



Pregnancy-Related Outcomes in Patients with Pulmonary Hypertension: A Multicenter Retrospective Cohort Study (2001-2023)

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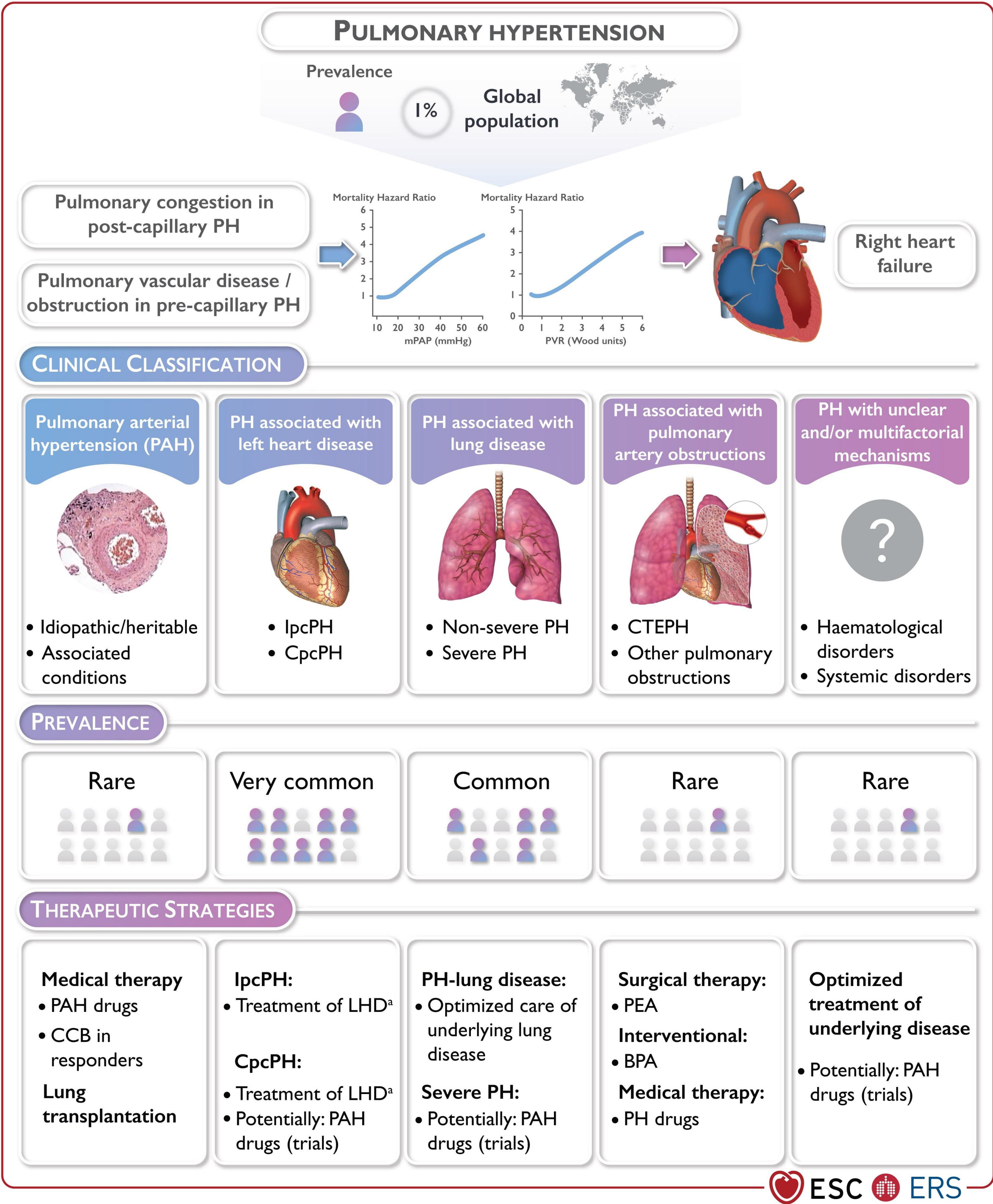
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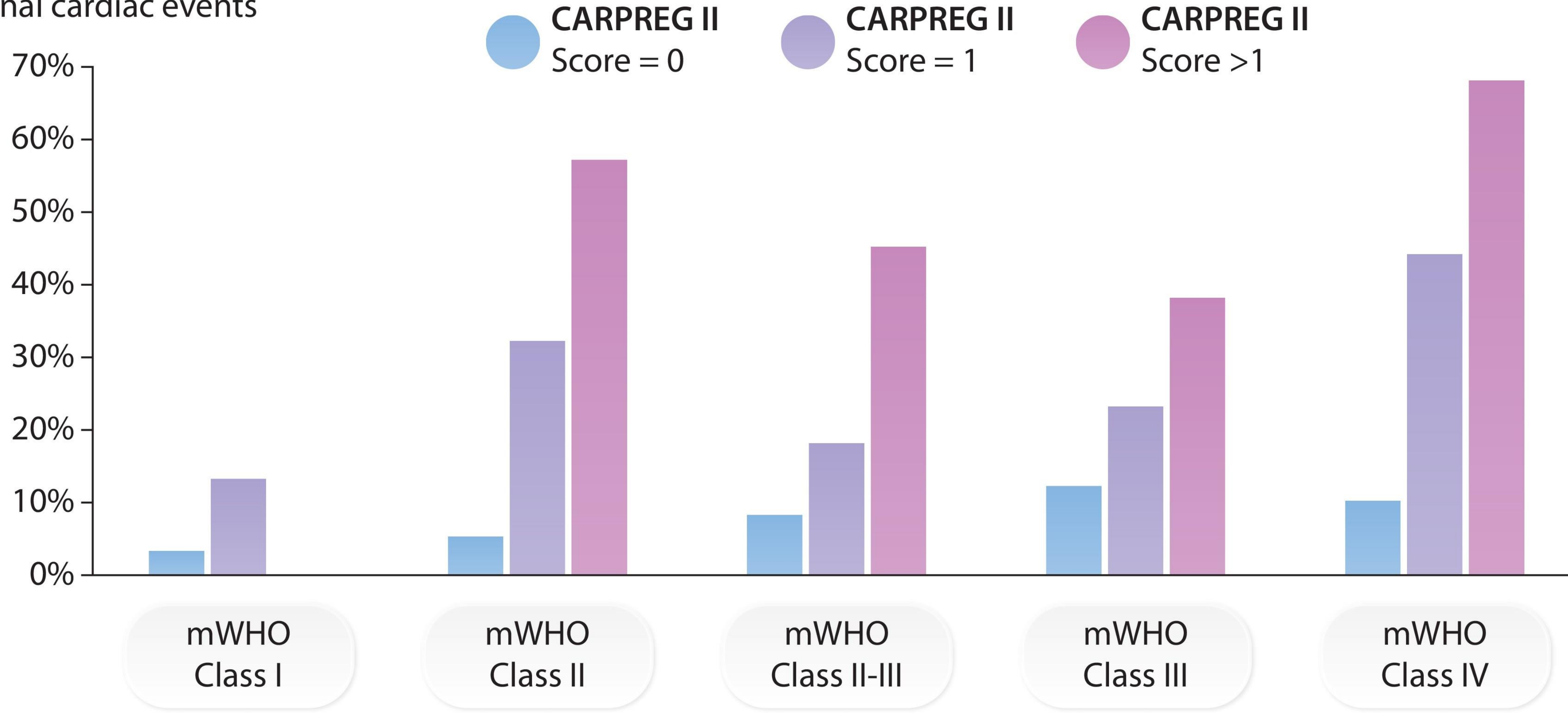


Duke Anesthesiology
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Background



Frequency of adverse maternal cardiac events



Background

	Prior Literature	This Study
Scope	PAH	All WHO PH Groups
Scale	Small sample sizes	N=165 pregnancies
Setting	Single center	Multicenter
Analysis	Limited generalizability	Stratified by disease severity, planned delivery mode, WHO PH group

Hypothesis:

Outcomes vary by PH severity

Hypothesis:

Planned delivery mode does not significantly impact morbidity or mortality

Methodology: Multicenter Study of Pulmonary Hypertension in Pregnancy

STUDY DESIGN & POPULATION



Multicenter Retrospective Cohort

2001–2023;
8 leading U.S.
academic
institutions;
Robust and
generalizable
dataset.

165

Pregnancies

Complicated
by Pulmonary
Hypertension
diagnosis.

DIAGNOSTIC CRITERIA



Echocardiography (Echo)

Suggested PH
when Right
Ventricular
Systolic Pressure
(RVSP)
 ≥ 35 mmHg.



Right Heart Catheterization (RHC)

Confirmation via
RHC (when
available) using
Mean Pulmonary
Arterial Pressure
(mPAP) > 20 mmHg.



PATIENT STRATIFICATION

PH Severity Classification



Non-Severe

mPAP 25–49 mmHg



Severe

mPAP ≥ 50 mmHg
or RVSP ≥ 70 mmHg

WHO PH Groups



1

arterial

2

left heart
disease

3

lung
disease

4

thrombo-
embolic

5

multifac-
torial

Planned Delivery Mode



**Trial of
Labor
(TOL)**



**Planned
Cesarean
Delivery (CD)**



Termination

OUTCOME MEASURES



Primary Outcome: Severe Maternal Morbidity (SMM)

Composite of major
maternal complications
during peripartum.



Secondary Outcome: 1-Year Mortality

Patient survival tracked
full year postpartum to
assess long-term risks.



Secondary Outcome: ECMO Utilization

Tracked incidence and
clinical context of
Extracorporeal Membrane
Oxygenation requirements.

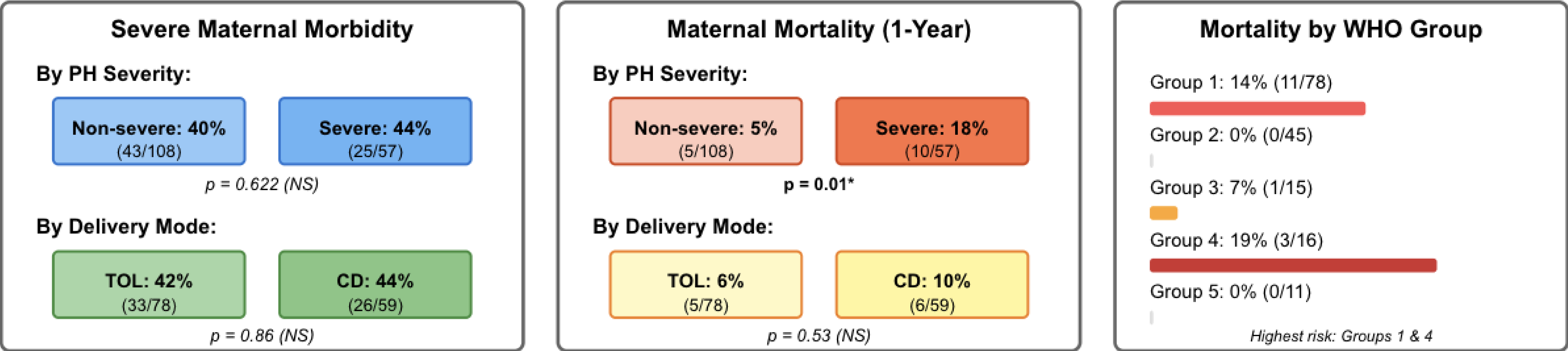


Statistical Significance: Groups
compared using Fisher's exact tests,
 $p < 0.05$ considered significant.

Cohort Characteristics

- Non-severe PH: 108 (65%)
 - Severe PH: 57 (35%)
- TOL: 78 (47%)
 - Planned CD: 59 (36%)
 - Termination: 26 (16%)
 - Unknown: 2 (1%)
- WHO Group 1: 78 (47%)
 - WHO Group 2: 45 (27%)
 - WHO Group 3: 15 (9%)
- WHO Group 4: 16 (10%)
 - WHO Group 5: 11 (7%)

Primary Outcomes



Secondary Findings

ECMO Utilization (n=8)

- VA-ECMO: 5 cases (4 with severe PH, all WHO Group 1)
- VV-ECMO: 3 cases (all WHO Group 1)
- Timing: 2 at delivery, 6 postpartum (>24 hours)

Associated with severe PH & reduced RV function

Conclusions

Planned delivery mode did not significantly affect morbidity or mortality, suggesting that TOL may be a reasonable option, especially for those with non-severe PH



Severe PH and severe right ventricular dysfunction were factors common to those who required ECMO



Mortality varied by PH severity and WHO PH group, highlighting the importance of incorporating PH severity and etiology into multidisciplinary pregnancy planning and future cardio-obstetric guidelines

