

# A Study to Identify Newborns Requiring Neonatal Abstinence Syndrome Observations Based on Dosage of Maternal Medication and Symptom Timing

## INTRODUCTION

Although maternal medications associated with Neonatal Abstinence Syndrome (NAS) are well recognised, there remains a critical lack of data regarding the dosage thresholds that precipitate clinically significant withdrawal. This leads to precautionary admissions of newborns with low-risk exposures, potentially increasing hospital burden and parental anxiety.

## OBJECTIVES

Establish evidence-based criteria to identify newborns requiring NAS observation and determine the duration of monitoring based on:

1. Dosage of maternal medications associated with NAS
2. Timing of Peak onset of withdrawal symptoms

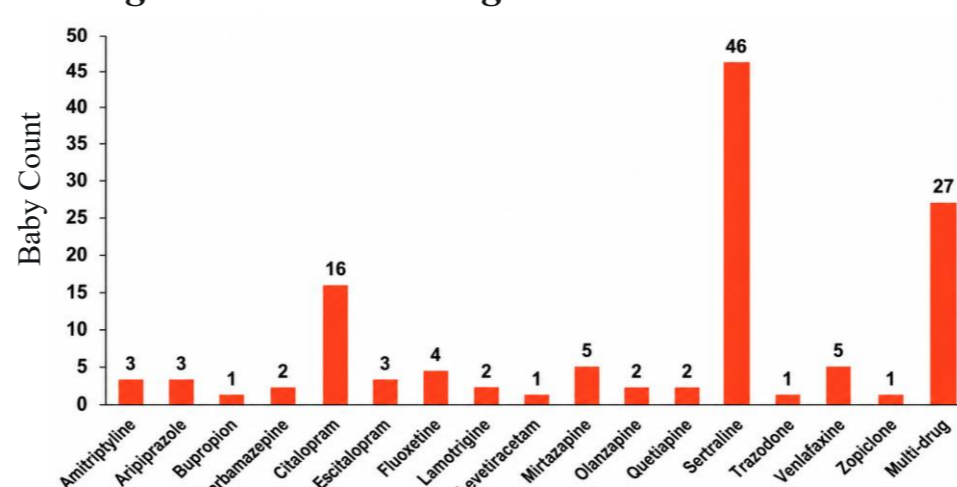
## METHODS

- Two-centre retrospective observational study, from May 2019 to September 2025
- The study included neonates born with documented in-utero exposure to maternal psychotropic/anticonvulsant medications, including those exposed to multiple such agents and cases with coexisting substance misuse.
- Infants monitored solely due to maternal substance misuse, without concurrent prescribed medication exposure, were excluded.
- Maternal medication dosages were correlated with peak neonatal Finnegan scores recorded during hospitalisation.
- Symptom severity was utilised to infer clinically relevant thresholds for admission, while temporal analysis of peak scores informed recommendations regarding safe discharge timing.

## RESULTS

- Sample size: 124
- 88.7 % were term babies, Median Birth Weight was 3.21 Kgs

### Drug Distribution amongst the cohort



- Among mothers prescribed Sertraline, 39(84.7%) were on a dose of 100 mg or less.
- 71/124(57%) babies had abstinence symptoms.
- Most infants reached their highest Finnegan scores within 24 hours, with jitteriness being the most common symptom.
- Overall, only three infants (2.4%) reached scores  $\geq 8$ , necessitating intensive care treatment (two after venlafaxine  $\geq 75$  mg; one after sertraline 150 mg).
- Venlafaxine withdrawal manifested as seizures at 3–4 days of life
- Sertraline-related symptoms - comprising hypertonia, tremors, hypoventilation, mild persistent pulmonary hypertension - emerged within 24 hours of life.

### Within the sertraline subgroup:

- 21 infants (45.7%) had a Finnegan score of '0' during the observation period.
- Among the remaining 25 infants, the median score was 3 (range 1 to 6), with 96% (n=24) reaching their peak score within 48 hours of life.
- All infants exposed to  $\leq 100$  mg had scores  $\leq 6$  and did not require medical intervention.

## CONCLUSIONS

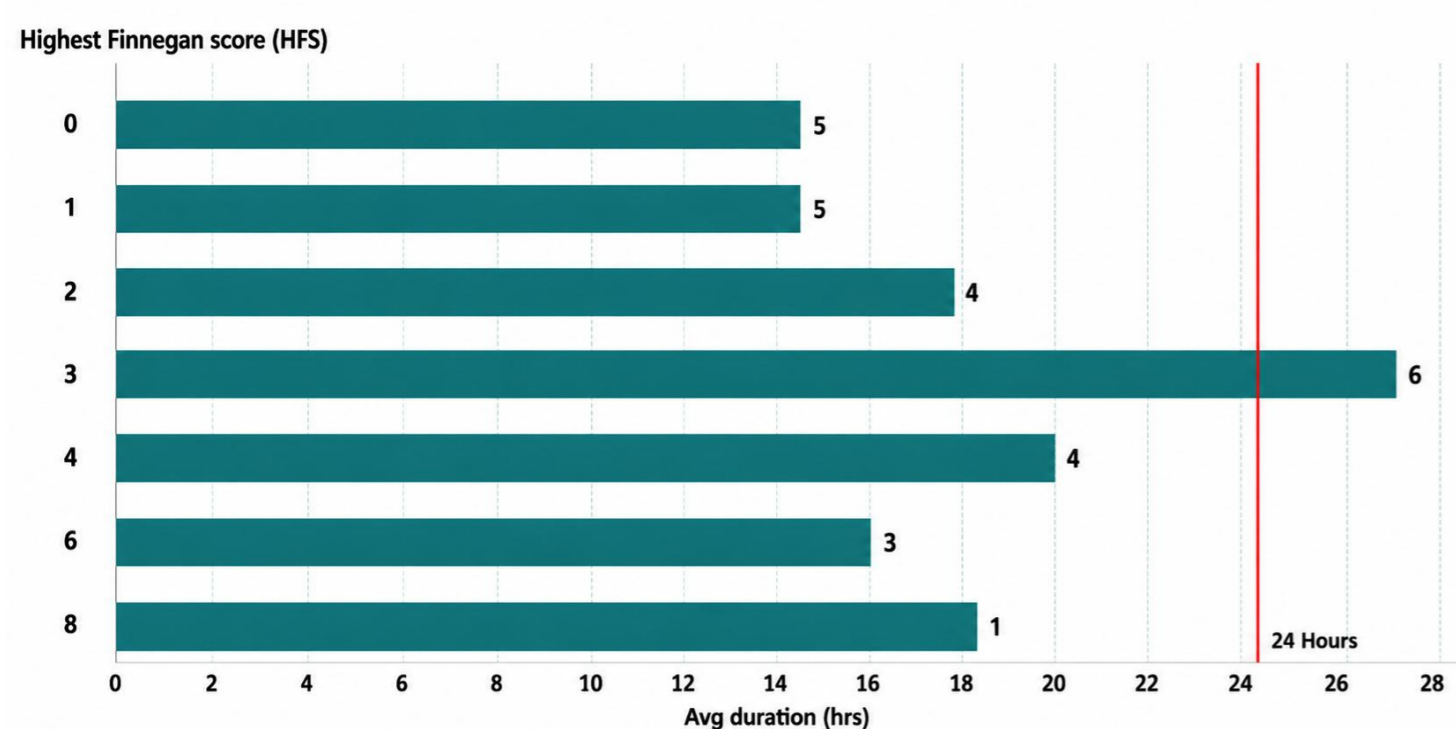
- Maternal medication dose is a critical predictor of the severity of neonatal withdrawal.
- Based on our findings, babies exposed to Sertraline of 100mg or less did not benefit from withdrawal monitoring in hospital, and therefore, routine observation for these infants may be unnecessary.
- Infants exposed to higher sertraline doses who remain asymptomatic can be safely discharged after 48 hours with clear safety netting advice.
- Given the small number of babies exposed to other individual drugs, we were unable to draw firm conclusions on dose-response relationships; larger studies are required to determine safe cutoffs and monitoring recommendations for non sertraline agents.

## REFERENCES

1. Finnegan LP, Connaughton JF Jr, Kron RE, Emich JP. Neonatal abstinence syndrome: assessment and management. *Addict Dis.* 1975;2(1-2):141–58.
2. Patrick SW, Schiff DM, Committee on Substance Use and Prevention. A Public Health Response to Opioid Use in Pregnancy. *Pediatrics.* 2017;139(3):e20164070.
3. <https://eoneonatalpccsicnetwork.nhs.uk/wp-content/uploads/2021/10/NAS-guideline-for-website.pdf>
4. Atypical antipsychotics and NAS Risk of Poor Neonatal Adaptation Syndrome Among Infants Exposed to Second-Generation Atypical Antipsychotics Compared to Antidepressants: Results From the National Pregnancy Registry for Psychiatric Medications Adele C. Viguera et al *J Clin Psychiatry* 2023;84(1):22m14492

## RELEVANT IMAGES

### Average duration of presentation of highest Finnegan score - Sertraline



### Highest Finnegan score presentation based on dose - Sertraline

