

"The GBS"

PRO ***SCREENING***

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"Evidence-based"

Prevention of perinatal Group B streptococcal infections

Guidelines from Belgian Council of Hygiene- July 2003

http://www.health.fgov.be/CSH_HGR

General Recommendations & Specific suggestions

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Intrapartum antimicrobial prophylaxis-IAP

Universal prenatal screening at 35-37 weeks gestation

Risk-based approach reserved for women with unknown GBS status at time of labor.



Why IAP ?

Why a Screening-based approach ?

- Risks for GBS EOD
- Goals of IAP
- Effectiveness
- Belgian choice
- Concerns about use of prophylaxis
- Concerns about number of candidates for IAP
- Cost-effective analysis

GBS VERTICAL TRANSMISSION

GBS colonized mothers

60 - 40 %

Non-colonized newborns

40 - 60 %

Colonized newborns

Risk factors

2 - 4 %
GBS EOD



96 - 98 %
Asymptomatic

sepsis
pneumonia
meningitis
long term
sequelae



GBS maternal colonization

Risk factor for early-onset disease
(EOD):

vaginal GBS colonization at delivery

- GBS carriers
 - 10 - 30 % of women
 - Clinical signs not predictive
 - Dynamic condition
 - Prenatal cultures late in pregnancy can predict delivery status

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

No difference in occurrence either in GBS Positive or Negative women, except intrapartum fever

*Lorquet S., Melin P. & al.
J Gynecol Obstet Biol Reprod 2005*



GBS EOD - Belgian data

- Incidence
 - 1985: 3/1000 live births
 - 1990: 3 cases + 4 likely cases/1000 live births
 - 1999, estimation : 2/1000 live births
- Meningitis : 10 %
- Mortality > 14 %
- **60 % EOD (130 cases) : WITHOUT any maternal/obstetric risk factor**
- Prenatal screening
 - Recto-vaginal cultures : 13-25 % GBS Positive

P. Melin, 2001 - Reference laboratory for GBS.

Prevention of perinatal GBS EOD

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

INTRAPARTUM ANTIMICROBIAL PROPHYLAXIS (IAP)

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

How best to
identify women
at risk ?



CDC 1996 recommendations

« IAP »

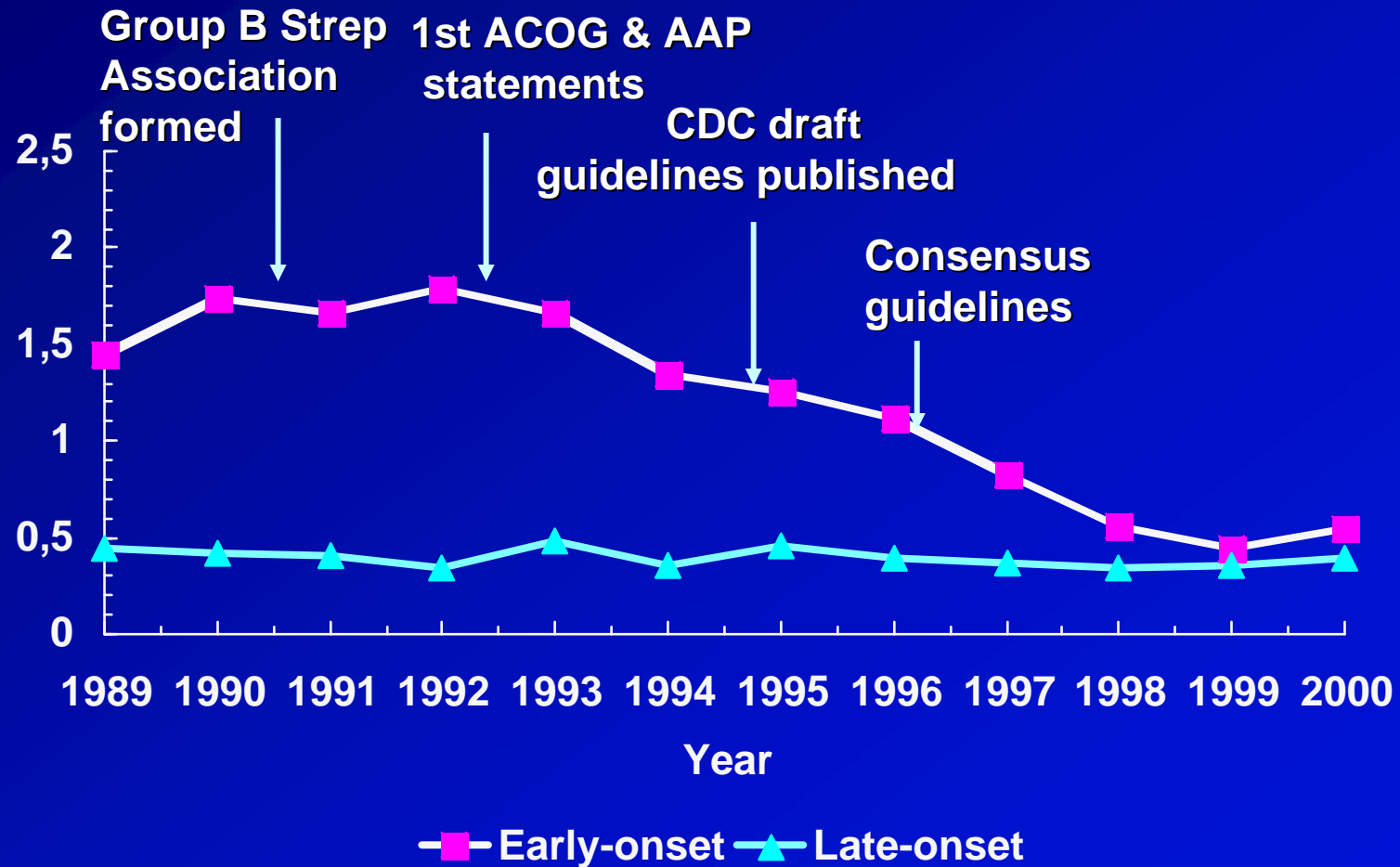
35-37 wks Screening-based strategy

Or

Risk factors-based strategy

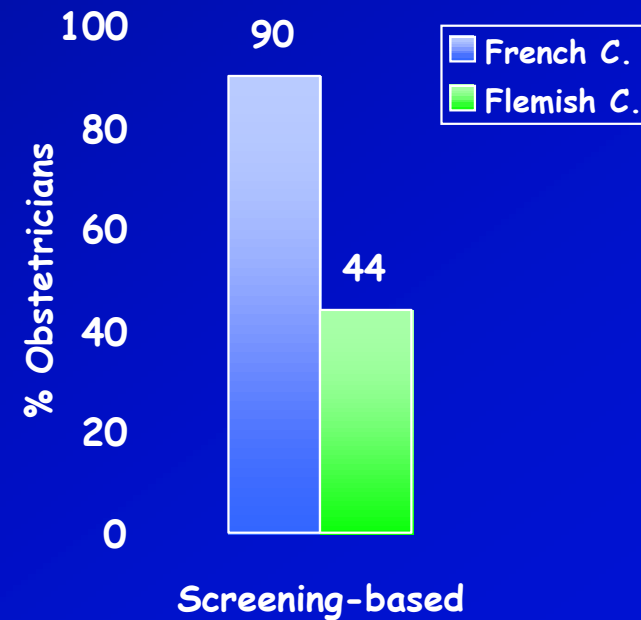
Impact of prevention practices

Rate of Early- and Late-onset GBS Disease in the 1990s, U.S.



S. Schrag, New Engl J Med 2000

Screening for GBS or risk-factors ?



P.Melin, 40th ICAAC, 2000

L.Mahieu, 2000, J Obst Gyn;5:460-4

Effectiveness of both CDC 1996 approaches

Schrag S. et al. N Engl J Med 2002; 347:233-9

"RF" easier and cheaper than "screening" BUT

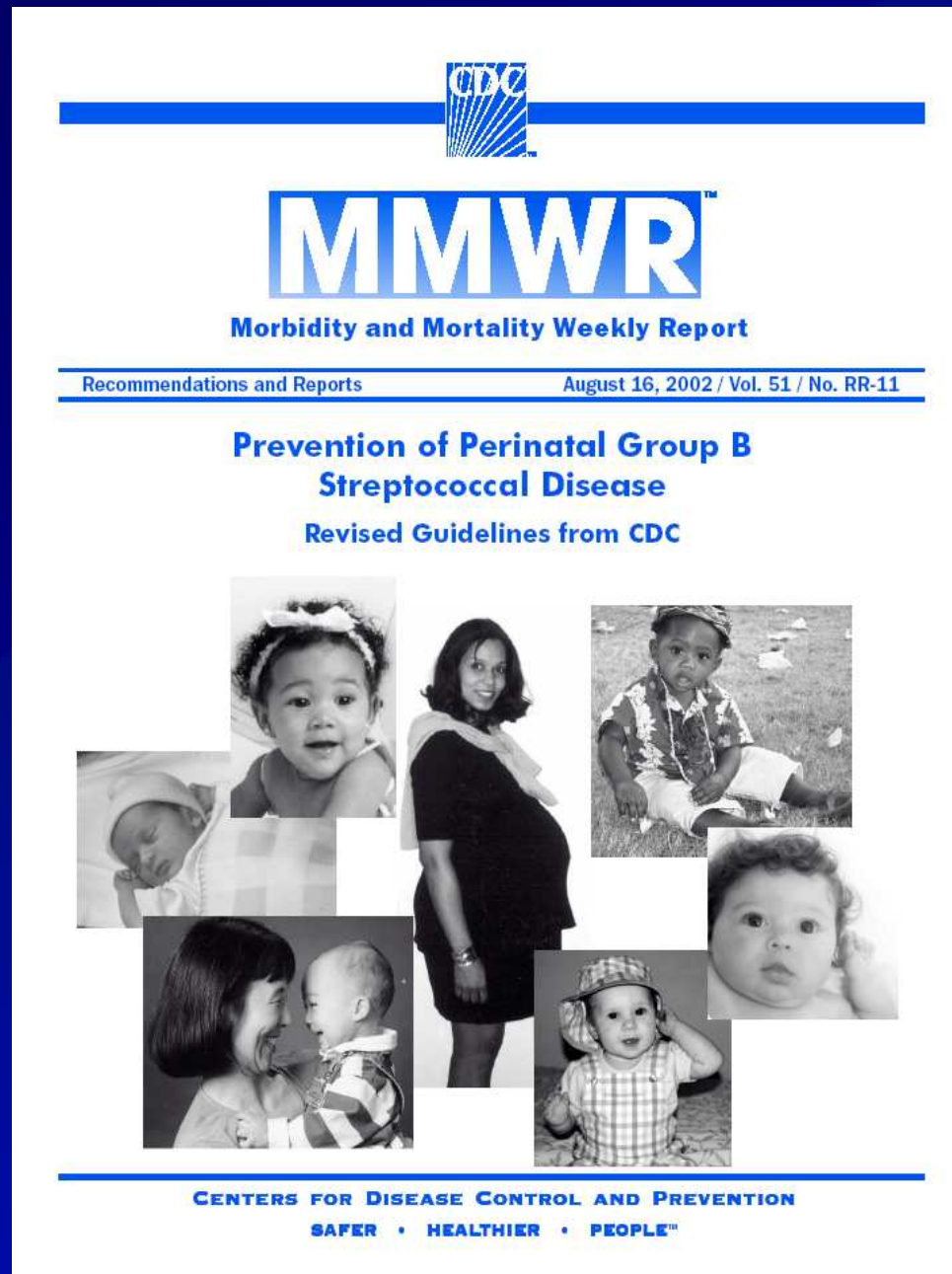
- Population-based surveillance study, U.S.
 - 312 GBS EOD ; > 600 000 live births
 - AUDIT (5144 files): « IAP given when mandatory »
 - 52 % of all deliveries had screening
 - IAP given more often if « GBS Positive screening » than if presence of ≥ 1 RF

"Screening" > 50 % more effective than "RF"

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



CDC

The Recommendations

MMWR, Vol 51
(RR-11) August 2002

*Universal prenatal
screening
& RF reserved for
unknown GBS culture
results*

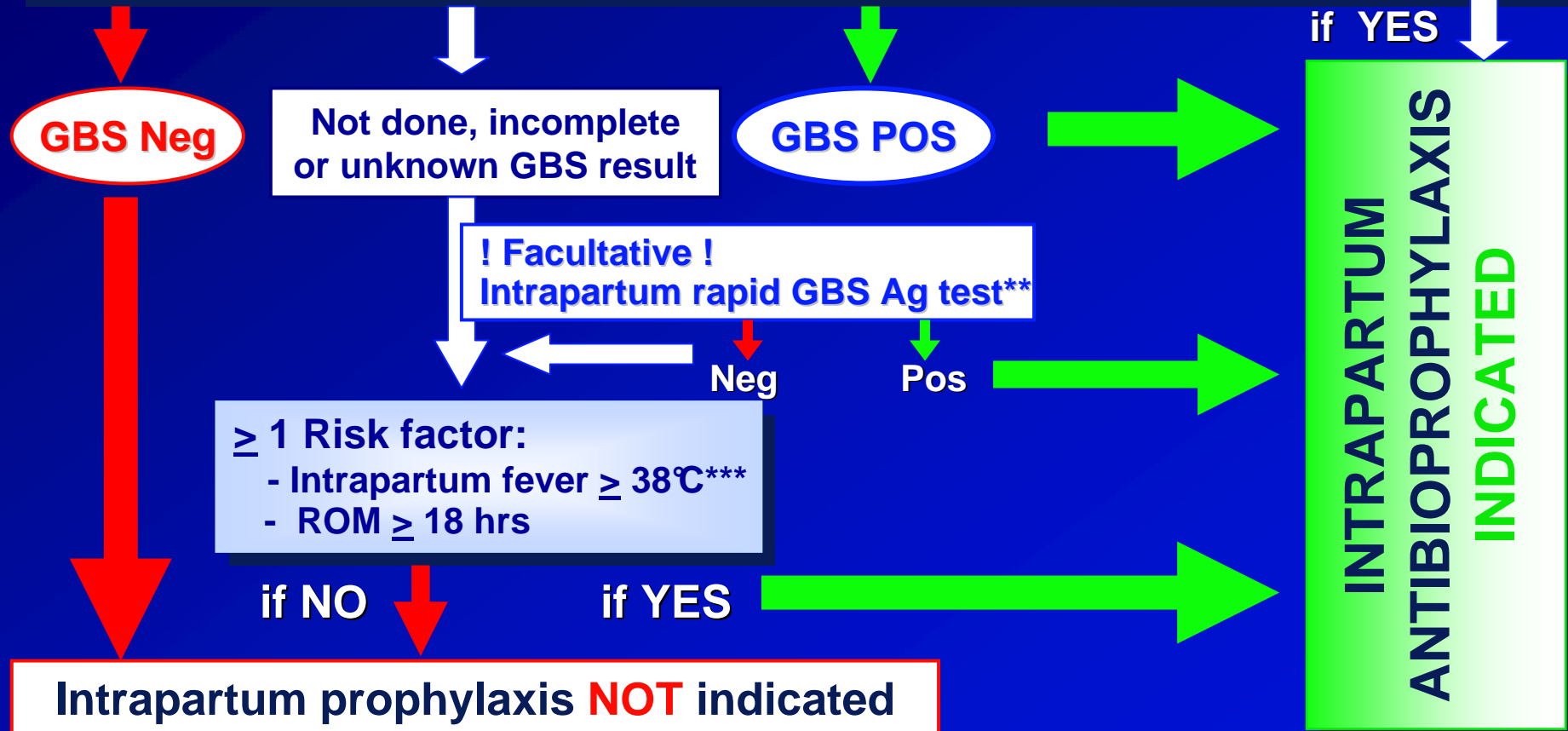
Endorsed by AAP
and by ACOG
in 2002

Screening-based strategy for prevention of GBS perinatal disease (Belgian CH, 2003)

Recto-vaginal GBS screening culture at 35-37 weeks of gestation

For ALL pregnant women

Unless patient had a previous infant with GBS invasive disease or GBS bacteriuria during current pregnancy or delivery occurs < 37 weeks' gestation *



Prenatal GBS screening : Laboratory procedure *(Belgian CH, 2003)*

Minimum:

35-37 wks V+R



Selective enrichment broth (eg. LIM)

Overnight, 35-37°C



Sub-culture onto "Granada" agar

Overnight, 35-37°C anaerobically



Presence
of orange
colonies
= GBS



Absence of
orange
colonies

POSITIVE screening

Negative screening

What to do in case of Positive GBS screening ?

- Send results to requesting doctor *and a copy to expected site for delivery*
- DO NOT treat during pregnancy if asymptomatic
 - (*! To treat if GBS bacteriuria !*)
- To schedule IAP

Feasibility in Belgium

- **Screening**
 - Follow-up visit already scheduled around 35-37 wks gestation
 - Accessibility to laboratories
- **IAP** (*intra-venous*)
 - Most of deliveries occur at hospital

Concerns about potential adverse / unintended consequences of prophylaxis

- **Allergies**
 - Anaphylaxis occurs but rarely
- **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 profile**

Concerns about potential adverse / unintended consequences of prophylaxis

- **Management of neonates**
 - **Increase of unnecessary evaluation**
 - **Increase of unnecessary antimicrobial treatments**

Management of neonates at risk for GBS EOD

Rem.: 95 % of GBS EOD are symptomatic < 24 h of live

Neonates born to women who received IAP

Symptomatic NN / asymptomatic NN

At low/at high risk



To minimize unnecessary evaluation and antimicrobial treatment

Concerns about the number of women who are given IAP

Prevalence of factors inducing the decision of IAP
(CHR Liege, 2002, 1350 consecutive deliveries)

FACTORS	« SREENING » OPTION	« RISK FACTORS » OPTION
Prematurity		17 %
GBS bacteriuria		1.2 %
GBS Positive	15-25 %	/
ROM \geq 18 h	/	19 %
T° \geq 38°C	/	1.6 %

Lorquet, Melin, Foidart, J Gynecol Obstet Biol Reprod 2005

Perinatal GBS disease burden

- Neonatal illness / death,
- Long-term disability
- Maternal morbidity

Neonatal direct costs plus indirect costs.

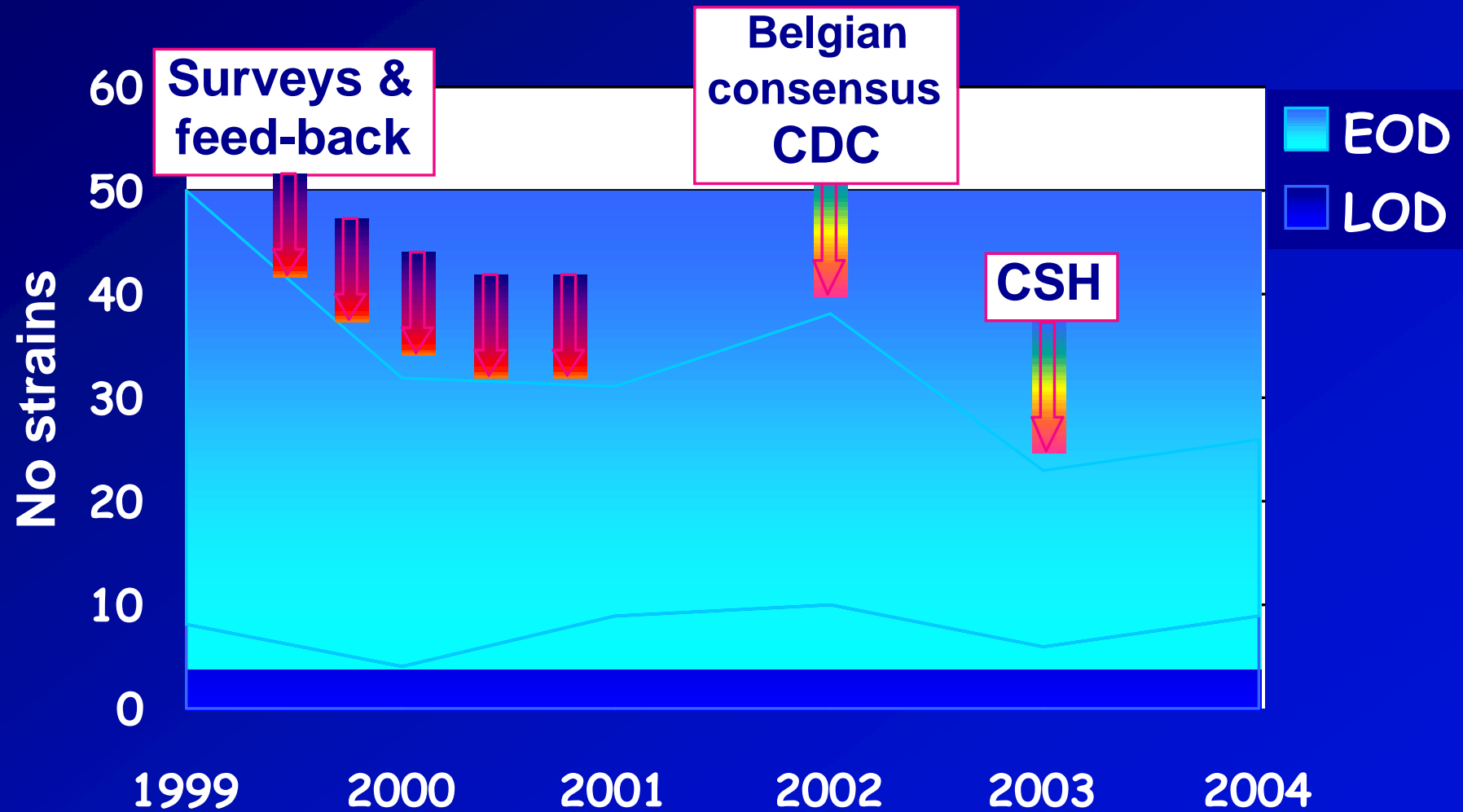
Rough cost-effective « analysis »

	Screening option	RF options
Criteria for IAP	GBS +	PRM \geq 18 h, T° \geq 38°C
Patients treated/1000 births	+/- 250	+/- 250
GBS cases prevented (%)	75 %	<< 50 %
Patients treated/prevented case	111	166
Lab cost /prevented case	2,200 €	/
IAP cost /prevented case	N € x 111	N € x 166
Min.cost /case (8 d, ICU/NN)	+/- 3,300 €	+/- 3,300 €
Indirect cost, sequelae, etc	not estimated*	not estimated*

Hypothesis: GBS prevalence in women: 20% ; Natural incidence of GBS EOD: 3/1000 ; prevalence of RF as in our study in Liege in 2002

*** If additional cost/case > 4500 €, Screening is cost effective versus RF**

Strains isolated from neonatal EOD or LOD and sent to the Belgian ref. Lab. for GBS



Conclusions & perspectives

Prevention of GBS perinatal Diseases PRO-SCREENING

Currently the best choice but NOT the ideal strategy

Temporary, waiting for vaccines, other approach

- To implement in the daily practice
- V+R Screening method
- !! Transmission of results !!

Key GBS Resources

- MMWR : August 16, 2002 / 51(RR11); 1-22
- ACOG Comm Opin 2002, N°279
 - Obstet Gynecol, 2002;100:1405-12
- CDC 's GBS Internet page
 - <http://www.cdc.gov/groupBstrep/>
- Conseil supérieur d'hygiène (*brochure strep B*)
 - http://www.health.fgov.be/CSH_HGR