

Background

Twin birth rates are rising and have greater associated maternal and neonatal complications compared to singleton births.¹⁻⁵ Mode of delivery (MOD) of twin pregnancies depends on multiple factors including gestational age, fetal presentation and maternal medical problems. Despite planning, twin pregnancies do not always end up being delivered by the antenatally discussed method (planned vaginal delivery (VD) or planned/elective caesarean section (ELCS), and this may increase the risk of poor outcomes.

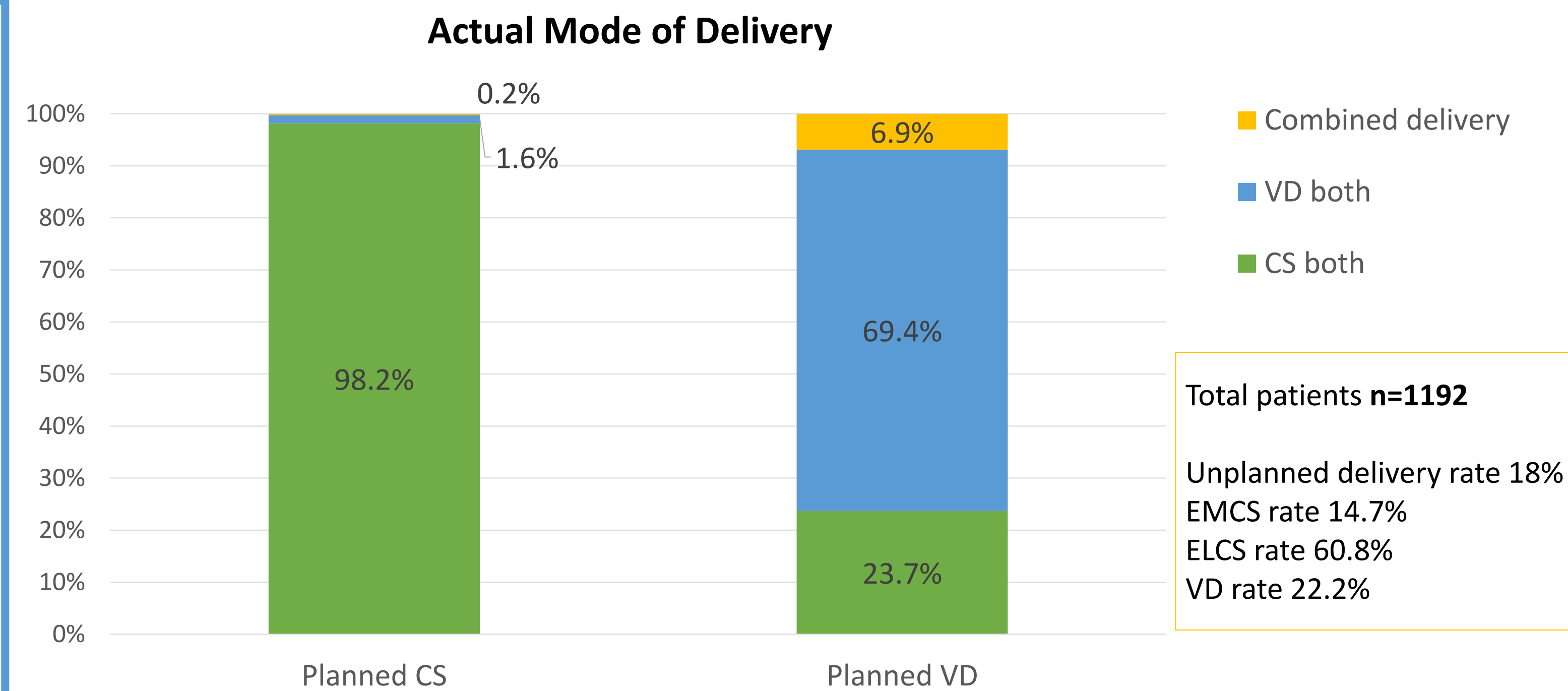
Objective: to explore adverse maternal and neonatal outcomes associated with planned and actual MOD and answer:

1. What influence does delivery type have on outcomes?
2. Are there risk factors associated with failure to achieve intended MOD?

Methods

- large tertiary university hospital
- retrospective study of electronic health records and clinic attendance lists (2010-2022)
- all twin deliveries delivered by VD, ELCS, emergency caesarean section (EMCS) or mixed delivery (twin 1 VD, twin 2 EMCS)
- review of demographics and outcomes including postpartum haemorrhage (PPH) and neonatal unit (NNU) admission

Exclusion criteria: not twins, stillbirth, IUD, < 32weeks gestation and birthweight < 1500g.
Analysis: Stata© MP 17.



Results

1. What influence does delivery type have on outcomes?

EMCS→ majority of severe maternal morbidity (severely unwell/in ITU) (0.4%, 5/1192) and highest PPH rate (22.3%, 39/175)

ELCS→ majority of neonatal mortality and morbidity (e.g. jaundice/necrotising enterocolitis/respiratory distress) and highest NNU admission rate (twin 1 18.8%, 136/725 and twin 2 19.0%, 138/725)

VD→ lowest PPH rate (15.9%, 40/252) and lowest NNU admission rate (both twins 9/252, 3.6%)

2. Are there risk factors associated with failure to achieve intended MOD?

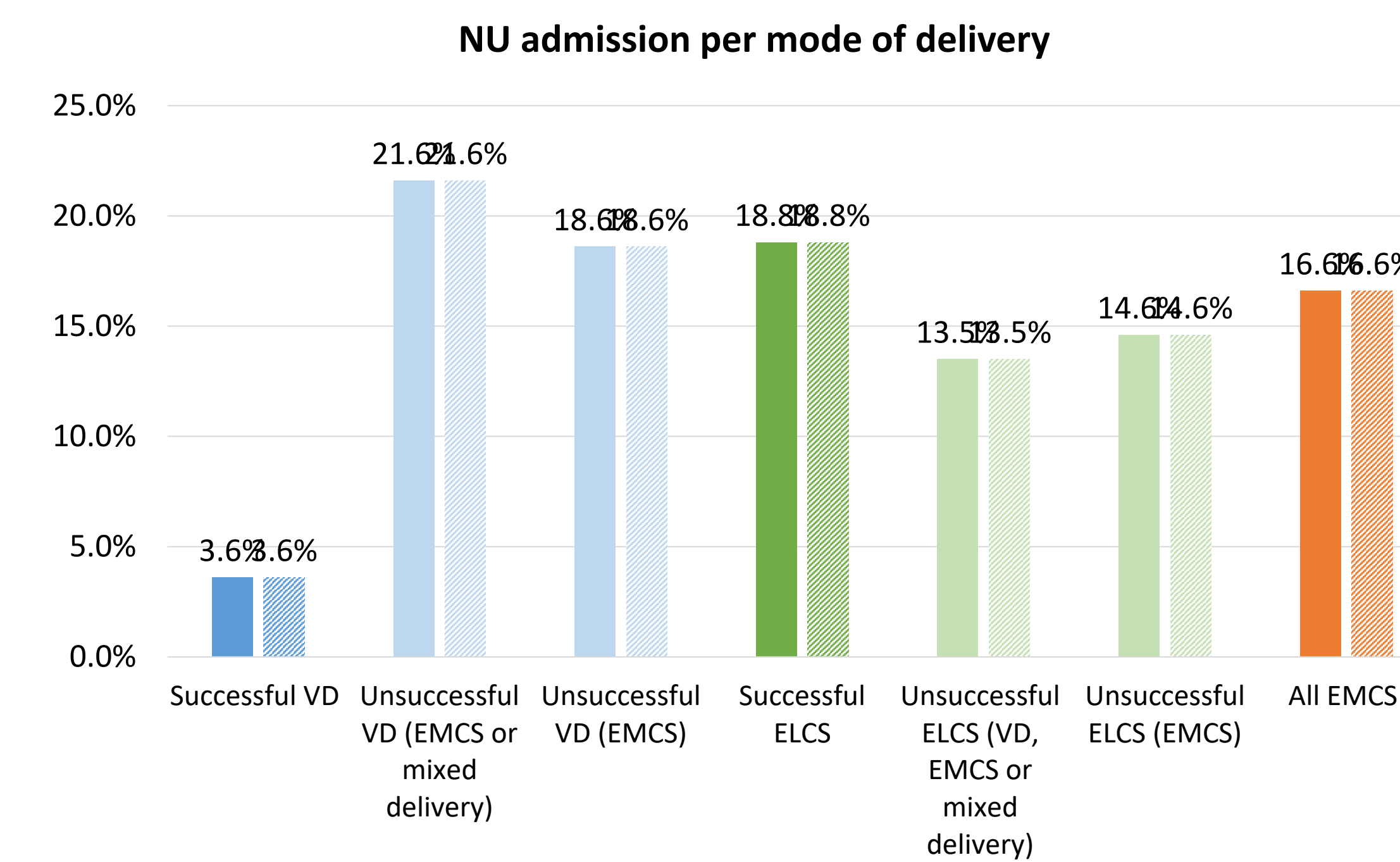
Parity drives significant differences between intended MOD (VD/ELCS) and unintended MOD (EMCS) [0.64 vs 0.34], 95% CI [0.53-0.66], p=0.00], as does gestational age at delivery [95% CI [257.4-258.5] p=0.000]. The unsuccessful deliveries (delivered via unintended method) are on average 5 days younger than the successful deliveries.

Planned VD (unsuccessful)→ higher BMI and lower parity, and higher PPH and NNU admission rate than those successful in getting a VD

Planned ELCS (unsuccessful)→ younger than those that were successful

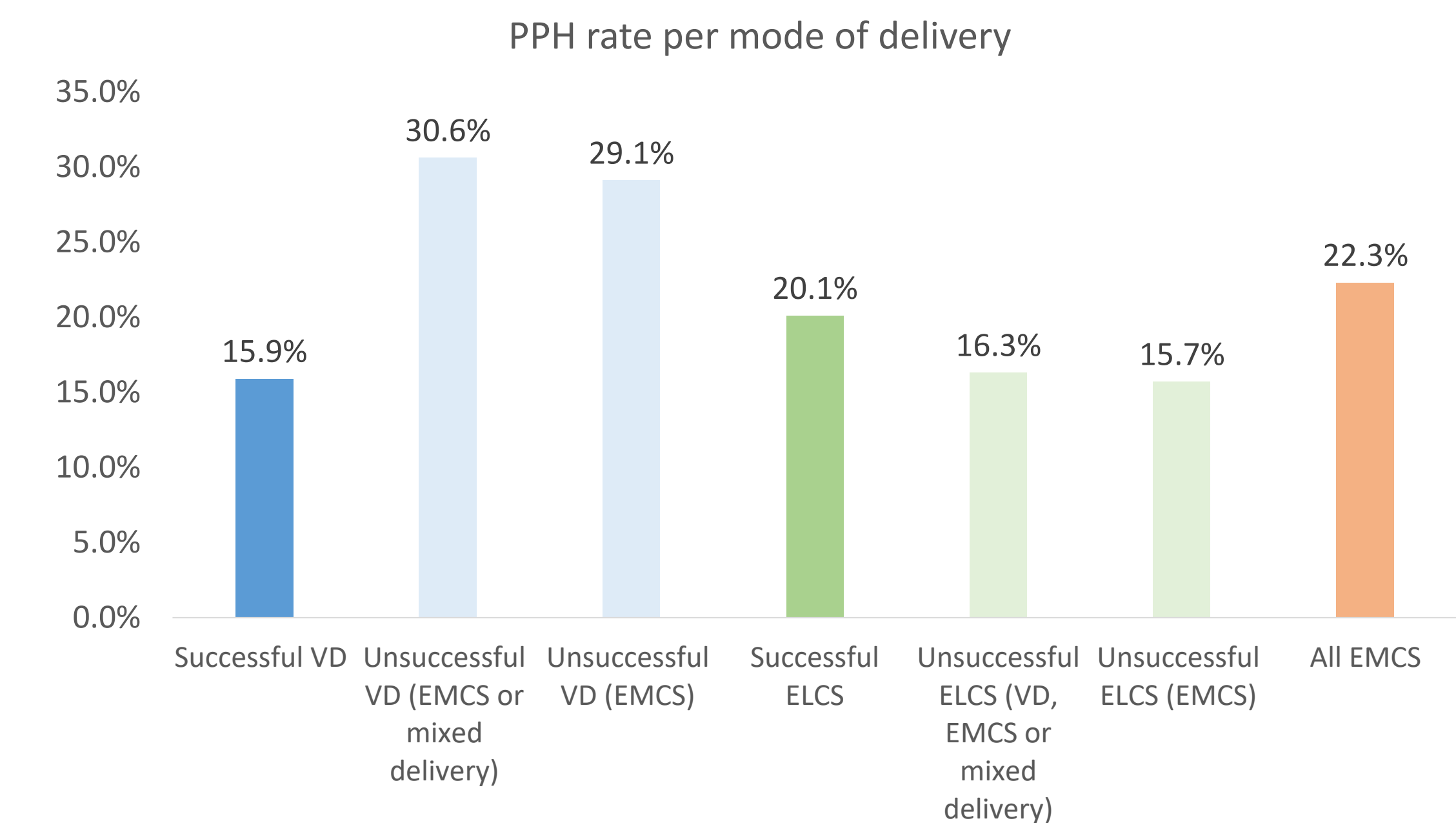
Neonatal morbidity

Planned VD/ELCS (compared to EMCS) is associated with a decreased incidence of NU admission: OR 57% (95% CI (0.2306 to 0.7701) p=0.006). Twin 1 VD is associated with a reduced rate of NU admission (OR 0.30 95% CI [0.10 to 0.91], p=0.03) and PPH (OR 0.37 95% CI [0.14 to 1.01] p=0.05). For twin 2 however, VD increases the odds of twin 2 requiring NU admission by 75 times (OR 75.37, 95% CI [19.92 to 304.50] p<0.001) and birthweight discordance (>25%) doubles the odds (OR 2.05, 95% CI [1.14 to 3.63] p=0.02).



Maternal morbidity

EMCS has the highest PPH rate (22.3%, 39/175) and multiparity increased PPH odds by 1.6 times (OR 1.62 95% CI [1.11 to 2.40] p=0.01).



Conclusions

- Most patients achieved a planned delivery, particularly those with a higher parity.
- Planned deliveries were less likely to result in PPH and admission to NNU of both twins (but particularly twin 2).
- Significant risk factors for maternal PPH include EMCS delivery and multiparity (in elective deliveries) and protective factors include VD of twin 1.
- Significant risk factors for NNU admission include ELCS delivery. VD of twin 2 and birth weight discordance >25% increase the odds of admission of twin 2 to NNU.
- This study explores both clinical outcomes and maternal choice factors and its methods may be easily reproduced in other centres.
- Results may aid localised, individualised delivery planning and potentially reduce morbidity and data could be translated into a predictive decision-making algorithm.
- Potential confounders not accounted for e.g. maternal co-morbidities, induction of labour and operative VD should be further investigated
- A prospective follow-up study integrating patient and clinician questionnaires on MOD choice would add valuable information.

References:

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