

Swedish EXPRESS Study



Karel Maršál

Department of Obstetrics and Gynecology

Lund University, Sweden

Extremely Preterm Infants in Sweden (EXPRESS)

Inclusion criteria:

- All live-born infants < 27 gestational weeks
- Stillbirths 22+0 – 26+6 weeks

April 1, 2004 – March 31, 2007

Exclusion criteria:

- Births outside Sweden
- Pregnancy terminations
- Neonatal care outside Sweden



EXPRESS
Extremely Preterm Infants in Sweden Study

SWEDEN:

7 health care regions

with large differences in size and population density



1600 km

The United States Government has not recognized the incorporation of Estonia, Latvia, and Lithuania into the Soviet Union.

Study protocol and basic design

- Previously recorded information on pregnancy and delivery collected
- Data stored in a web-based database
- Database accessible for all team members with personal accounts

Data from the
first visit
at antenatal clinic

Data from
ultrasound
measurements

Clinical data on
pregnancy and
labor

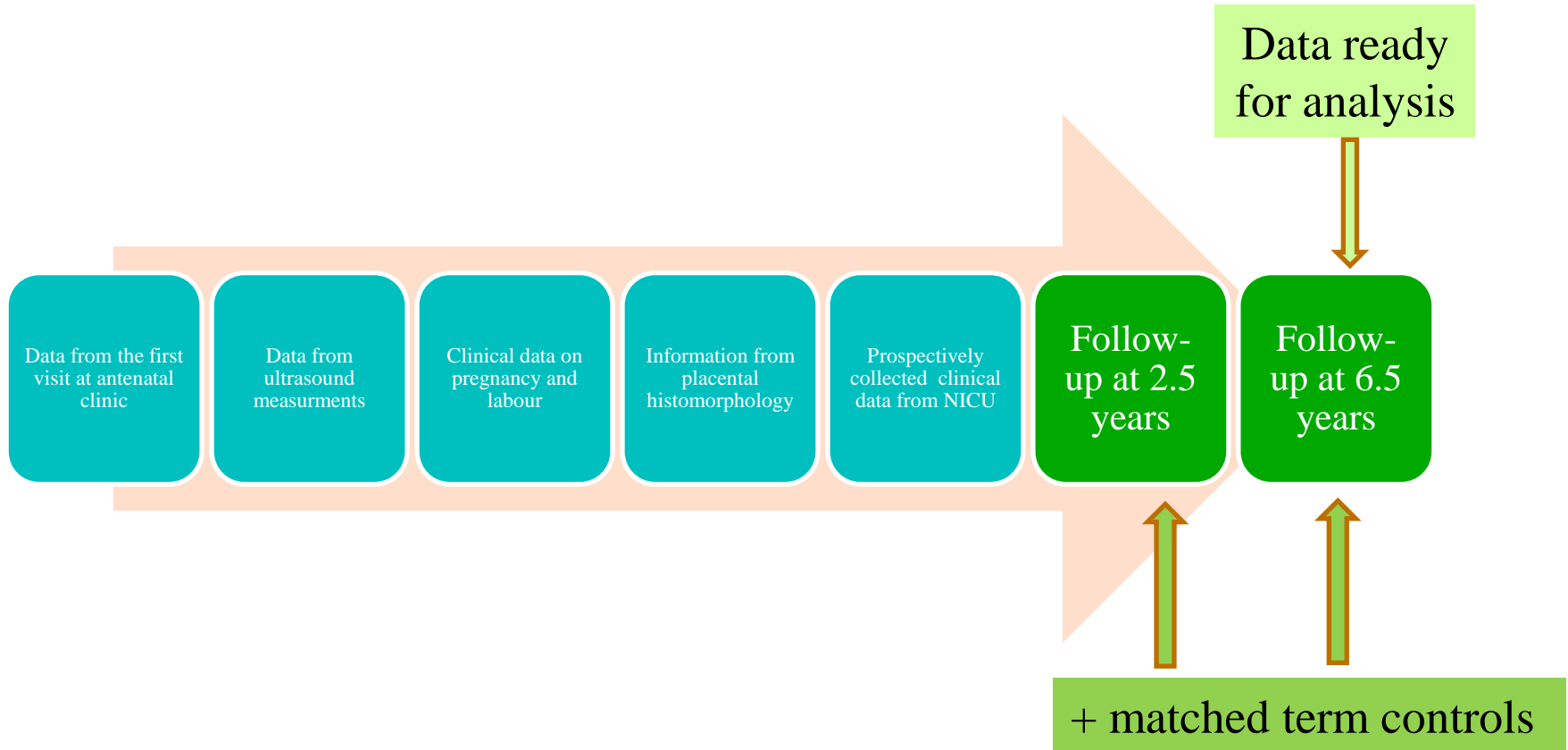
Information on
placental
histomorphology

Prospectively
collected
clinical data
from NICU

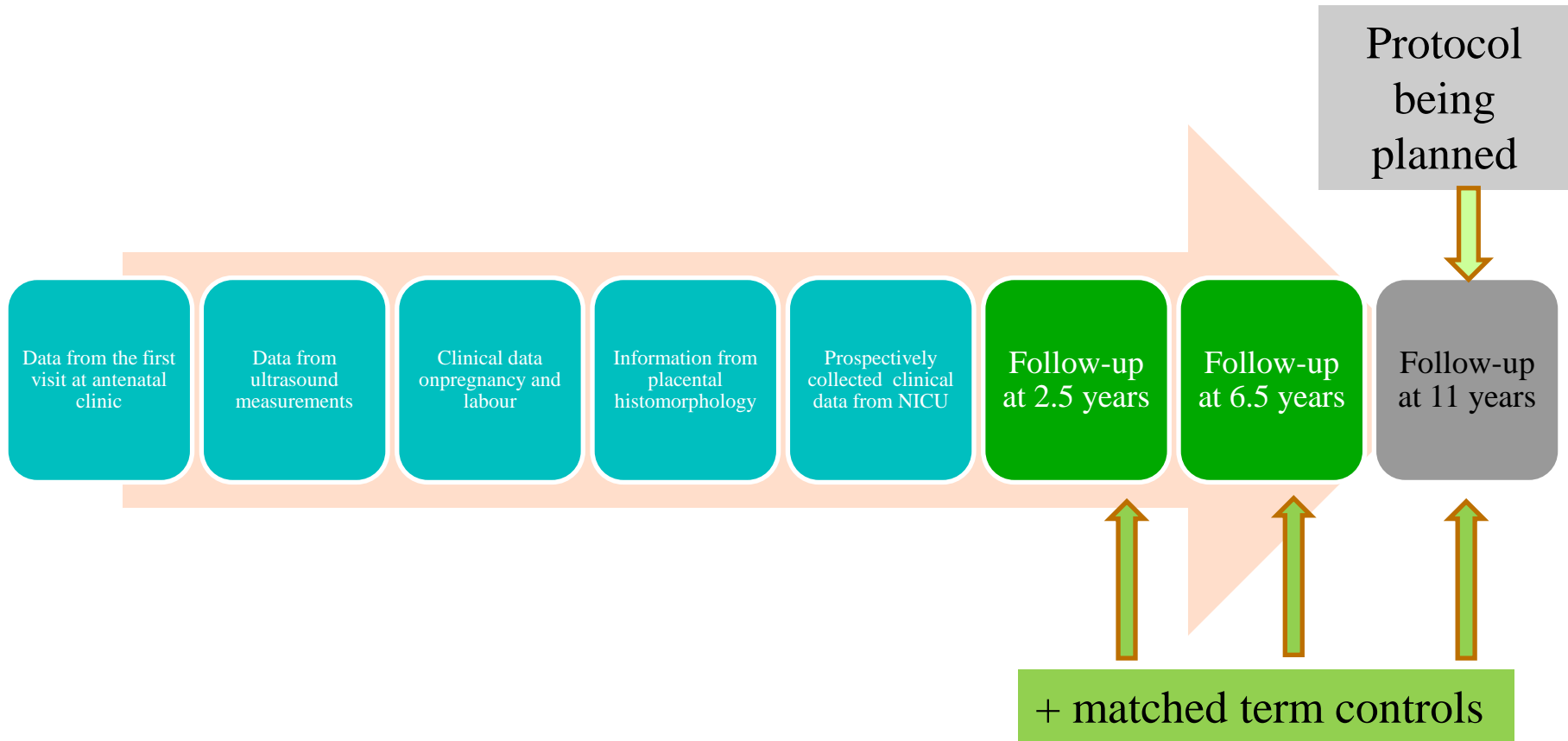
In cases of stillbirths or infant deaths:
Information from post mortem reports

One-year survival assessed using
data from Statistics Sweden

Study protocol and basic design



Study protocol and basic design



Number of registered infants

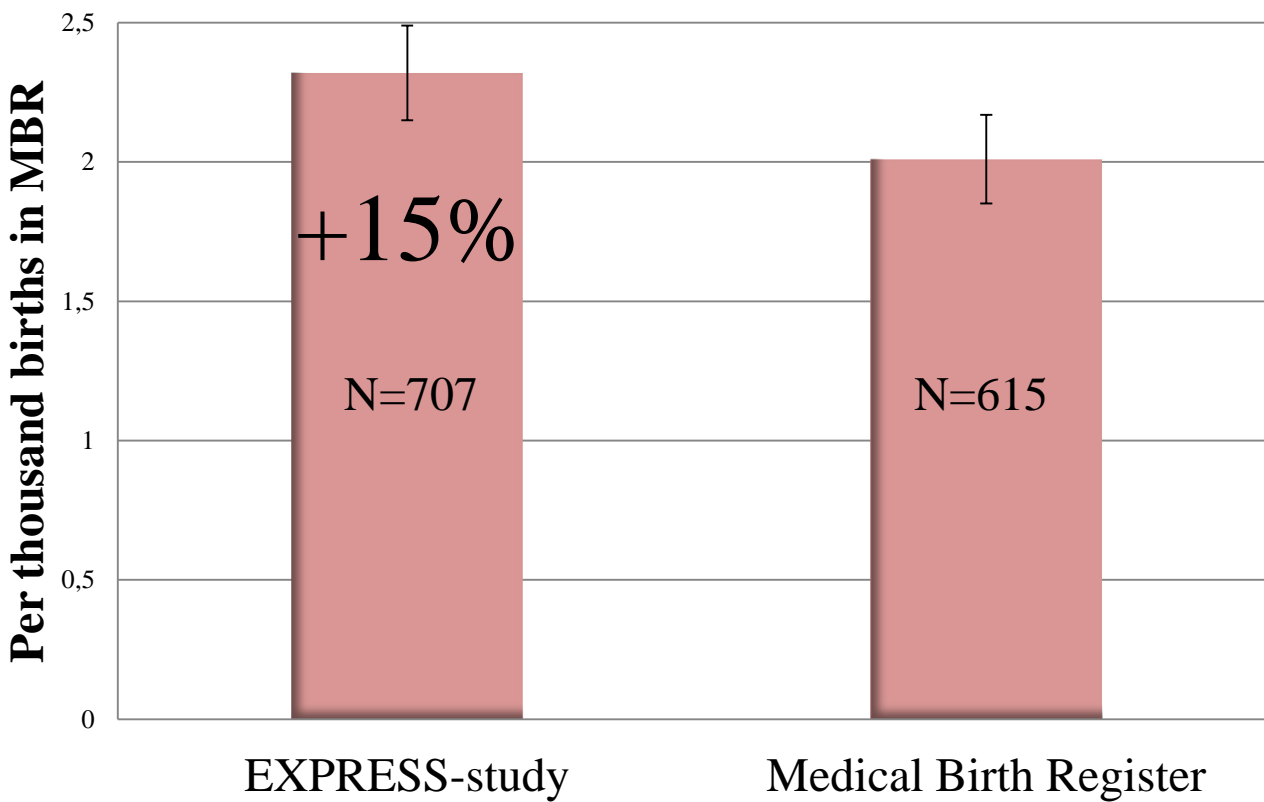
1011

- live-born	707	(70 %)
- stillborn	304	(30 %)

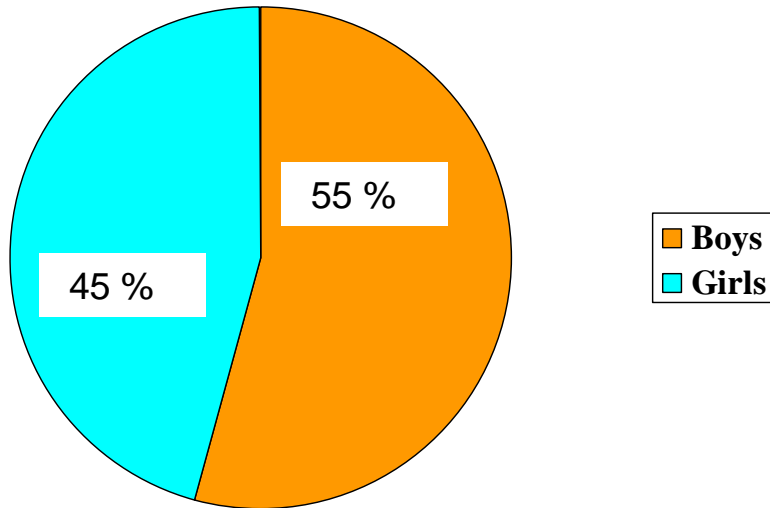
Incidence

- total	3.3	per 1000 infants
- live-born	2.3	per 1000 infants
- stillborn	1.0	per 1000 infants

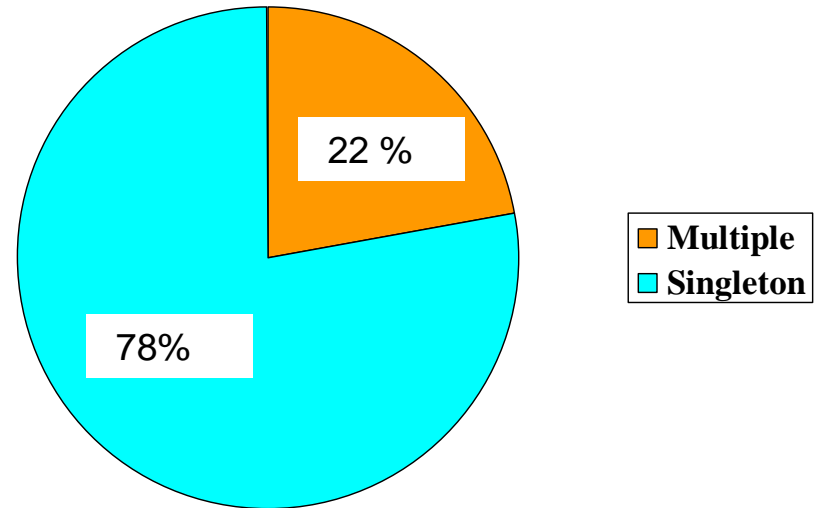
Live births <27 weeks



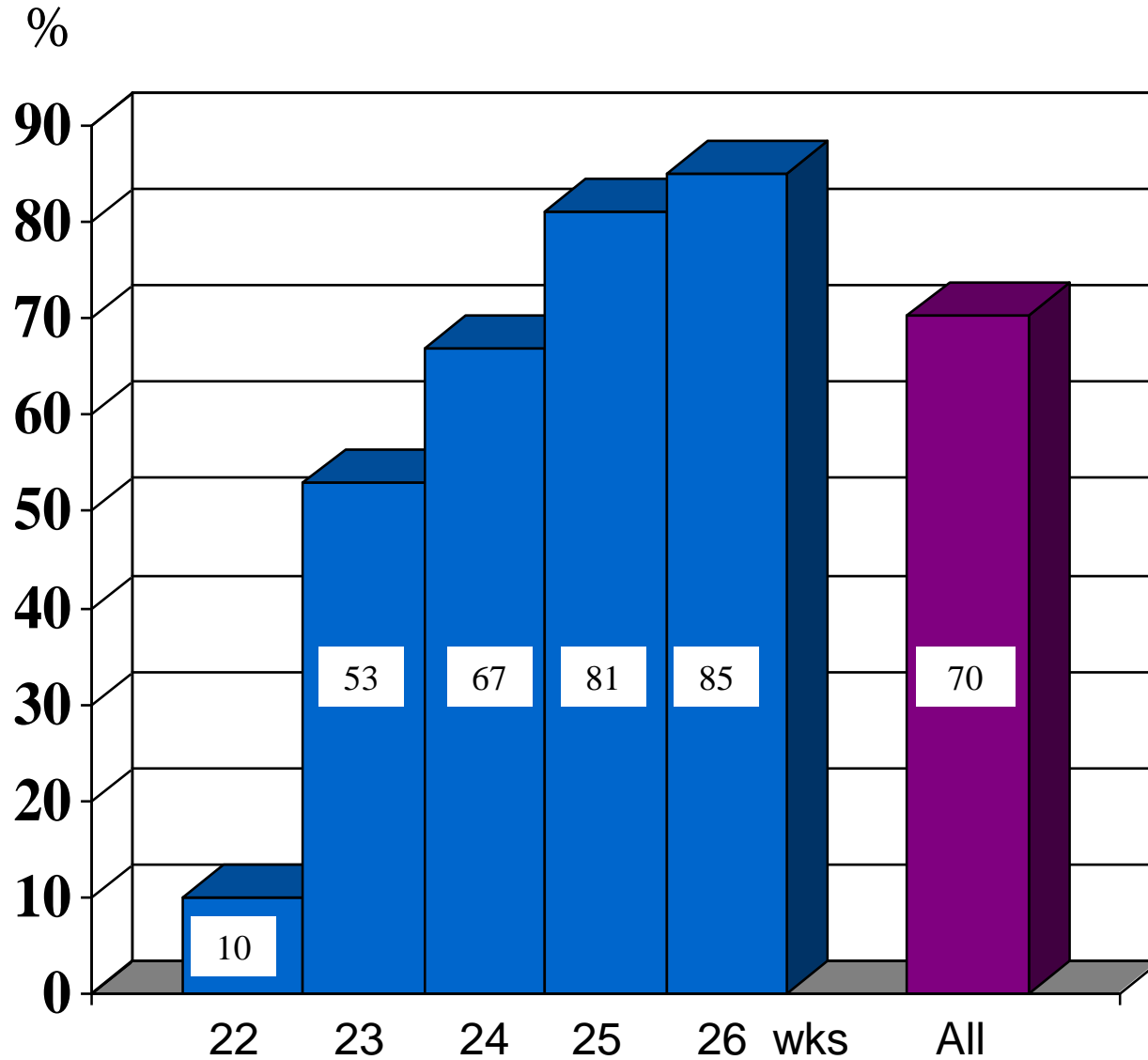
Gender



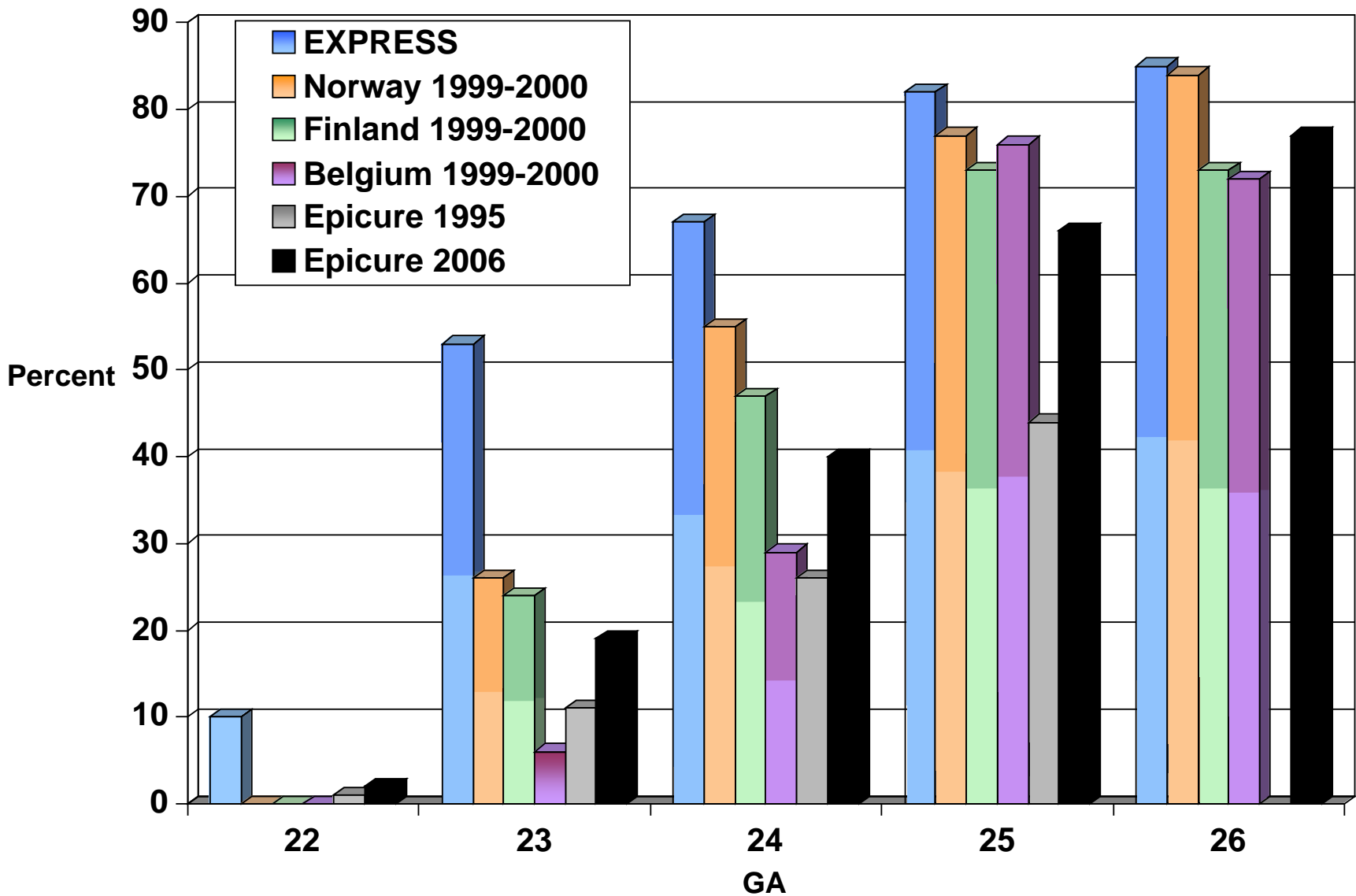
Singleton / multiple birth



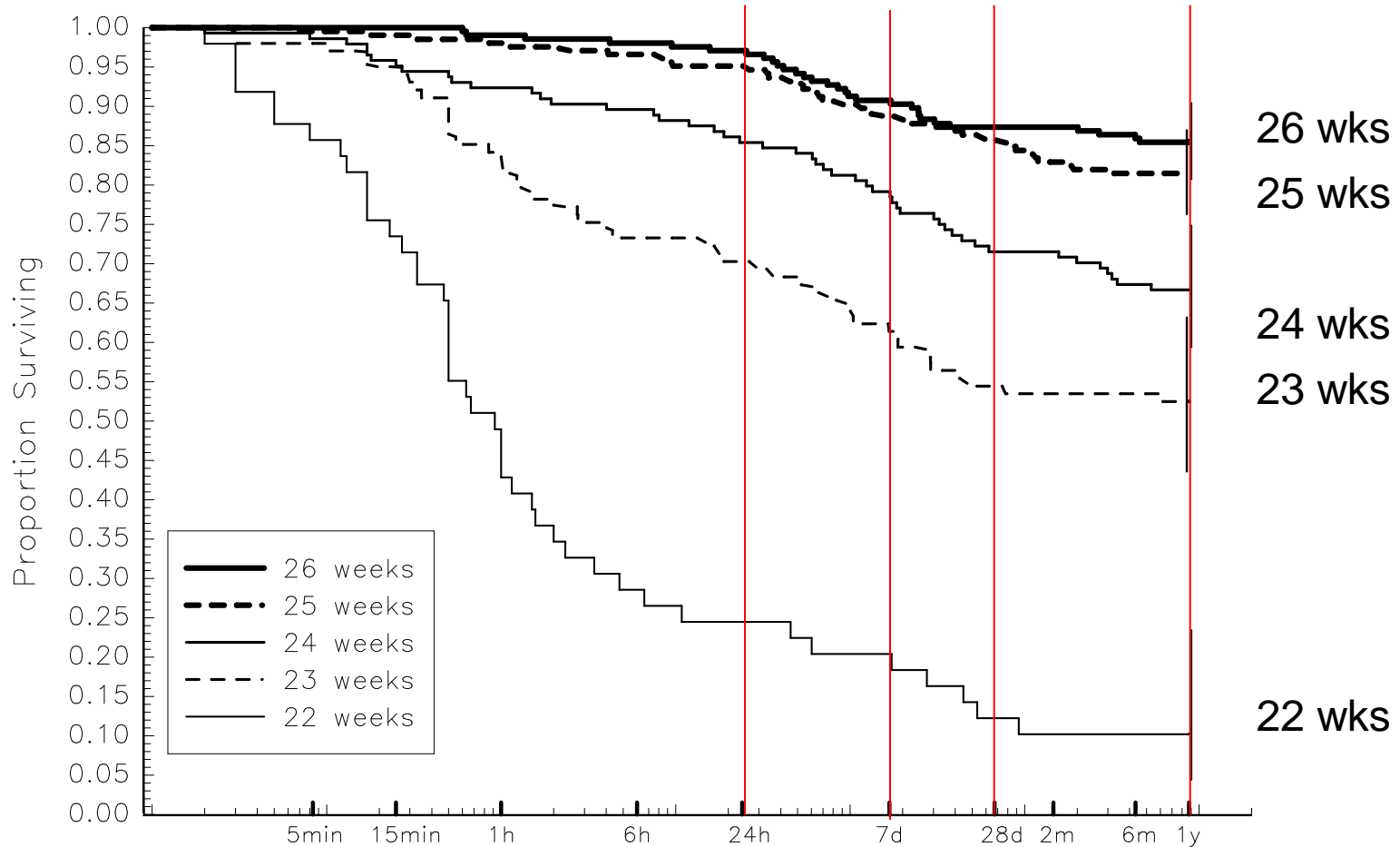
SURVIVAL AT 1 YEAR



Survival in Sweden 2004-07 vs recent national studies



Survival – live-born infants (n = 707) acc. to gestational age at birth





Obstetric factors - infant mortality **within the first 24 h**

	OR	(95% CI)
Chorioamnionitis/PPROM	2.4	(1.1 – 5.4)
Placenta abruption	2.7	(1.0 – 7.3)
Multiple birth	2.2	(1.2 – 4.3)
Birth at level III hospital	0.3	(0.2 – 0.5)
Tocolysis	0.3	(0.2 – 0.5)
Antenatal steroids	0.1	(0.1 – 0.2)
Cesarean section	0.2	(0.1 – 0.3)
Apgar score <4 at 5 min	50.4	(28.2 – 90.2)

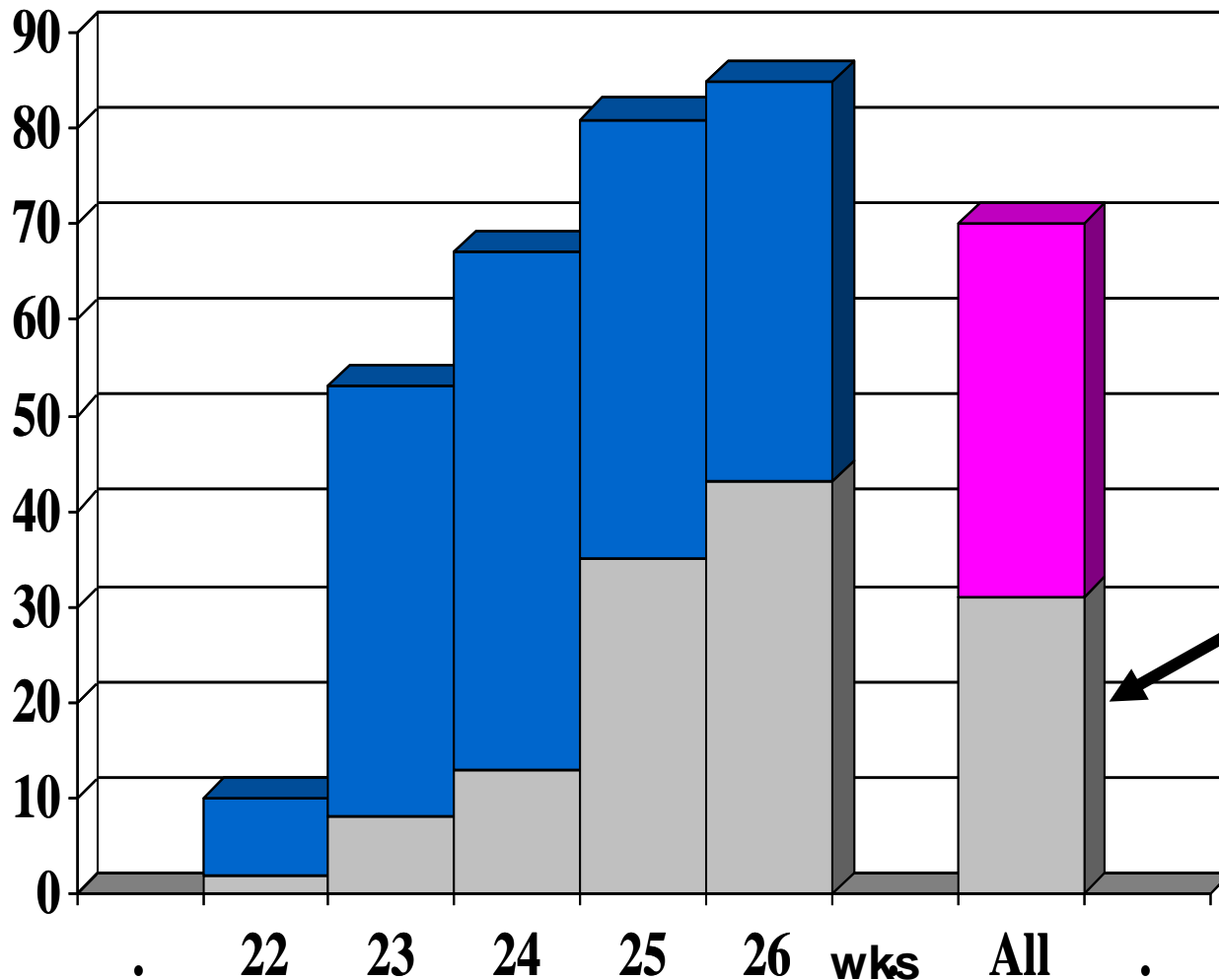
OR adjusted for gestational age

Is there a risk that better survival
has been bought at the expense of increased
neonatal morbidity?

SURVIVAL WITHOUT MAJOR MORBIDITY

(IVH \geq gr.3, ROP \geq st.3, NEC, CLD)

%



No major neonatal morbidity at 1 year:

43 % of survivors

Survivors without major morbidity - infants <26 weeks

Per cent of live-born

Epicure	38
New Zealand	38
Canada	23
EpiBel	30
Netherlands	30
Express (Swedish study)	30

Major morbidity: IVH \geq grade 3, PVL, ROP \geq stage 3, NEC, CLD

The Swedish national EXPRESS study showed a further improvement of the survival also at the boarder of viability.

The neonatal morbidity was considerable, however, not more frequent than in other studies.

JAMA[®]

Online article and related content
current as of September 19, 2010.

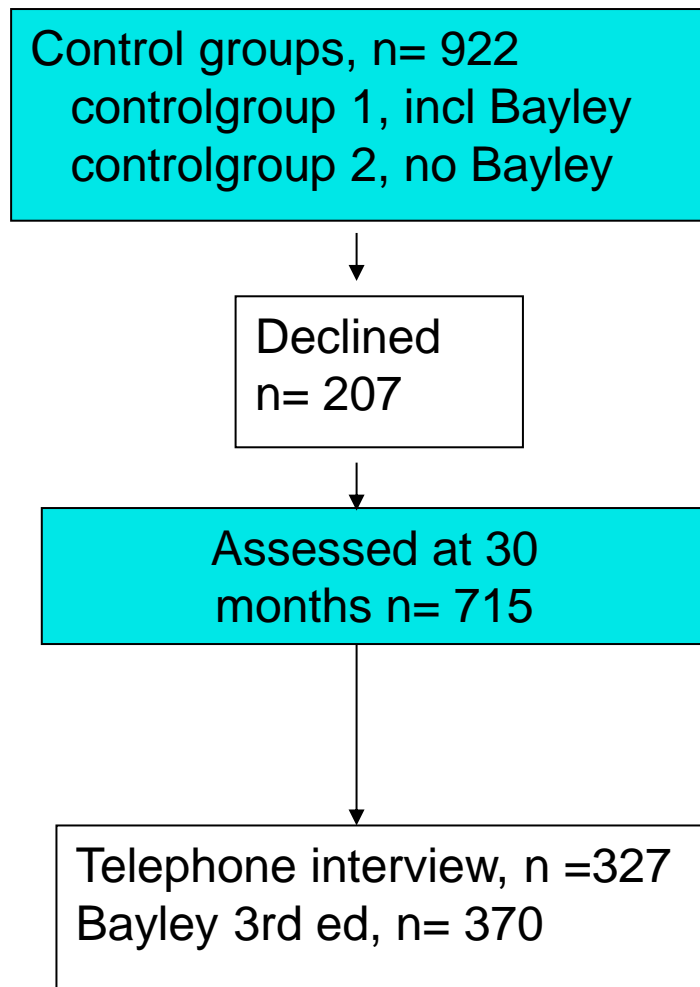
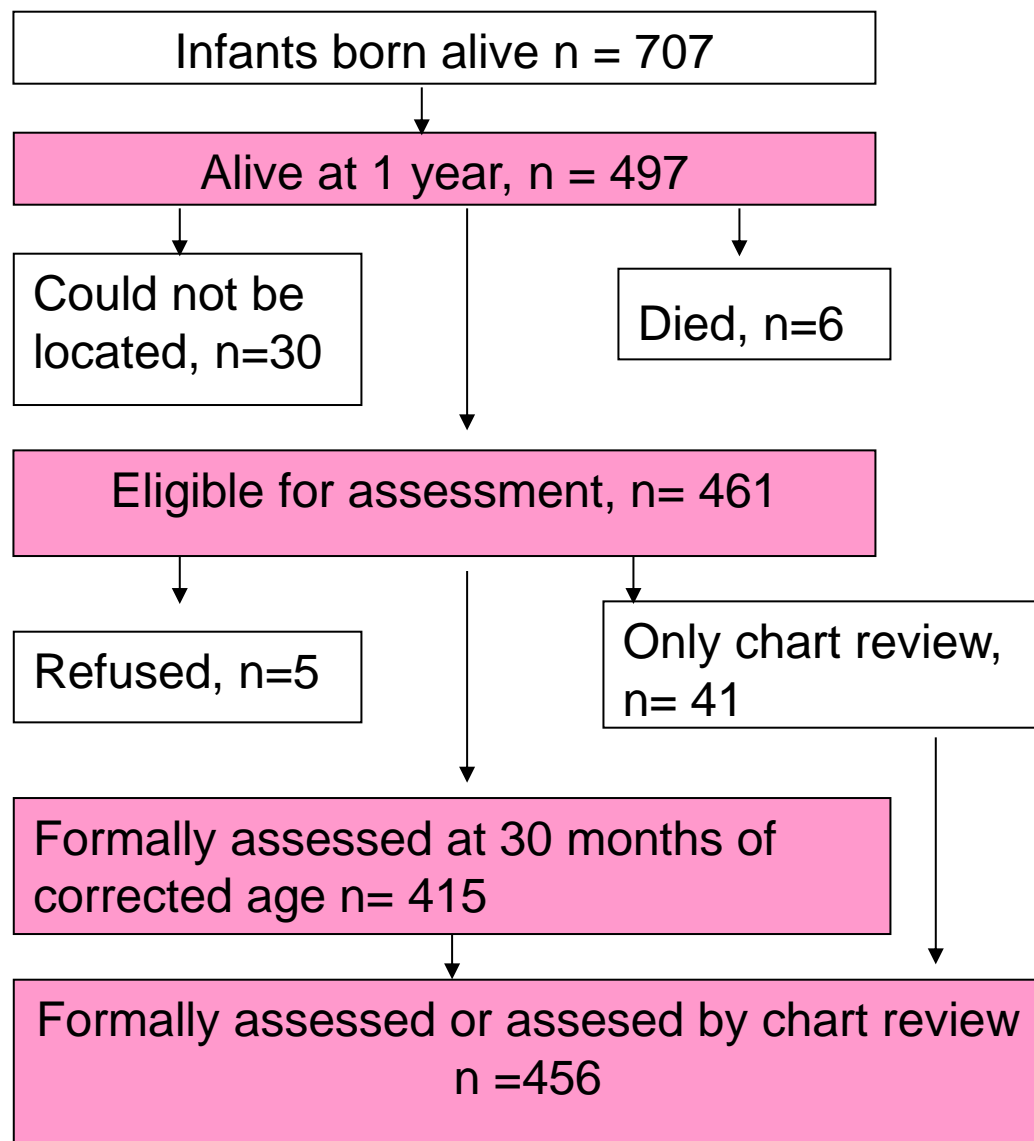
One-Year Survival of Extremely Preterm Infants After Active Perinatal Care in Sweden

The EXPRESS Group

JAMA. 2009;301(21):2225-2233 (doi:10.1001/jama.2009.771)

<http://jama.ama-assn.org/cgi/content/full/301/21/2225>

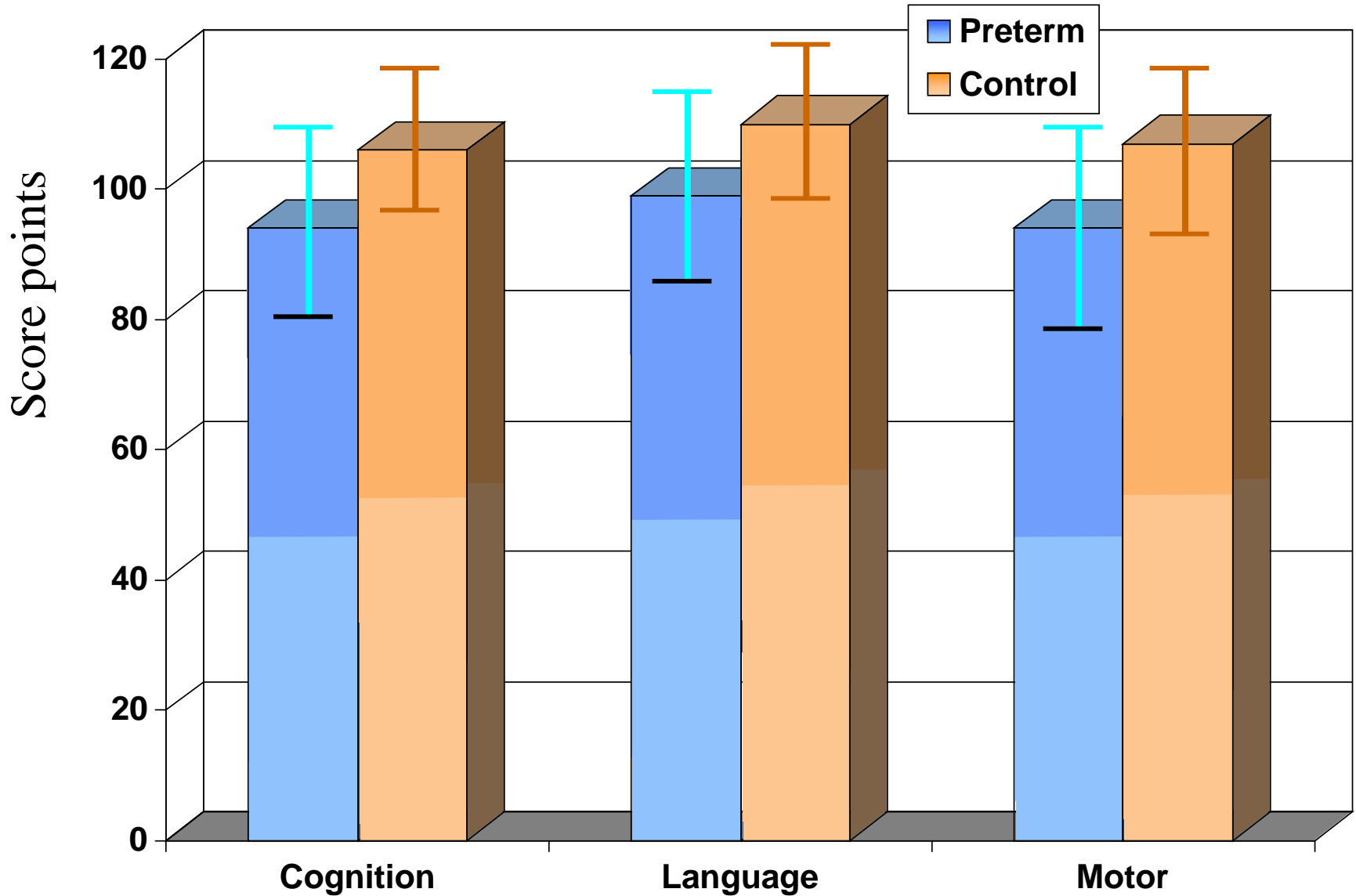
Neurodevelopmental outcome at 2.5 years of age



Examinations at 2.5 years of corrected age

- *Pediatrician:* Structured examination and medical history:
 - Motor development/CP
 - Vision
 - Hearing
 - Communication (speech)
- *Psychologist:* Developmental testing
 - Cognition, language, motor development (Bayley 3rd ed)
- *Ophthalmologist:*
 - Visual acuity
 - Strabismus and other eye problems
- *Parents:*
 - Behavior (CBCL)
- *Nurse:* Telephone interview on medical history

Bayley III scores compared with term controls



Rate of cerebral palsy in the index children (n=456) vs control group (n=715)

	Index		Control	
	n	%	n	%
Cerebral palsy				
Ambulant	26	5.8	0	
Non-ambulant	6	1.3	1	0.1
Total	32	7.0	1	0.1

Overall disability

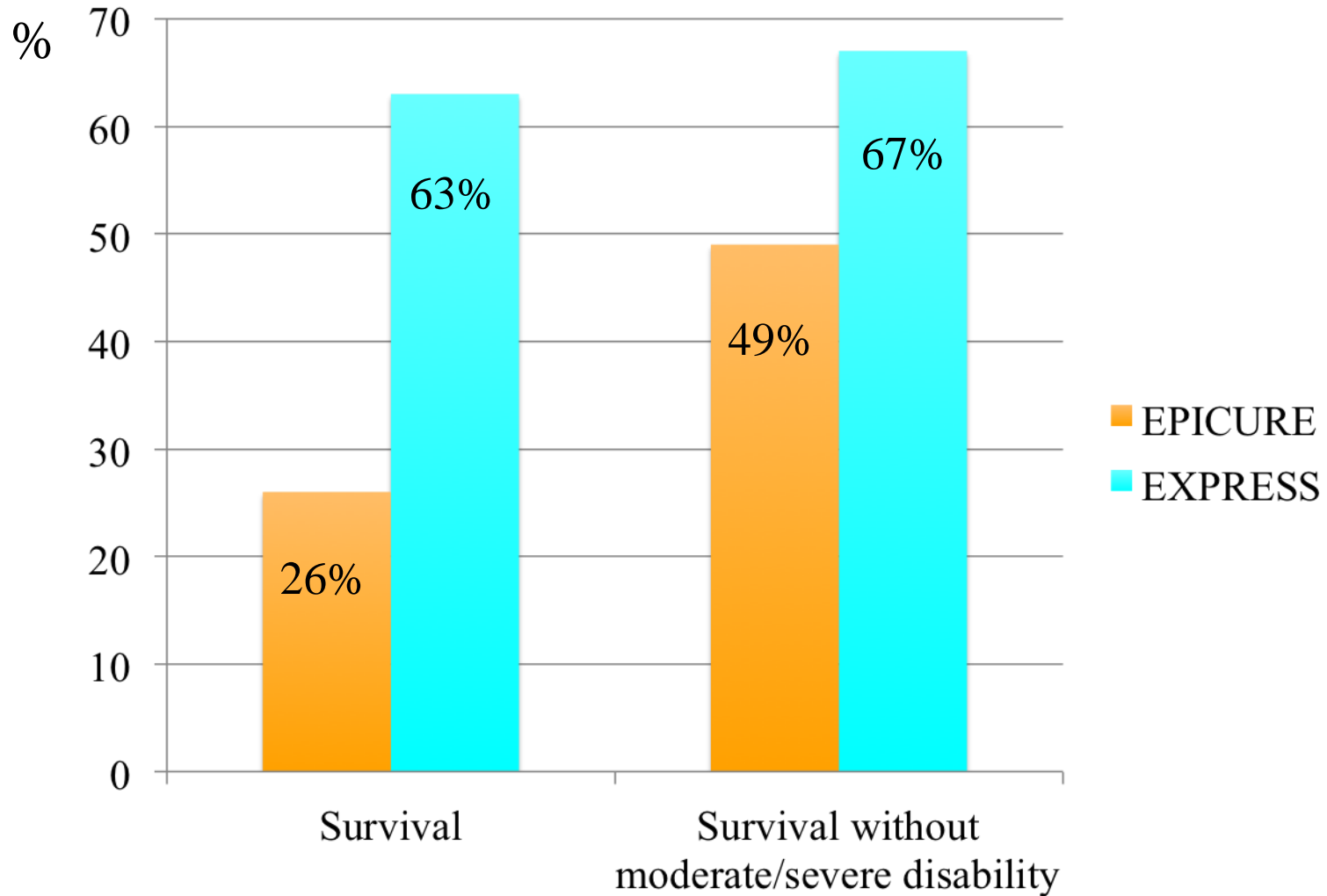
	Extremely preterm (< 27 wks) n=456	Controls (37-41 wks) n=366	p-value
Disability:			
None	192 (42)	286 (78)	
Mild	140 (31)	68 (19)	< 0.001
Moderate	74 (16)	11 (3)	< 0.001
Severe	50 (11)	1 (0.3)	< 0.001

At 2.5 years, 73 % survived without moderate or severe disability

(Infants < 26 wks)

Outcome at 2.5 years

EPICURE 1995 vs. EXPRESS 2004-07



Conclusions II

In spite of high survival compared with other studies, the morbidity rate at 2.5 years was similar or lower.

Few children were severely impaired.

Thus, the reduced mortality was **not** bought at the expense of increased morbidity among survivors.

JAMA®

**Neurodevelopmental Outcome
in Extremely Preterm Infants at 2.5 Years
After Active Perinatal Care in Sweden**

The EXPRESS Group

May 1, 2013—Vol 309, No. 17, 1810-1820

EXPRESS – research team



Mats Blennow

Uwe Ewald

Vineta Fellman

Orvar Finnström

Thomas Fritz

Ingrid Hansson

Lena Hellström-Westas

Per-Åke Holmgren

Gerd Holmström

Stellan Håkansson

Annika Jeppsson

Bengt Jönsson

Marius Kublickas

Karin Källén

Hugo Lagercrantz

Ricardo Laurini

Eva Lindberg

Anita Lundqvist

Pia Lundqvist

Karel Maršál

Tore Nilstun

Solveig Norden-Lindeberg

Mikael Norman

Elisabeth Olhager

Petra Otterblad

Grozda Pajic

Jens Schollin

Fredrik Serenius

Marija Simic

Gunnar Sjörs

Lennart Stigson

Karin Stjernqvist

Bo Strömberg

Margareta Wennergren

Magnus Westgren

Ingrid Östlund