Phenobarbital in Neonatal Abstinence Syndrome (NAS)

Clinical Indications & Management Protocols

Distilled insights from the Toronto Resident's Handbook of Neonatology

Clinical Pathway

Non-Pharmacologic

Skin-to-skin, rooming-in, swaddling, low-stimulation environment, breastfeeding.

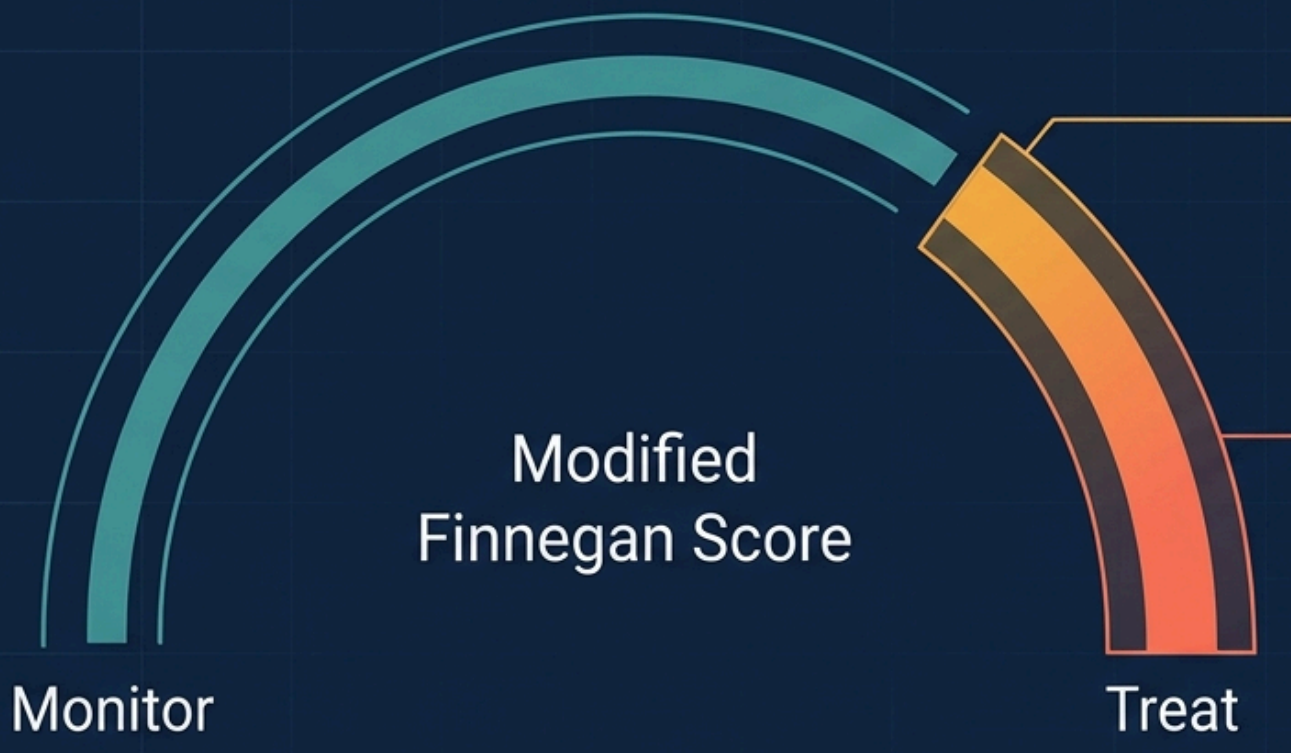
Primary Pharmacologic

Oral Morphine (starting at 0.32 - 0.8 mg/kg/day based on Finnegan score).

Advanced Escalation

Phenobarbital or Clonidine. Deployed when primary mechanisms fail.

The Treatment Trigger



≥8 on 3 consecutive assessments

Average ≥12 on 2 consecutive assessments

Scoring begins 1-2 hours post-delivery and continues q3-4h for a minimum of 72 hours.
Note: 30-75% of infants will require medical intervention.

Clinical Triggers for Escalation

Trigger 1: Refractory Symptoms

The infant remains highly symptomatic despite receiving high-dose first-line therapy (≥0.8 mg/kg/day PO Morphine).

Trigger 2: Complex Exposure

Indicated specifically as an adjunct in cases of maternal polysubstance use, where opioid-specific withdrawal protocols are insufficient.

High-Visibility Dosing Reference

LOAD

10 mg/kg PO

q12h x 3 doses

MAINTAIN

5 mg/kg/day PO

Daily maintenance

WEAN

Reduce by 10-20%

Total daily dose every 1-2 days once symptoms are controlled.

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Medicines

Phenobarbital

IV or IM | Oral

40mg/mL - 4% gtts | 5mg/mL Solution | 20mg/5mL Solution | 30mg/7.5mL Solution | 60mg/15mL Solution

Loading | Maintenance

Weight (kg)
2

Desired dose (mg/kg/dose)
10

Suggested Loading dose: 15 to 20 mg/kg/dose.
Abstinence: 16 mg/kg/dose

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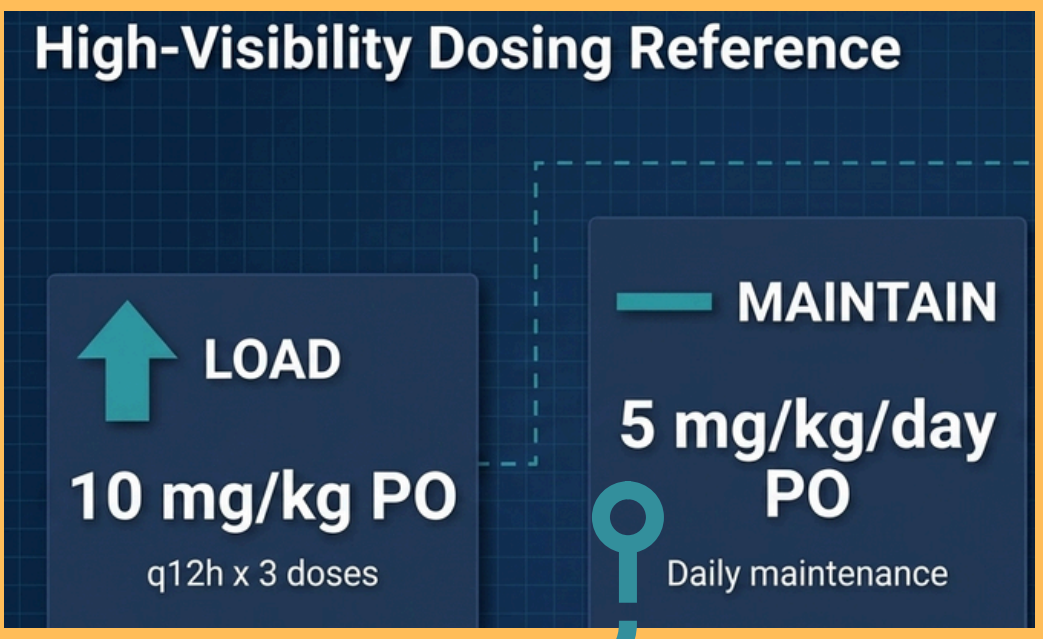
Medicines

Phenobarbital
Oral - 40mg/mL - 4% gtts

Dose	20mg
Interval	Now
Dose	20drops

Note: in drop presentation, 1 drop usually corresponds to 1 mg manufacturer's presentation). The drops should be ted in water. Maximum anticonvulsant dose is up to 40 mg/kg, increased every 10 mg/kg/dose for 20 to 30 min. Premature infants < 1,500 g may require Loading doses of less than 15 mg/kg, followed by a single dose of less than 3



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Medicines

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IV or IM | Oral

40mg/mL - 4% gtts | 5mg/mL Solution

20mg/5mL Solution | 30mg/7.5mL Solution

60mg/15mL Solution

Loading | Maintenance

Weight (kg)
2

Desired dose (mg/kg/day)
5

Suggested maintenance dose: 3 to 5 mg/kg/day.
Abstinence: 2 to 8 mg/kg/day

Phenobarbital
Oral - 40mg/mL - 4% gtts

Dose	5mg
Interval	12/12h
Dose	5drops

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Medicines

Phenobarbital
Oral - 40mg/mL - 4% gtts

Dose	5mg
Interval	12/12h
Dose	5drops

Note: in the d ion, 1 drop usually corresponds to 1 mg (see r ure presentation). The drops should be diluted . Maximum anticonvulsant dose is up to 40 mg/ eased every 10 mg/kg/dose for 20 to 30 min. P e infants < 1,500 g may require Loading doses of an 15 mg/kg, followed by a single dose of less than 3 g/kg/dose 24 hours later. In the case of withdrawal syndrome, weaning can be achieved by reducing the dose by 20% every other day.

Additional information
Bibliographical references ›

Please note: the information presented in this application is taken from bibliographical references and is for information purposes only. The doctor is solely responsible for prescribing, administering and making the necessary adjustments. This app does not replace medical guidelines or clinical judgment.

Anatomical Warning Tag

Pharmacokinetics

Extremely long half-life (45-100 hours). Mandates strict serum level monitoring.

Neurological Impact

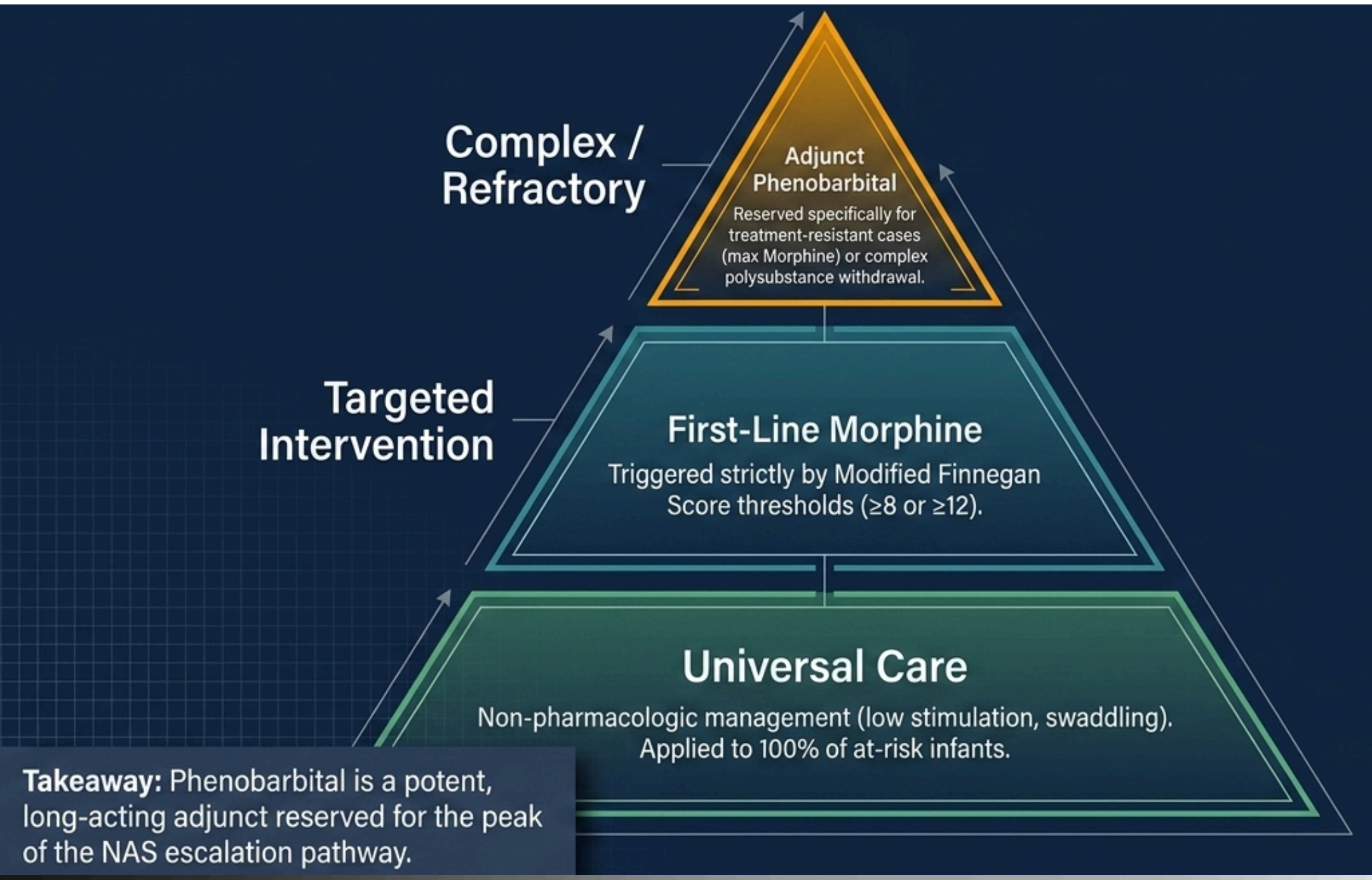
High sedative effect. Can mask alternative neurological symptoms.

Gastrointestinal Risk

Formulation contains 15% alcohol. May actively worsen GI symptoms.

Morphine vs. Phenobarbital Comparison

	Morphine	Phenobarbital
Role	Primary First-Line	Secondary Adjunct
Clinical Trigger	Finnegan Score ≥8	Refractory on ≥0.8 mg/kg/day Morphine or Polysubstance exposure
Half-Life	Short (easier titration)	45-100 hours (prolonged wash-out)
Primary Cautions	Opioid toxicity	Severe sedation, 15% alcohol content, worsened GI symptoms



Takeaway: Phenobarbital is a potent, long-acting adjunct reserved for the peak of the NAS escalation pathway.