

Can a tablet do the job?

The effect of oral calcium on maternal plasma concentration

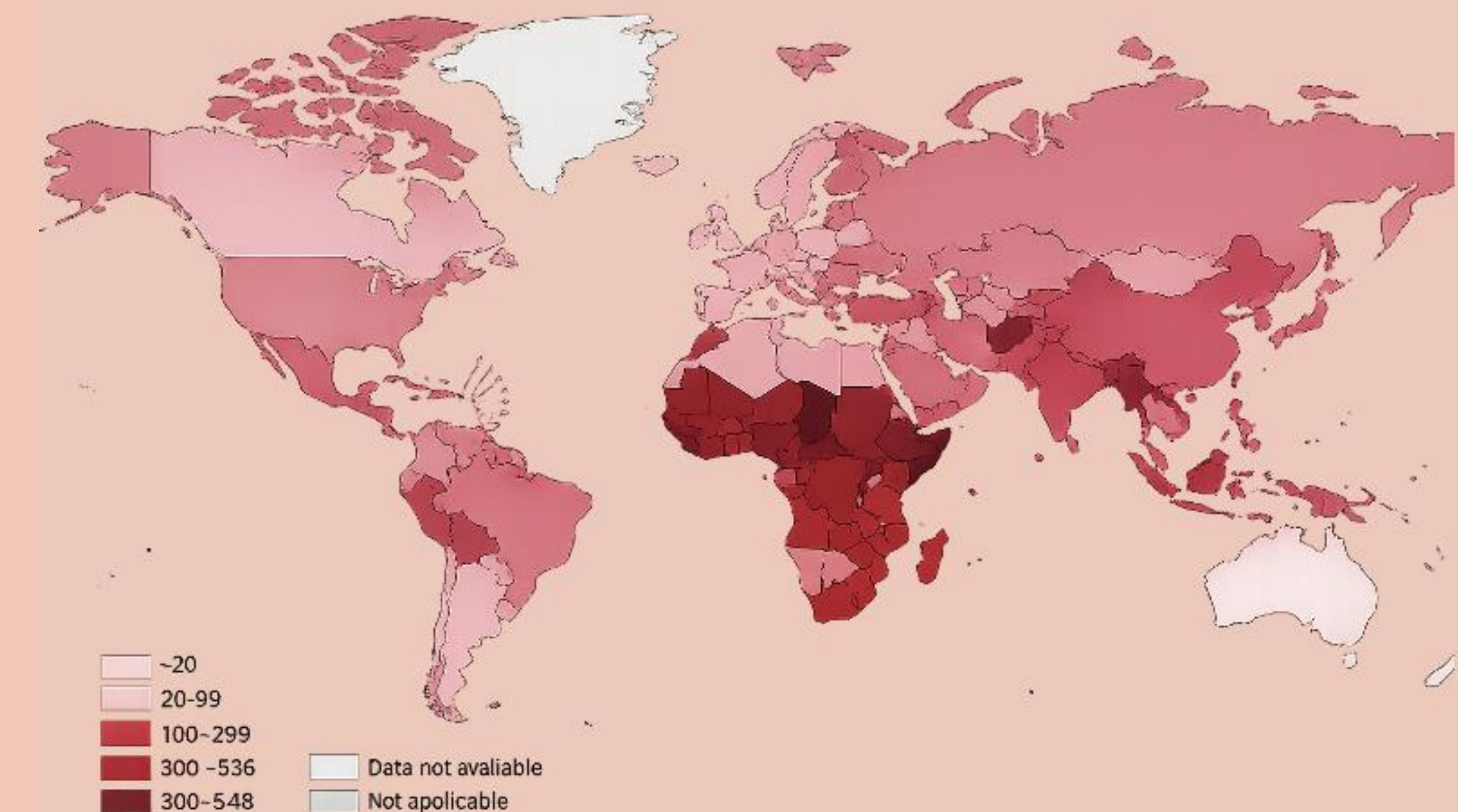
L. Blake, MD; P. Callihan, MD, PhD; J. Abrams, MD; C. Stanwyck, MD; B. Carvalho, MBBCh; J. Ansari, MD

Background

- Postpartum hemorrhage (PPH) remains the leading global cause of maternal mortality
- Emerging data suggests IV calcium may reduce PPH due to uterine atony
- In low resource settings where IV access is not readily available, an **oral alternative** may be beneficial

Hypothesis/Aim

To determine whether common oral calcium formulations can raise ionized calcium levels to support uterine contractility



Can a tablet do the job?

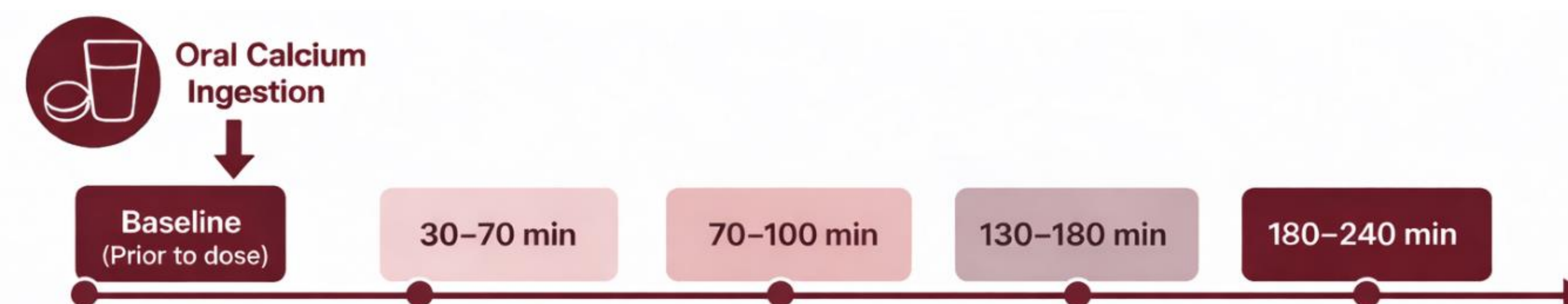
The effect of oral calcium on maternal plasma concentration

Study Design and Methods

- Single-center interventional study
- Term laboring patients (March-October 2025)
- Exclusion criteria: weight < 55kg or > 100 kg, severe range BP, renal dysfunction, congenital or acquired cardiac disease
- Participants were administered oral calcium (2 tablets) followed by serial blood sampling to assess ionized calcium
- Post-ingestion tolerability survey

Oral Calcium Pharmacokinetic Study Participant Characteristics, n = 20

Variable	N (%), Mean $\pm$ SD, or Median [Interquartile Range]
Age (years)	30.6 $\pm$ 6.3
Self-reported race and ethnicity	
Asian	6 (30%)
Black	0 (0%)
Hispanic	11 (55%)
White	3 (15%)
Weight (kg)	81.3 $\pm$ 11.2
Body mass index (kg/m ²)	32.7 $\pm$ 4.1
Gestational age, completed weeks	39 [37-39]
Gravida	1 [1-2]
Epidural analgesia	8 (40%)
Calcium formulation and dose	
Calcium carbonate, 1200mg	12 (60%)
Calcium citrate, 1250mg	8 (40%)
Quantitative blood loss, mL	346 [156-908]
Pre-delivery hemoglobin, mg/dL	37.4 $\pm$ 3.2
Post-delivery hemoglobin, mg/dL	31.1 $\pm$ 3.8



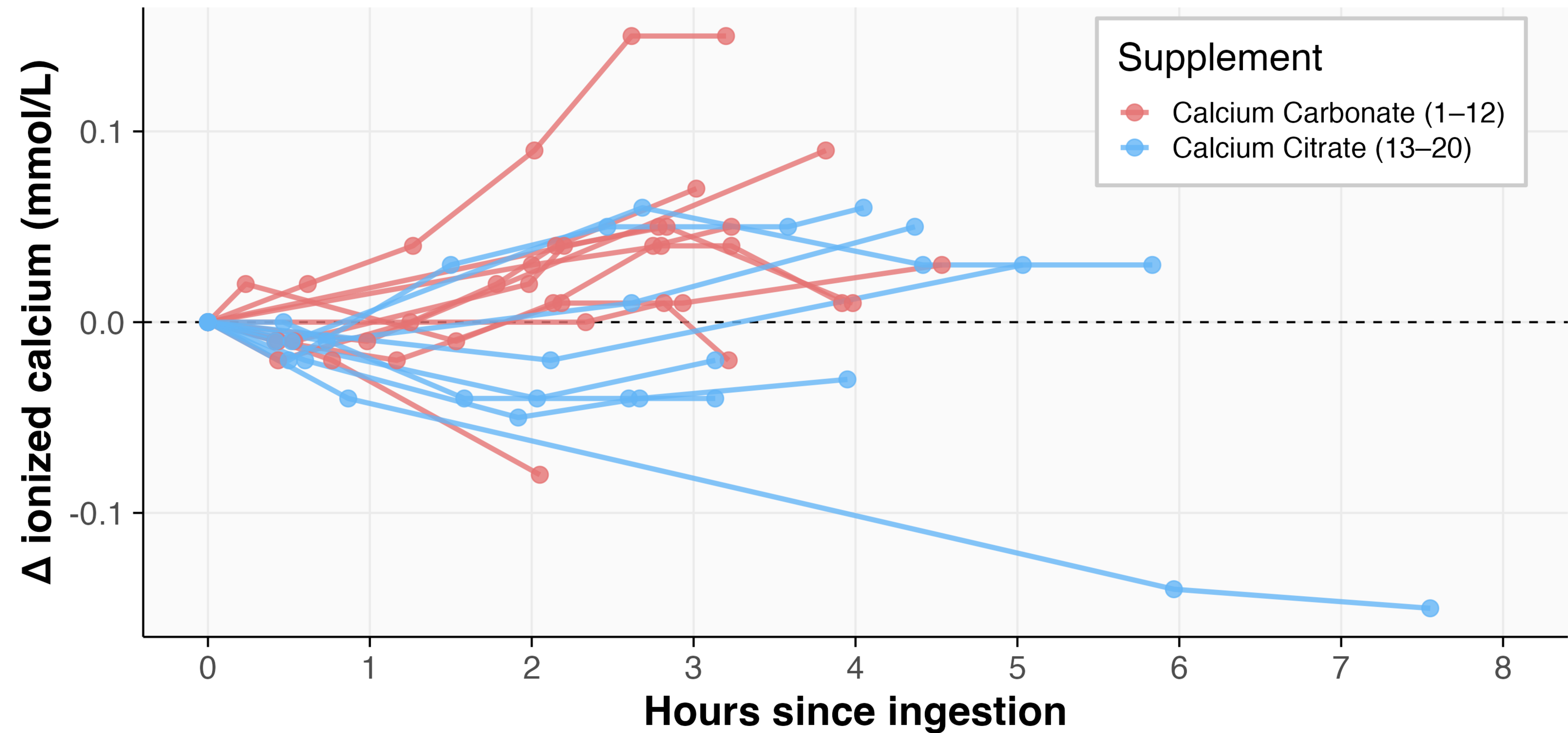
Can a tablet do the job?

The effect of oral calcium on maternal plasma concentration

Results

- **Minimal to no increase in serum ionized calcium** with either oral calcium formulation
 - 1200 mg calcium carbonate
 - 1250 mg calcium citrate
- No adverse side effects were reported

Change in calcium over time- Calcium carbonate vs. Calcium citrate



Can a tablet do the job?

The effect of oral calcium on maternal plasma concentration

Discussion/Conclusion

- The package insert “maximum” dose of two formulations of oral calcium failed to increase serum ionized calcium in laboring patients
- Recent randomized trials suggest IV calcium may reduce need for second-line uterotonics, lower rates of uterine atony, and decrease quantitative blood loss due to atony
- Lack of effect of oral calcium likely reflects **limited GI absorption** and **insufficient dosing** during labor
- Future studies that focus on **higher or repeated oral dosing** strategies are needed

