DIONYSUS

WORLDWIDE COLLABORATION FOR HDFN

Variations & Opportunities in the Management of Hemolytic Disease of the Fetus and Newborn

an International Registry

Derek P. de Winter and Enrico Lopriore

For the **DIONYSUS-investigators**

Sanquin

Leids Universitair Medisch Centrum

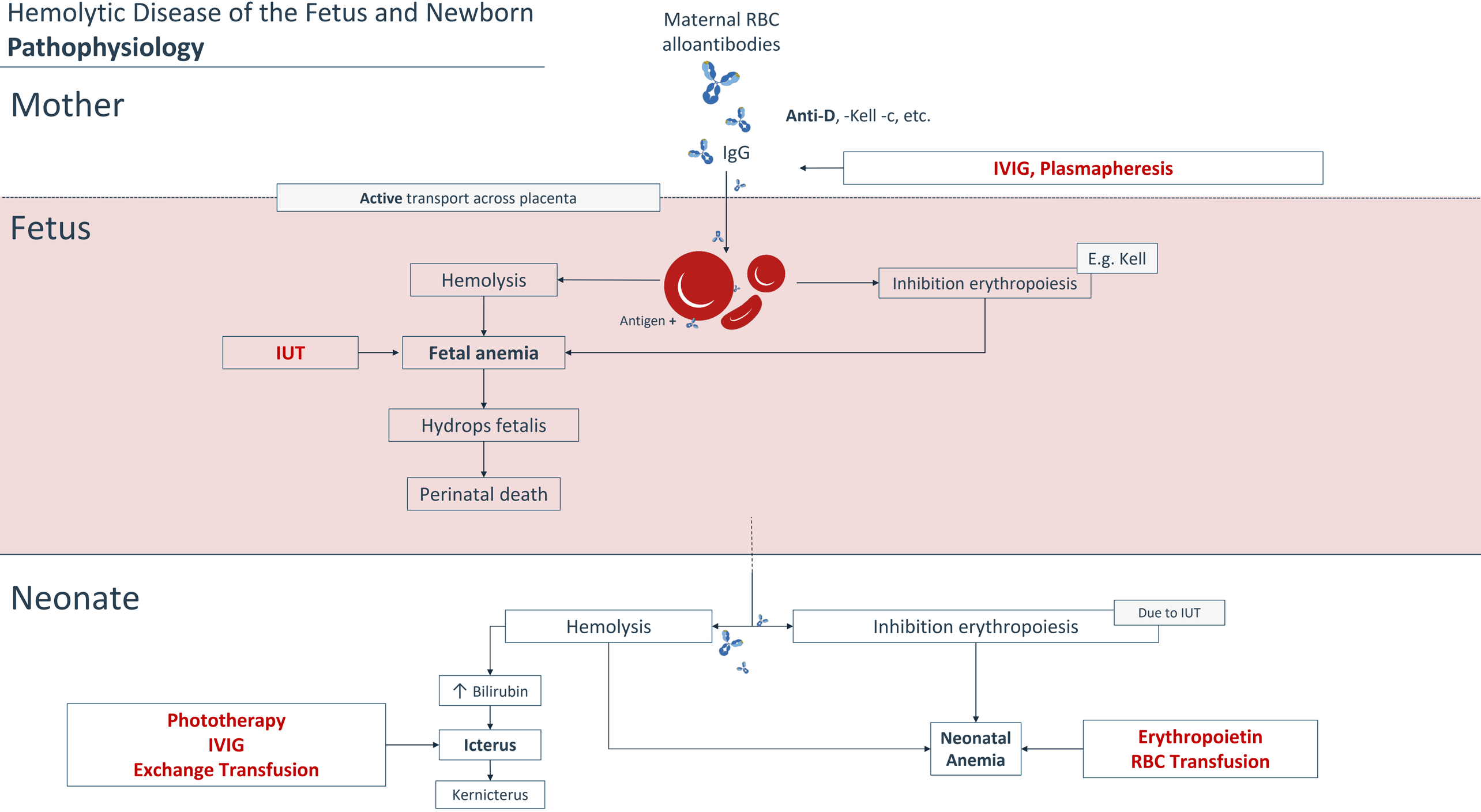
Disclosures

DIONYSUS-study is researcher-initiated and not externally funded.

Dutch research group received funding from Momenta Pharmaceuticals to work on biomarkers and data analysis for identification of high-risk HDFN.

Hemolytic Disease of the Fetus and Newborn

Pathophysiology



Sanquin

LUMC Leids Universitair Medisch Centrum

Research Aims

1. To describe practice variations in the management of HDFN and the clinical outcomes of those affected

2. To identify opportunities to improve care

This presentation:

1. IUT techniques
2. IUT complications
3. Timing of the last IUT and timing of delivery

Delivery past 37+0 weeks?

Later this afternoon:

- Postnatal practice variations and opportunities

Effects of delivery after 37+0

Methods

International, retrospective observational cohort study.

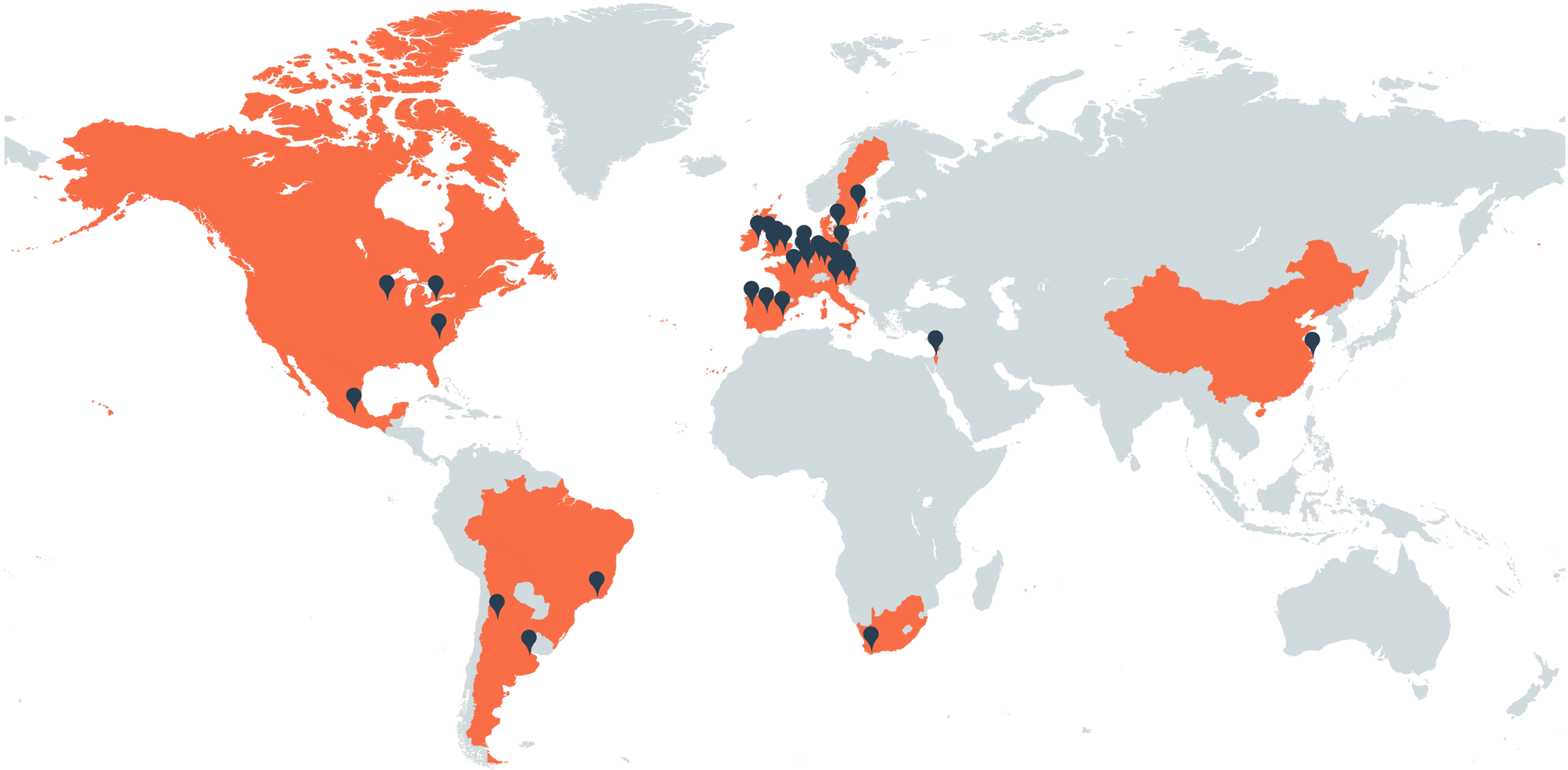
Cases with maternal alloimmunization between **2006 and 2021**:

- Fetal demise (≥16 weeks of gestation)
- Liveborn cases with antenatal treatment.
- Liveborn cases with postnatal treatment only.

Data Collection

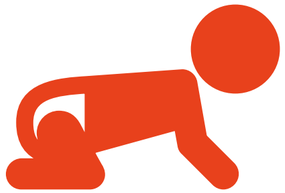
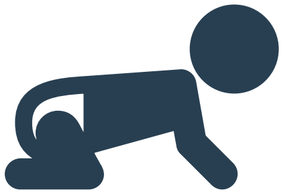
Obstetric history, serology & diagnostics, prenatal management, delivery, postnatal management, long-term outcome

22 countries, 31 centers

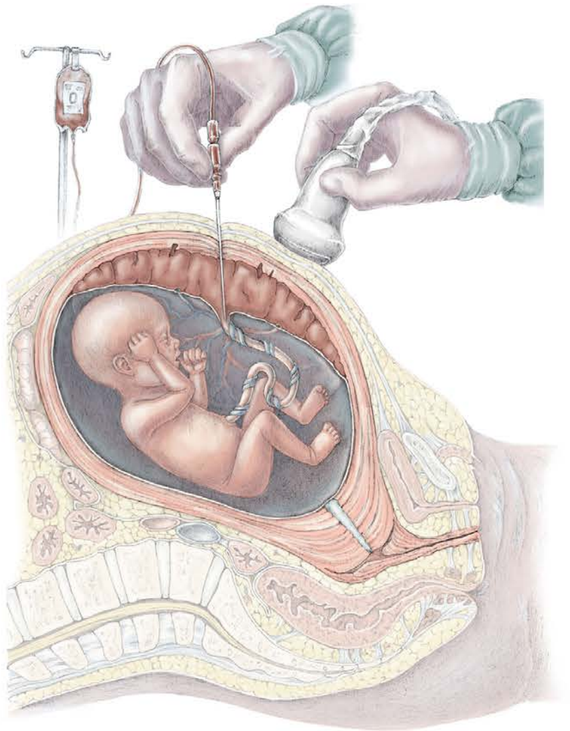


31 centers, 22 countries

2420 inclusions

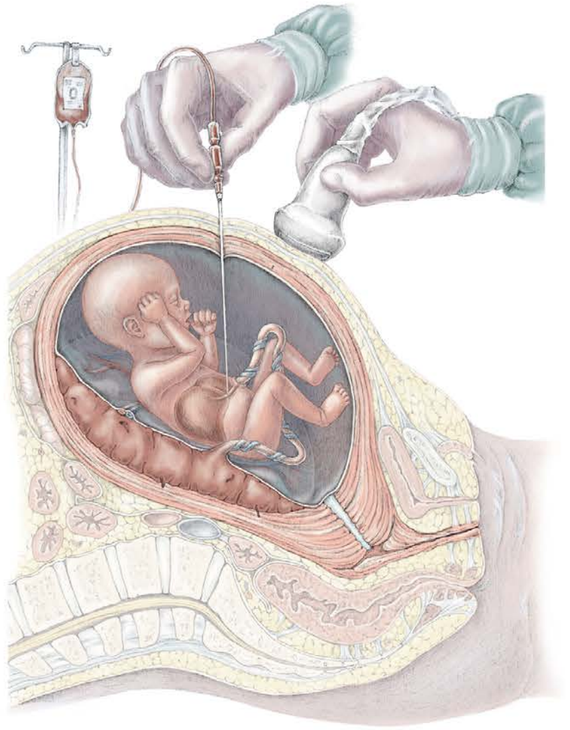
Perinatal Death	Liveborn, antenatal treatment	Liveborn, no antenatal treatment
		
95 (4%)	1349 (56%)	976 (40%)

1 Fetal access sites in 3753 IUTs



Placental Insertion

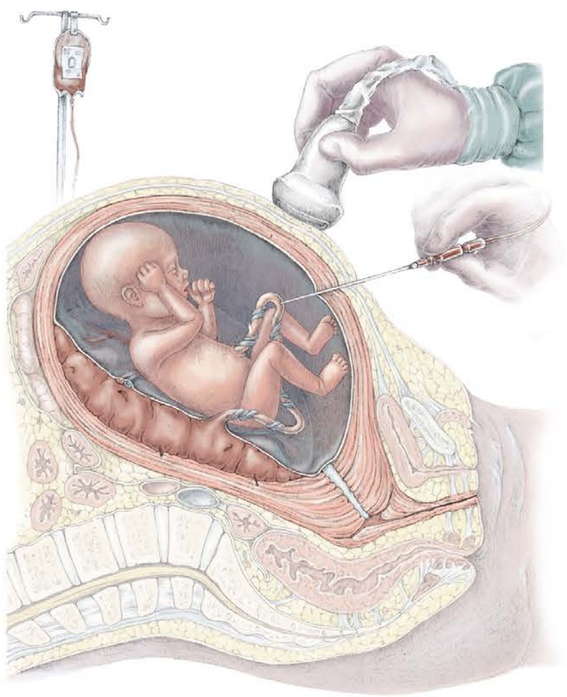
60%



Intrahepatic

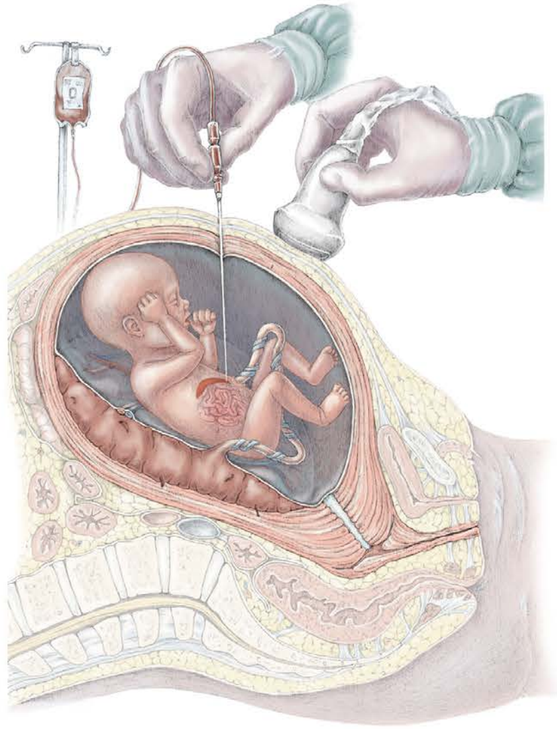
21%

7% combined IP



Free loop

8%

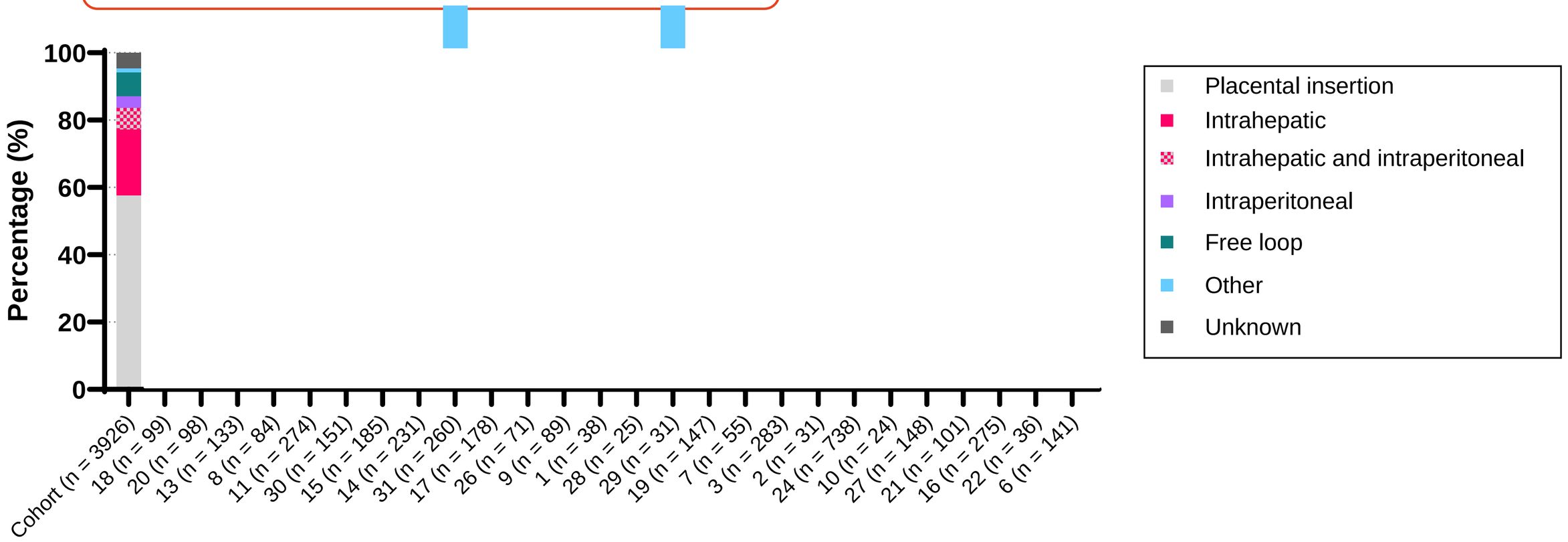


Intraperitoneal

4%

1 Fetal access sites in IUTs

In 3753 IUTs, **placental insertion** was most used (60%)
Considerable variations across centers



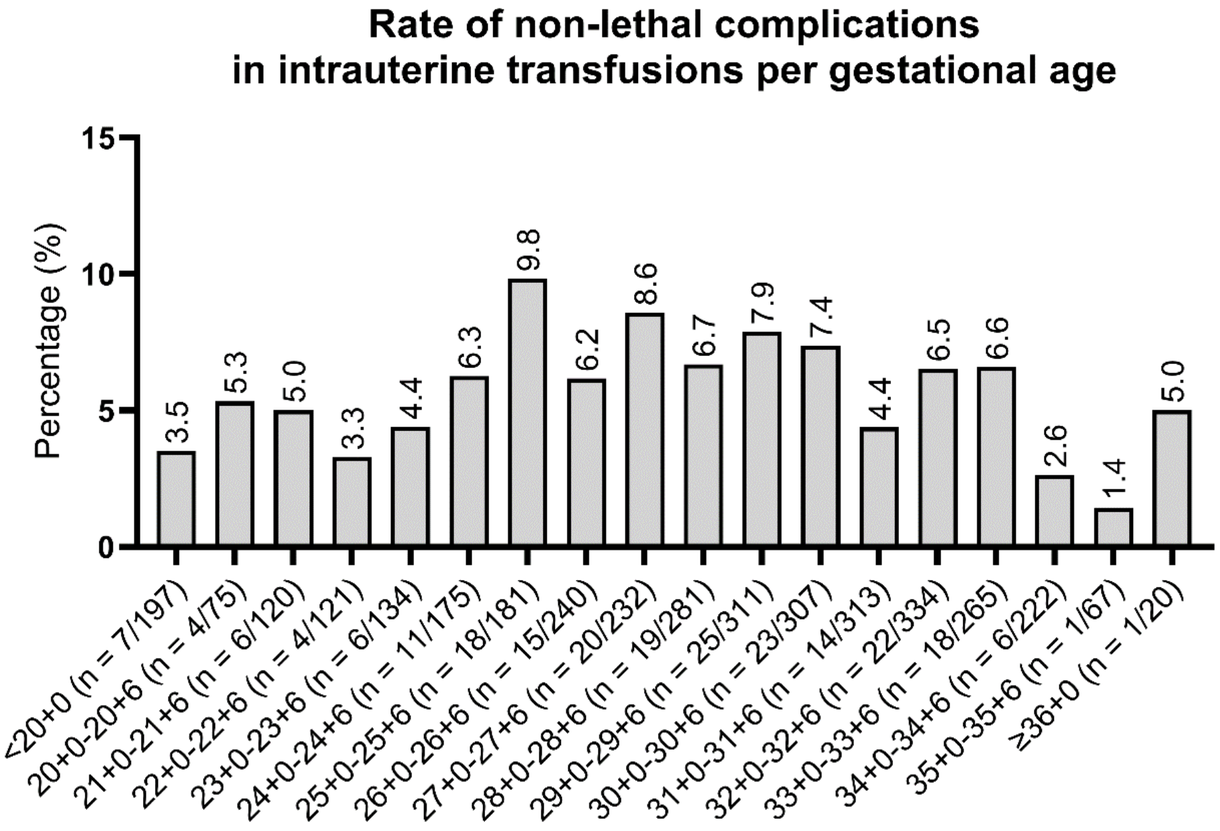
Europe: intrahepatic
North-America: umbilical vein at cord insertion

E. Moise et al. Critical procedural steps in intrauterine transfusion: Delphi survey of international experts; Ultrasound Obstet Gynecol

2 IUT - *complications*

250 in 3613 IUTs with data on complications (6.9%)

- Bleeding from puncture site (2.8%)
- Emergency CS <24h (1.1%)
- Fetal death <24h (0.8%)
- Procedure failure (0.6%)
- Needle dislocation (0.4%)
- Maternal complications (0.3%)
  - *PPROM, vaginal bleeding, chorioamnionitis, contractions…*

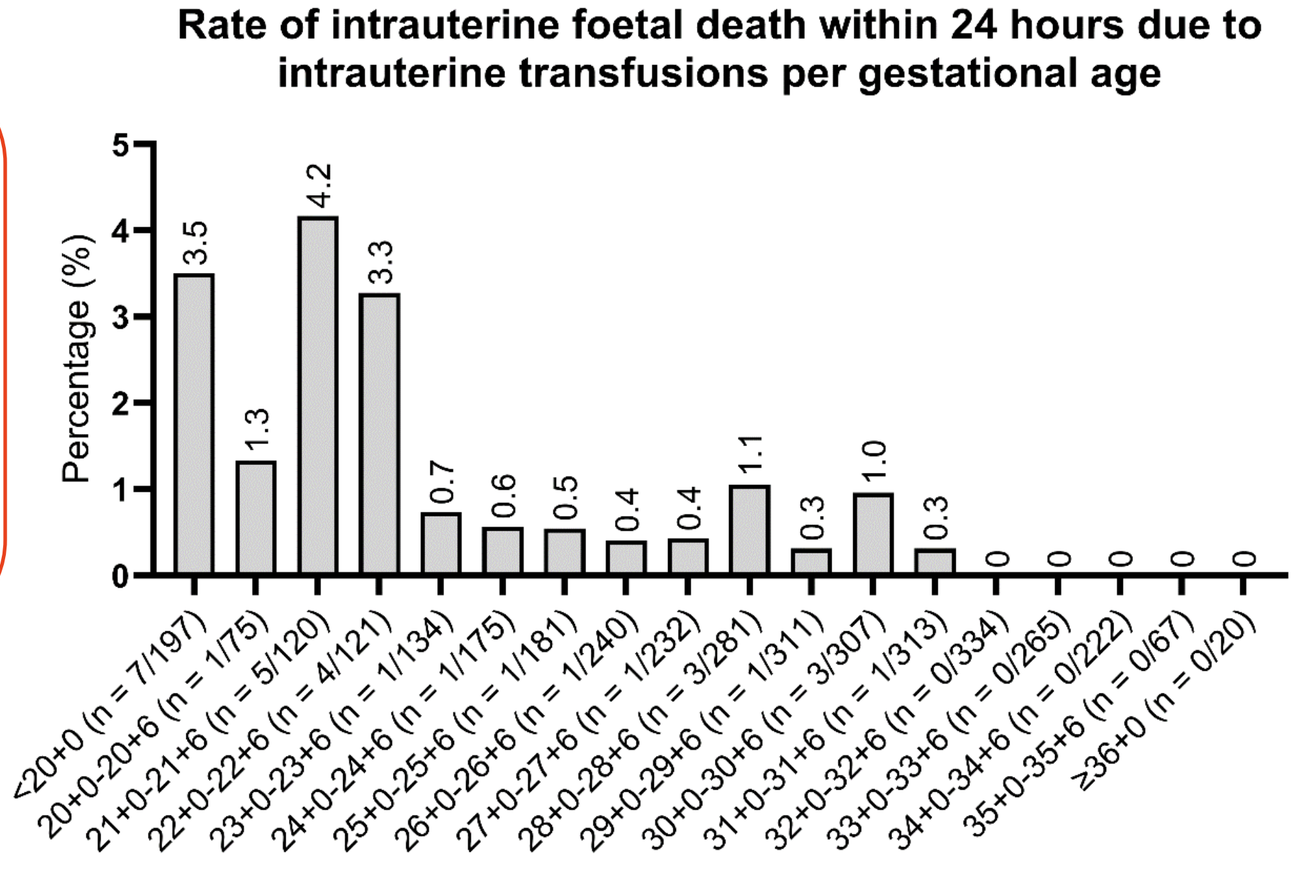


No differences per gestational age

2 IUT - *complications*

250 in 3613 IUTs with data on complications (6.9%)

- Bleeding from puncture site (2.8%)
- Emergency CS <24h (1.1%)
- Fetal death <24h (0.8%)
- Procedure failure (0.6%)
- Needle dislocation (0.4%)
- Maternal complications (0.3%)
  - *PPROM, vaginal bleeding, chorioamnionitis, contractions…*



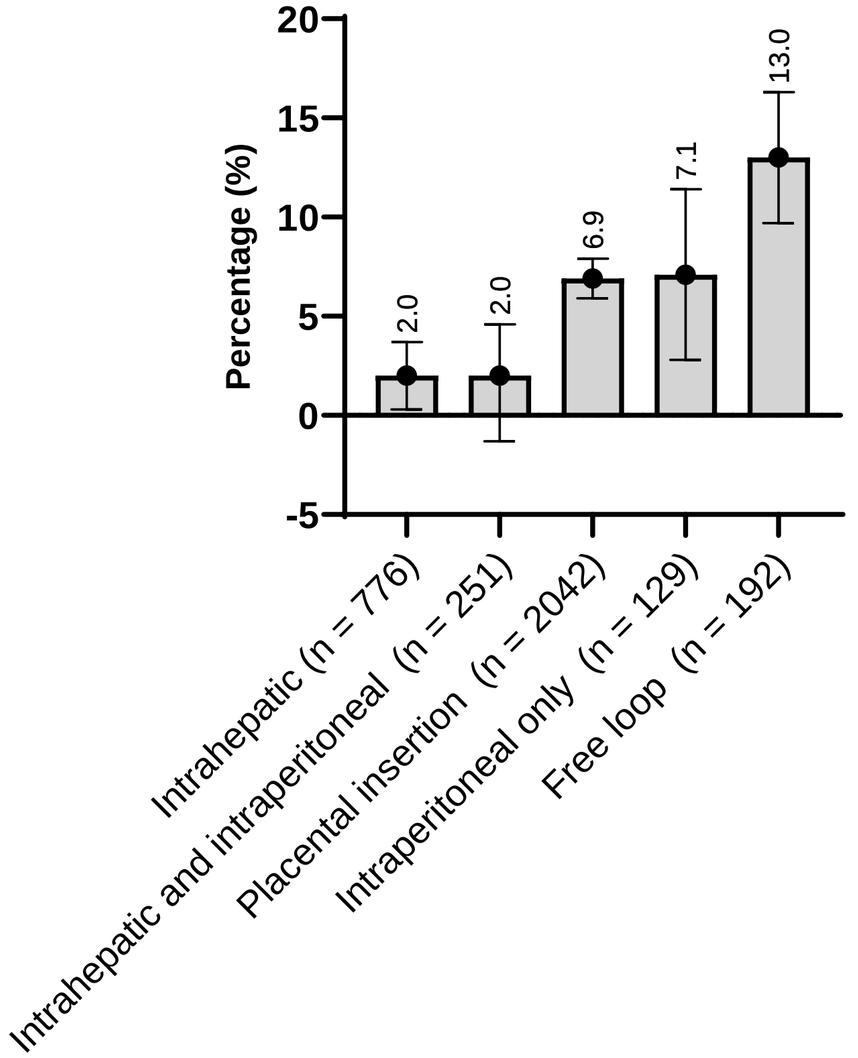
No fetal death in 908 IUTs after 32+0 weeks

2 IUT – *complications per access site*

Non-lethal complications (bleeding from puncture site, cord occlusion, fetal heart rate abnormalities, procedure failure, intrauterine infection, PPROM, preterm emergency delivery)

Fetal death < 24 hours

Emergency CS < 24 hours (in IUTs performed ≥24+0 weeks)

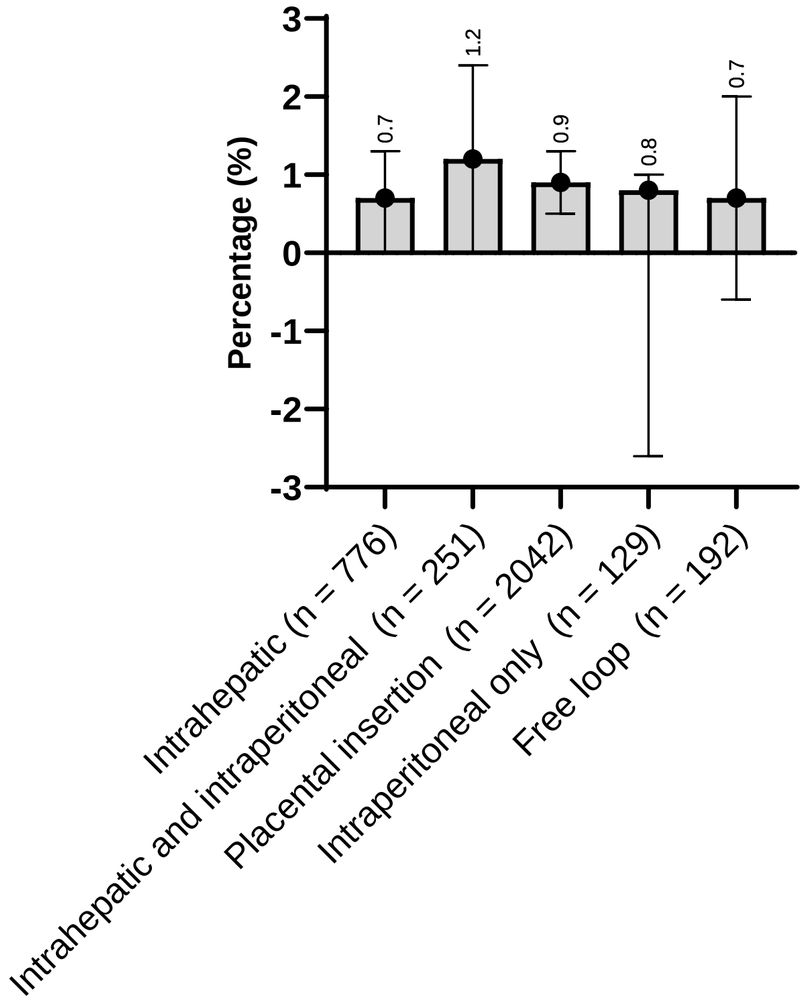


2 IUT – *complications per access site*

Non-lethal complications (bleeding from puncture site, cord occlusion, fetal heart rate abnormalities, procedure failure, intrauterine infection, PPROM, preterm emergency delivery)

Fetal death < 24 hours

Emergency CS < 24 hours (in IUTs performed ≥24+0 weeks)

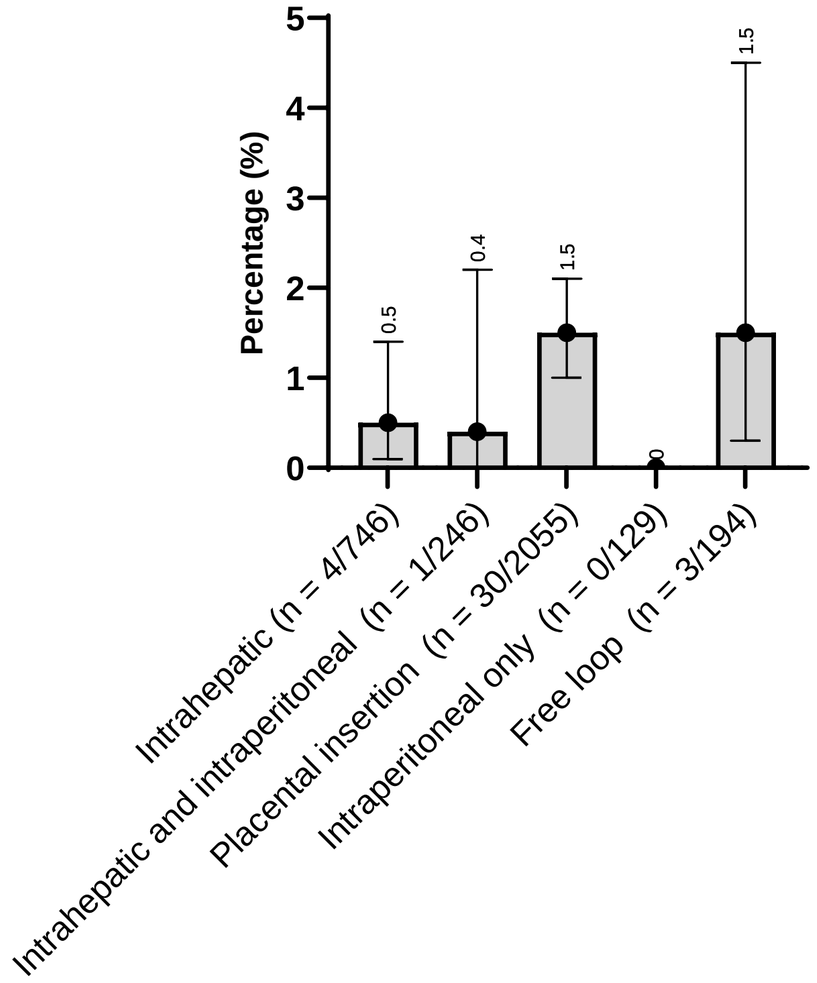


2 IUT – *complications per access site*

Non-lethal complications (bleeding from puncture site, cord occlusion, fetal heart rate abnormalities, procedure failure, intrauterine infection, PPROM, preterm emergency delivery)

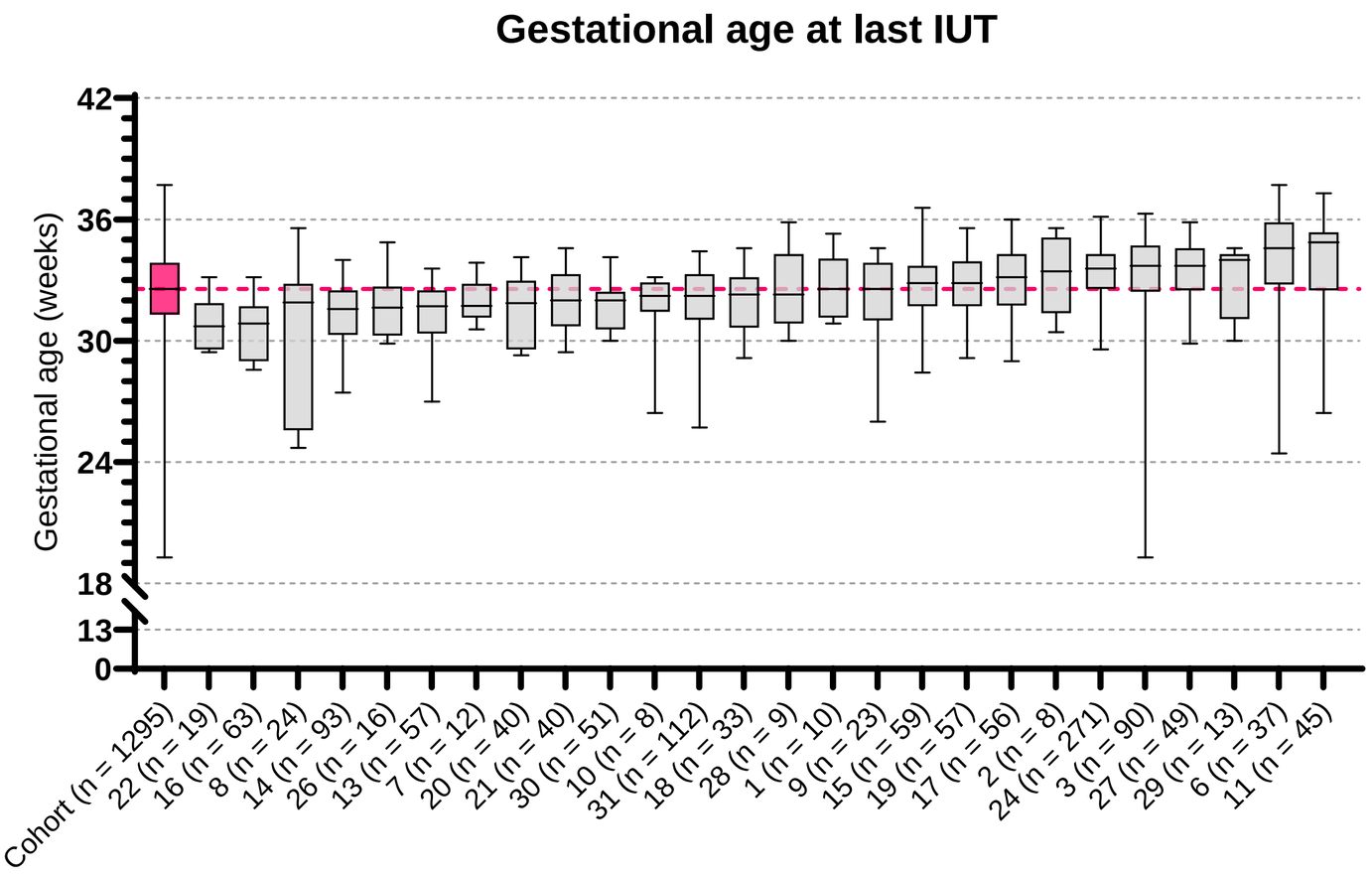
Fetal death < 24 hours

Emergency CS < 24 hours (in IUTs performed ≥24+0 weeks)



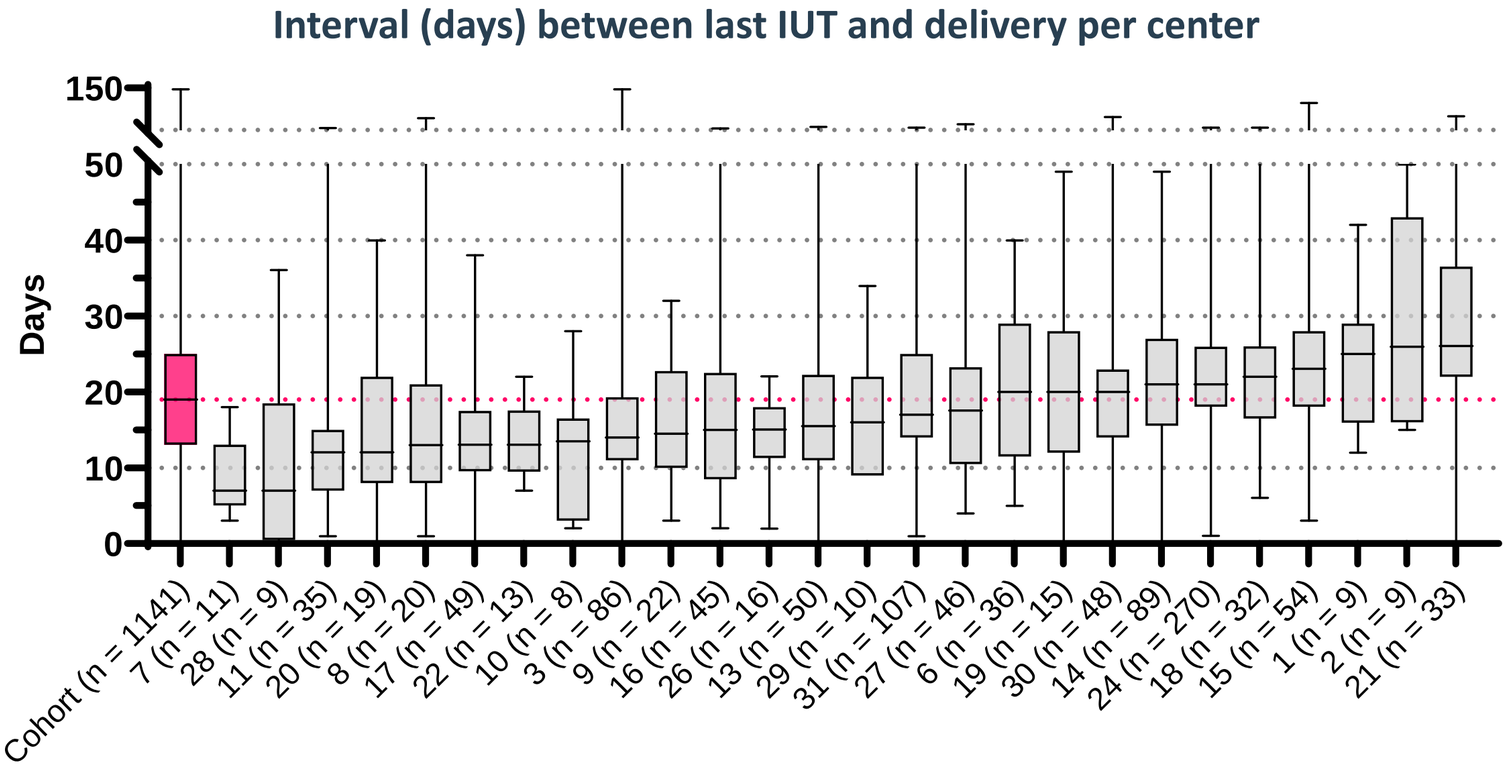
3 Timing of last IUT – GA at last IUT

Median GA at last IUT: 32.6 weeks [31.3-33.9]
Range of 4 weeks between medians of centers



3 Timing of last IUT – Interval until birth

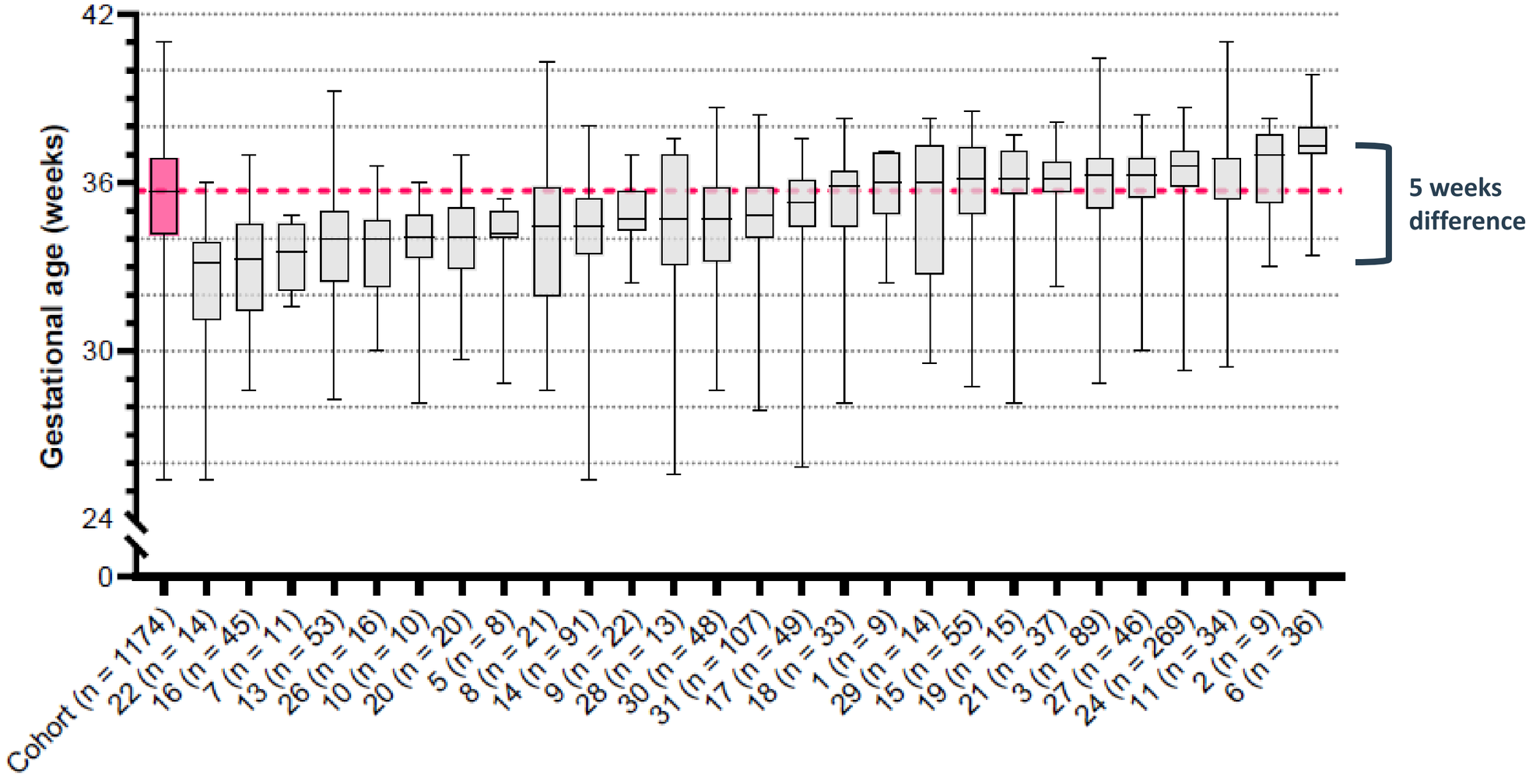
Median interval: 19 days [13-25]
Range of 21 days between medians of centers



3 Gestational age at birth

<u>With intrauterine transfusion</u>: 35.7 weeks [34.1-36.9]

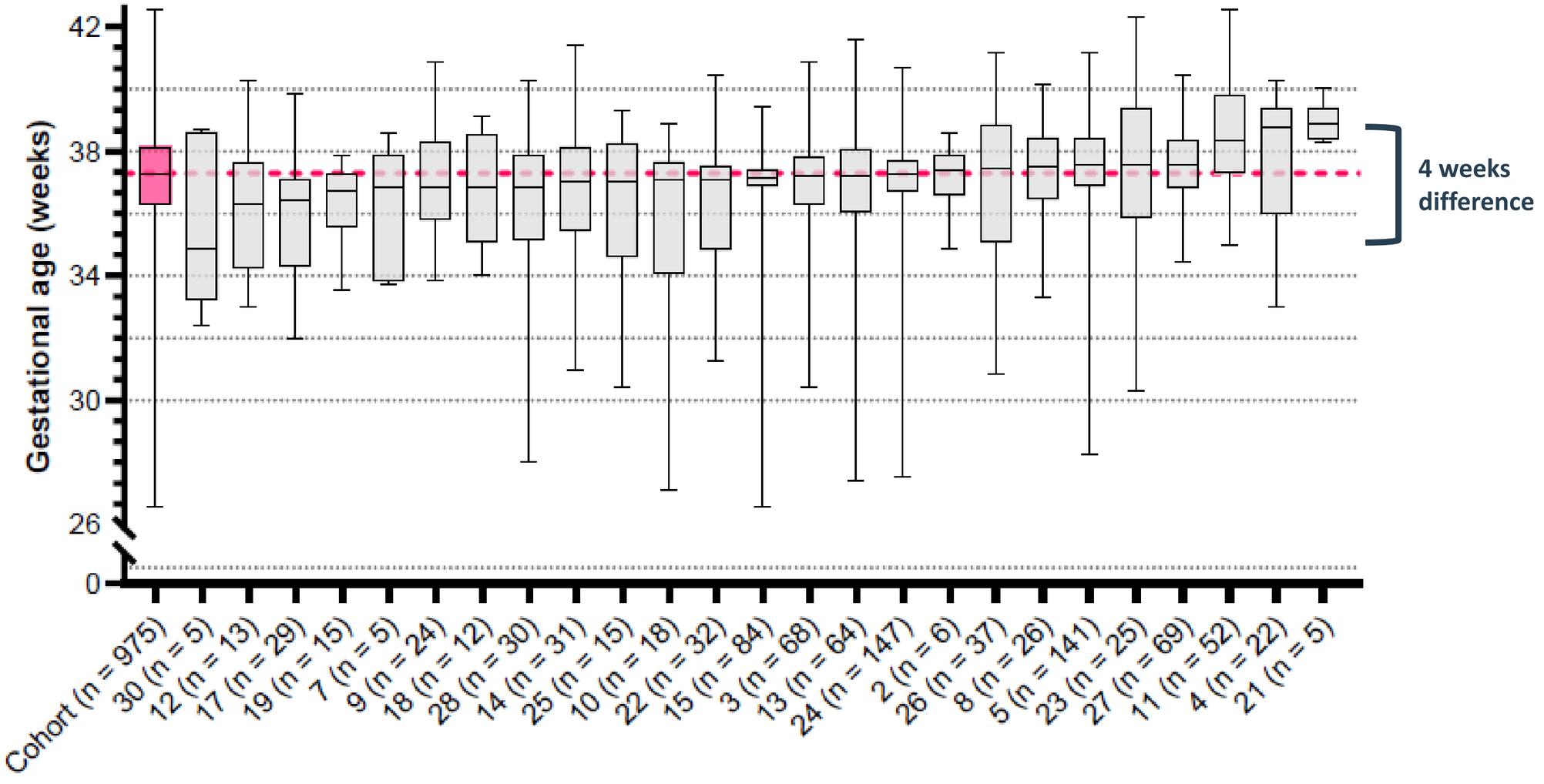
Median [IQR]



3 Gestational age at birth

<u>Without</u> antenatal treatment: 37.3 weeks [36.3-38.1]

Median [IQR]



To conclude…

Considerable variation between centers in IUT techniques

Fewer non-lethal complications in intrahepatic IUTs

No fetal death in 900 IUTs performed after 32+0 weeks

More than two-thirds were born premature, considerable variations between centers

Story to be continued!

DIONYSUS

WORLDWIDE COLLABORATION FOR HDFN

Thank you to the participating centers!

Birmingham Women's and Children's Hospital NHS Foundation Trust

Centre Hospitalier Universitaire de Lille, France

Charité-Universitätsmedizin Berlin, Germany

Children's Hospital "Vittore Buzzi" Milan, Italy

Copenhagen University Hospital Rigshospitalet, Denmark

Hôpital d'Enfants Armand-Trousseau Paris, France

Hospital Italiano de Buenos Aires, Argentina

Hospital de la Mujer, La Paz, Bolivia

Hospital La Paz Madrid, Spain

Instituto Fernandes Figueira, Rio de Janeiro, Brazil

Instituto Nacional de Perinatologia, Mexico City, Mexico

Karolinska University Hospital, Stockholm, Sweden

Leiden University Medical Center, Leiden, The Netherlands

Levine Children's Hospital Charlotte, North Carolina, USA

Liverpool Women’s Hospital, United Kingdom

Mount Sinai Hospital, Toronto, Canada

Medical University of Graz, Austria

Pränatal Medizin München, Germany

Sant Pau Hospital, Barcelona, Spain

São João Hospital, Porto, Portugal

Shanghai First Maternity and Infant Hospital, China

Sheba Medical Center, Tel Aviv, Israel

St George’s University Hospital, London, United Kingdom

St. Michael's Hospital, University Hospitals Bristol and Weston NHS Trust, UK

Stellenbosch University, South Africa

Midwest Fetal Care Center, Minneapolis, USA

The Rotunda Hospital, Dublin, Ireland

University Hospital KU Leuven, Belgium

Universitätsklinikum Bonn, Germany

Universitätsklinikum Gießen, Germany

University Medical Center Ljubljana, Slovenia