cloned
- **Provide a high protective humoral response in mouse**
  - Sip and 3 others
  - The 3 other proteins = "pilus like structures"
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**GBS « pilus like structure »**

- Highly immunogenic proteins
- Elicit protective and functional antibodies
- Virulence factor
  - Adhesion
  - Transcytose through cells

**WHEN?**

**WHY?**

**HOW?**

**WHICH?**

**IMPACT?**

Specimen collection
 Processing
 Culture or non culture approach?

**SCREENING FOR GBS COLONIZATION**

**Antenatal GBS culture-based screening**

Goal of GBS screening
To predict GBS vaginal (rectal) colonization at the time of delivery

- Critical factors influencing accuracy
  - Swabbed anatomic sites (distal vagina + rectum)
  - Timing of sampling
  - Screening methods
    - Culture
    - Procedure
    - Media
    - Non-culture

**Optimal time for screening**

35-37 weeks gestation

Culture-based screening done 1 to 5 or > 6 weeks before delivery (Faucy, 860 cases; Melin, 331 cases)

Not 100 % as colonization is dynamic

Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

INTRODUCTION & BURDEN

PREVENTION

SCREENING

Optimal time for culture-based screening
35-37 weeks gestation

Culture-based screening done 1 to 5 or > 6 weeks before delivery (Yancey, 860 cases; Melin, 532 cases)

Melin, 13-16% GBS Pos
PPV= 56%
NPV= 95%
or 5% False negative or 30% of GBS pos in labor not detected with antenatal screening!


From direct plating on blood agar
Evolution of culture methods

Use of selective enrichment broth (Lim broth, e.g.)

• To maximize the isolation of GBS
• To avoid overgrowth of other organisms

Use of differential agar media
Recommended by some European guidelines (+ CDC 2010)

GRANADA (M.de la Rosa, J.CM) StrepTo B Select Brilliance StrepB


Which agar or which combination?

Blood agar

Workload - costs - extra-testing - non β-hemolytic GBS detection to be considered

Antenatal culture-based screening:
Limiting factors

• Positive and negative predictive values
• False-negative results
• Failure of GBS culture (reduced viability during transport, oral ATB, feminine hygiene) or new acquisition
• Up to 1/3 of GBS positive women at time of delivery

Need for more accurate predictor of intrapartum GBS vaginal colonization

P.Melin, National reference Centre for GBS, CHU Liège, Université de Liège
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**Crucial conditions to optimize SCREENING**

- **WHEN**: 35-37 weeks
- **WHO**: ALL the pregnant women
- **Specimen**: Vaginal + rectal swab(s)
- **Collection**: WITHOUT speculum
- **Transport**: Transport/collection device/condition (non nutritive medium: Amies/Stuart or Granada like tube) (type of swab) (Length and T°)
- **Request form**: To specify prenatal GBS screening
- **Laboratory procedure**: Crucial conditions to optimize

**Transport-collection system & transport-storage condition**

- **Recommendations CDC, USA (2010)**
  - Non nutritive media: Amies or Stuart without charcoal
  - Storage at 4°C or RT 1-4 days
  - Or Granada like tubes ??
- **Recommendations CSS, Belgium (2003)**
  - Non nutritive media: Amies or Stuart without charcoal
  - Storage maximum 48h at 4°C

**Specimen storage in transport medium and detection of group B streptococci by culture.**


Viability of GBS NOT fully preserved by storage of vaginorectal swabs in Amies transport medium, mainly if not stored under refrigeration.

**Crucial conditions to optimize SCREENING**

- **Use of a selective enrichment Lim broth (BD, Copan, bioMérieux)**
  - At RT° up to 35°C
  - Between 4-8°C
- **Use of a selective enrichment Granada medium (bioMérieux)**
  - At RT° up to 35°C
  - Between 4-8°C
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

Results:
Recovery of GBS in Lim BD at 4°C, RT and 35°C

![Graph showing recovery of GBS at different temperatures](image)

**Important amplification**
- **4°C**
- **RT**
- **35°C**

**Continuous decrease**

**Remark**
- If use of Amies or Stuart medium (non nutritive medium)
  - To be processed as soon as possible within 24 hours (max 48 h)

Crucial conditions to optimize SCREENING

**Transport-collection system & transport-storage condition**

<table>
<thead>
<tr>
<th>Results (2012, NRC GBS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of a selective enrichment Lim broth (BD, Copan, bioMérieux)</td>
</tr>
<tr>
<td>At RT° up to 35°C</td>
</tr>
<tr>
<td>Rapid important amplification of GBS initial inoculum</td>
</tr>
<tr>
<td>Sustained viability &gt; 4 days</td>
</tr>
<tr>
<td>Between 4-4°C</td>
</tr>
<tr>
<td>≥ 24 hours, continuous</td>
</tr>
<tr>
<td>Decrease of life GBS</td>
</tr>
</tbody>
</table>

| Reuse of a selective enrichment Granada medium (bioMérieux) |
| At RT° up to 35°C |
| Rapid important amplification of GBS initial inoculum |
| Sustained viability at RT° |
| Abrupt lost of viability at 35°C |
| ≤ 48-72h |
| Between 4-4°C |
| ≥ 24 hours, continuous |
| Decrease of life GBS |

Transport conditions to be recommended for optimizing GBS antenatal screening

Belgian Health Superior Council, 2013

- **Transport system**
  - Use of a selective enrichment Lim broth with a flocked swab (BD, Copan, bioMérieux, i.e.)
- **Transport and storage condition**
  - At RT° (up to 35°C)
  - As soon as possible
  - Viability sustained at least 4 days
- **Remark**
  - Use of Amies or Stuart medium (non nutritive medium)
  - To be processed as soon as possible within 24 hours (max 48 h)

Antenatal culture-based screening combined with illumigene® Group B Streptococcus assay

A loop mediated isothermal amplification (LAMP) assay by Meridian Bioscience, Inc

- Broth enrichment followed by illumigene® GBS
- **Speed and accuracy**

Evaluation of the illumigene® GBS assay for antenatal screening from Lim broth

- Speed and “accuracy”
- Good comparison to reference culture method
- “Easy” to perform BUT not as easy as claimed and training very important

- 95% sensitivity and 100% specificity
- Identification of an 0.8% additional GBS positive specimen
- Overall cost and logistic to be considered

Alternative to GBS antenatal screening: intrapartum screening Theranostic approach

**Turnaround time**

<table>
<thead>
<tr>
<th>collect specimen at admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimal management of patient</td>
</tr>
<tr>
<td>Specimen Analysis “POCT”?</td>
</tr>
</tbody>
</table>

**Results**

30-45 minutes, 24 hra/7 d, robust

Bonn; et al. 1999, Pediatrics, Vol 183 (6)
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

Intrapartum screening theranostic approach: expected advantages
- Inclusion of women without prenatal screening/care
- Identification of women with change of GBS status after 35-37 wks gestation
- Increased accuracy of vaginal GBS colonization status at time of labor & delivery

Real Time PCR for intrapartum screening
- Advance in PCR techniques & development of platforms
  - BD GeneOhm™ Strep B Assay (+/- 1 hr) (in laboratory)
  - Xpert GBS, Cepheid (35-45 min) (can be performed as a POCT)

Xpert GBS for intrapartum screening
Diagnostic Accuracy of a Rapid Real-Time Polymerase Chain Reaction Assay for Universal Intrapartum Group B Streptococcus Screening
Napous El Helali, Jean-Claude Nguyen, Aicha Ly, Yves Giovangrandi and Ludovic Trinquart
Clinical Infectious Diseases 2009;49:417–23
- 968 Pregnant women
- Intrapartum Xpert GBS, Cepheid (performed in lab) vs intrapartum culture
  - antenatal culture (French recom.)
  - vaginal swabs/CNA-BA
    - Sensitivity: 98.6%
    - Specificity: 99.8%
    - PPV: 97.8%
    - NPV: 99.7%
    - Positive Predictive Value: 58.3%
    - Negative Predictive Value: 92.1%

Xpert GBS for intrapartum screening
Cost and effectiveness of intrapartum group B streptococcus polymerase chain reaction screening for term deliveries.
El Helali N, Giovangrandi Y, Guyot K, Chevet K, Gutmann L, Durand-Zaleski I
Obstet Gynecol 2012 Apr;119 (4):822-9
- 2009 Antenatal screening
  - 11.7% GBS POS
- 2010 Xpert GBS intrapartum screening
  - Performed by midwives as a POCT !!
  - 16.7% GBS POS
  - Less GBS EOD & less severe
  - Cost neutral per delivery

Xpert GBS for intrapartum screening
Real-Time PCR Assay Provides Reliable Assessment of Intrapartum Carriage of Group B Streptococcus
Michelle J. Alfa, Shadi Sepehri, Pat De Gagne, Michael Helawa, Gunwat Sandhu, and Godfrey K. M. Harding
JCM, Sept. 2010, p. 3095–3099
- 205 Pregnant women
- Intrapartum Xpert GBS, Cepheid
  - vs intrapartum culture (with Lim enrichment step)
    - 24.5% GBS pos
      - Sensitivity: 91.7%
      - Specificity: 99.3%
      - PPV: 97.3%
      - NPV: 97.3%
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

Real-time PCR, very promising, BUT ...

- Rapid, robust & accurate technology
- Still an expensive technology (specific equipment)
  - Need for more cost-effectiveness clinical study
- Logistic
  - 24 hours 7 days
  - In the lab?
  - In the obstetrical department as a POCT?
- In combination with prenatal screening strategy?
  - CDC 2016: for women with premature delivery or no prenatal care
- Drawback: no antimicrobial result
  - In the future detection of R genes, but mixed microbiota!

Revised Belgian guidelines

(Superior Health Council, expected autumn 2014)

(Neonatologists, obstetricians, microbiologists, midwives)

Main recommendations

- Universal antenatal screening at 35-37 wks gestation
  - Lim broth as transport media
  - Selective differential culture media
  - Determination of clindamycin susceptibility (if IgE mediated penicillin allergy)
- Universal screening at time of delivery can be used
  - IF POCT with high PPV and NPV
  - Real time PCR or other methods
  - TAT < 1 hour
  - In case of known IgE mediated penicillin allergic women
  - Determination of clindamycin susceptibility for GBS positive screening
- IAP for all GBS positive pregnant women
  - documented by antenatal testing (or intrapartum testing if performed)

Prevention strategy for GBS EOD

TOWARDS A EUROPEAN CONSENSUS ?

Conference held in June 2013, Florence, Italy

A European working party: Neonatologists, obstetricians, microbiologists

Representing countries
- with screening-based IAP
- with risk-based IAP strategies
- or nothing

Towards « European Consensus »

Decision taken by the European working party

Main recommendations

- Universal screening at time of delivery
  - POCT with high PPV and NPV
  - Real time PCR or other methods
  - TAT < 1 hour
- IAP for all GBS positive pregnant women
  - documented by intrapartum testing (or late pregnancy test if performed)
- Late pregnancy prenatal screening in known penicillin allergic women
  - Determination of clindamycin susceptibility if GBS positive screening

Towards « European Consensus »

Decision taken by the European working party

Main recommendations

- Provisionally, for countries with antenatal screening
  - Improved antenatal screening method
  - Use of Lim broth for transportation
  - Use of selective differential media
Prevention of perinatal group B streptococcus infection: situation and new laboratory strategies

**CONCLUSION**

**Take home messages**

In Europe, as globally

- EOD and LOD, a global health concern
- IAP efficient for prevention of EOD
  - Best strategy still a matter of debate
  - Not 100% efficient
  - No effect on LOD
- IAP not widely recommended
- New tools to improve GBS detection
- Toward a European consensus
- GBS vaccine eagerly expected
  - Appears to be within reach

**Summary**

"Screening" Prevention strategies

- Culture-based GBS prenatal screening
  - To optimize critical factors
  - Improved by selective differential agars
  - False +/False -!
  - Expected improvement from transport system
- Rapid intrapartum screening
  - Real time PCR
  - Yes but costs, logistic,...
  - Need for more clinical and cost effectiveness trials

Thank you!