

BOXES, FIGURES AND TABLES

Box 1. List of pharmacological pain management options.

Pharmacological pain management options:

- Epidural analgesia
- Parenteral opioids, such as fentanyl, diamorphine and pethidine
- Patient-controlled analgesia, such as remifentanyl
- Inhaled analgesia, such as nitrous oxide
- Non-opioid drugs, such as diazepam
- Local anesthetic nerve block, such as paracervical block

Box 2. List of outcome categories (maternal, fetal, neonatal, child health, health service, provider's perspective and economic outcomes) and sub-categories based on consultations with clinical experts.

<p>Maternal outcomes</p> <p>Pain-related outcomes</p> <p>Pain intensity, variably measured using:</p> <ul style="list-style-type: none"> • visual analogue score or visual analogue pain score • verbal analogue/rating score • numerical rating scale • other methods <p>Back soreness/Back ache</p> <p>Motor blockade</p> <p>Sensory blockade</p> <p>Women's perspective outcomes</p> <p>Woman's satisfaction with pain relief</p> <ul style="list-style-type: none"> • visual analogue score or visual analogue pain score • numerical rating scale • descriptive scale (verbal) • percentage score <p>Satisfaction with analgesia in labour measured during the postnatal period</p> <p>Memory of labour</p> <p>Sense of control in labour</p> <p>Satisfaction with childbirth experience</p> <p>Desire to use the same analgesia in future</p> <p>Physiological outcomes</p> <p>Maternal blood pressure</p> <p>Maternal hypotension</p> <p>Maternal heart rate</p> <p>Respiratory rate</p>	<p>Respiratory depression</p> <p>Apnoea</p> <p>End tidal CO₂ (EtCO₂)</p> <p>Oxygen saturation (SaO₂)</p> <p>Oxygen desaturation (as defined by trialist)</p> <p>Maternal acid-base balance/blood gases</p> <p>Maternal serum levels (lactate, aspartate transaminase, creatinine, prolactin)</p> <p>Maternal temperature</p> <p>Labour and childbirth outcomes</p> <p>Duration of stages of labour</p> <p>Slow labour progress</p> <p>Progress of cervical dilatation</p> <p>Uterine contractions</p> <p>Uterine relaxation</p> <p>Spontaneous membrane rupture</p> <p>Amniotomy</p> <p>Maternal expulsion period</p> <p>Meconium-stained liquor</p> <p>Malposition</p> <p>Use of catheterisation during labour</p> <p>Mode of birth</p> <p>Spontaneous vaginal birth</p> <p>Assisted vaginal birth (including forceps, vacuum)</p> <p>Caesarean section (emergency, elective)</p> <p>Indication for caesarean section</p> <p>Uterine rupture</p> <p>Continuous support (e.g. midwifery support, contact with relatives)</p> <p>Birth trauma</p>	<p>Perineal trauma</p> <p>Oxytocin augmentation</p> <p>Episiotomy</p> <p>Infection-related outcomes</p> <p>Fever</p> <p>Urinary infection</p> <p>Mental health-related outcomes</p> <p>Mental state</p> <p>Postnatal depression</p> <p>Anxiety/distress</p> <p>Immediate postpartum outcomes</p> <p>Blood loss</p> <p>Postpartum haemorrhage</p> <p>Other maternal outcomes</p> <p>Vaginal haematoma</p> <p>Negative effects on mother/baby interaction</p> <p>Addition of other pain relief interventions (other than study drug)</p> <p>Need for rescue analgesia/medication (mother or baby)</p> <p>Duration of analgesia</p> <p>Amount of analgesia given</p> <p>Onset of analgesia</p> <p>Time from request of analgesia to time she felt the level of pain relief was satisfactory</p> <p>Time from study drug administration until request for additional analgesia</p>	<p>Time from the administration of analgesia to the beginning of the second stage</p> <p>Number of women after 10 mins experiencing satisfactory pain relief</p> <p>Number of top-up doses requested to treat breakthrough pain</p> <p>Maternal side effects</p> <p>Bradycardia</p> <p>Headache</p> <p>Nausea</p> <p>Vomiting</p> <p>Itching (pruritus)</p> <p>Feeling cold</p> <p>Shivers</p> <p>Drowsiness</p> <p>Sedation</p> <p>Euphoria</p> <p>Dizziness</p> <p>Numbness</p> <p>Dreams, hallucinations</p> <p>Smell of gas</p> <p>Dry mouth</p> <p>Orientation</p> <p>Motor coordination</p> <p>Mobility, ability to ambulate</p> <p>Hyperthermia</p> <p>Patient cooperation</p> <p>Patient responsiveness</p> <p>Pain experienced form injection</p> <p>Urinary retention</p> <p>Renal and hepatic toxicity</p> <p>Cardiac compromise</p>
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Box 3. List of outcome categories (maternal, fetal, neonatal, child health, health service, provider's perspective and economic outcomes) and sub-categories based on consultation with clinical experts continued.

<p>Venous thromboembolic events Require general anaesthetic for caesarean section Other serious maternal morbidity (e.g. meningitis, eclampsia, ICU admission)</p> <p>Fetal outcomes</p> <p>Fetal distress/non-reassuring fetal status Fetal bradycardia Abnormal fetal heart rate Fetal temperature Fetal heart rate monitoring/CTG Fetal scalp blood sampling Doppler pulsatility index</p> <p>Neonatal outcomes</p> <p>Physiological outcomes</p> <p>Umbilical cord blood gases (arterial or venous) Neonatal acid-base balance Acidosis, as defined by cord blood arterial pH <7.2, 7.15 Blood chemistry (base excess or deficits of haemoglobin concentrations) Neonatal oxygen saturation Neonatal temperature Neonatal blood pressure Apgar score (as defined by trialist)</p> <p>Cardio-respiratory outcomes</p>	<p>Silverman-Anderson Score Time of delivery to first breath Neonatal respiratory rate Neonatal asphyxia Neonatal resuscitation Oxygen and ventilation support Respiratory depression</p> <p>Nutrition outcomes</p> <p>Breastfeeding (at specified time points) Birth weight Weight change Neonatal feeding behaviour Neonatal hypoglycaemia</p> <p>Neurological outcomes</p> <p>Neurobehavioral assessment Muscle tone The Amiel-Tison Test at 2 and 24 hours Neurological and Adaptive Capacity Score (NACS) at 2 and 24 hours Neonatal seizure within 24 hours after birth Neurodevelopment outcomes during infancy</p> <p>Infection-related outcomes</p> <p>Neonatal fever Neonatal sepsis</p> <p>Metabolic outcomes</p> <p>Neonatal serum bilirubin levels/hyperbilirubinemia</p>	<p>Neonatal jaundice Neonatal lethargy/irritability</p> <p>Other neonatal outcomes</p> <p>Long-term neonatal complication Neonatal morbidity (e.g. intraventricular haemorrhage, necrotising enterocolitis) Neonatal mortality</p> <p>Child health outcomes</p> <p>Poor infant outcomes at long-term follow-up (as defined by trialist, e.g. seizures, disability in childhood)</p> <p>Health service outcomes</p> <p>Maternal</p> <p>Duration of maternal admission Postpartum follow-up Postpartum hospital admission within 6 weeks of discharge Number of women re-admitted into hospital within one month Number of women requiring ongoing anaesthetic follow-up following discharge from hospital</p> <p>Neonatal</p> <p>Paediatrician assessment at 24 hours Admission to SCN/NICU Naloxone administration</p>	<p>Infant discharged from hospital 6 days postpartum</p> <p>Provider outcomes</p> <p>Provider's perspective of labour pain, pain relief, or progress of labour</p> <p>Adverse effects on healthcare provider</p> <p>Occupational exposure (for the professional) Toxic effects on reproduction (for the professional)</p> <p>Economic outcome</p> <p>Cost (as defined by trialist)</p>
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Figure 1. PRISMA Flow Chart

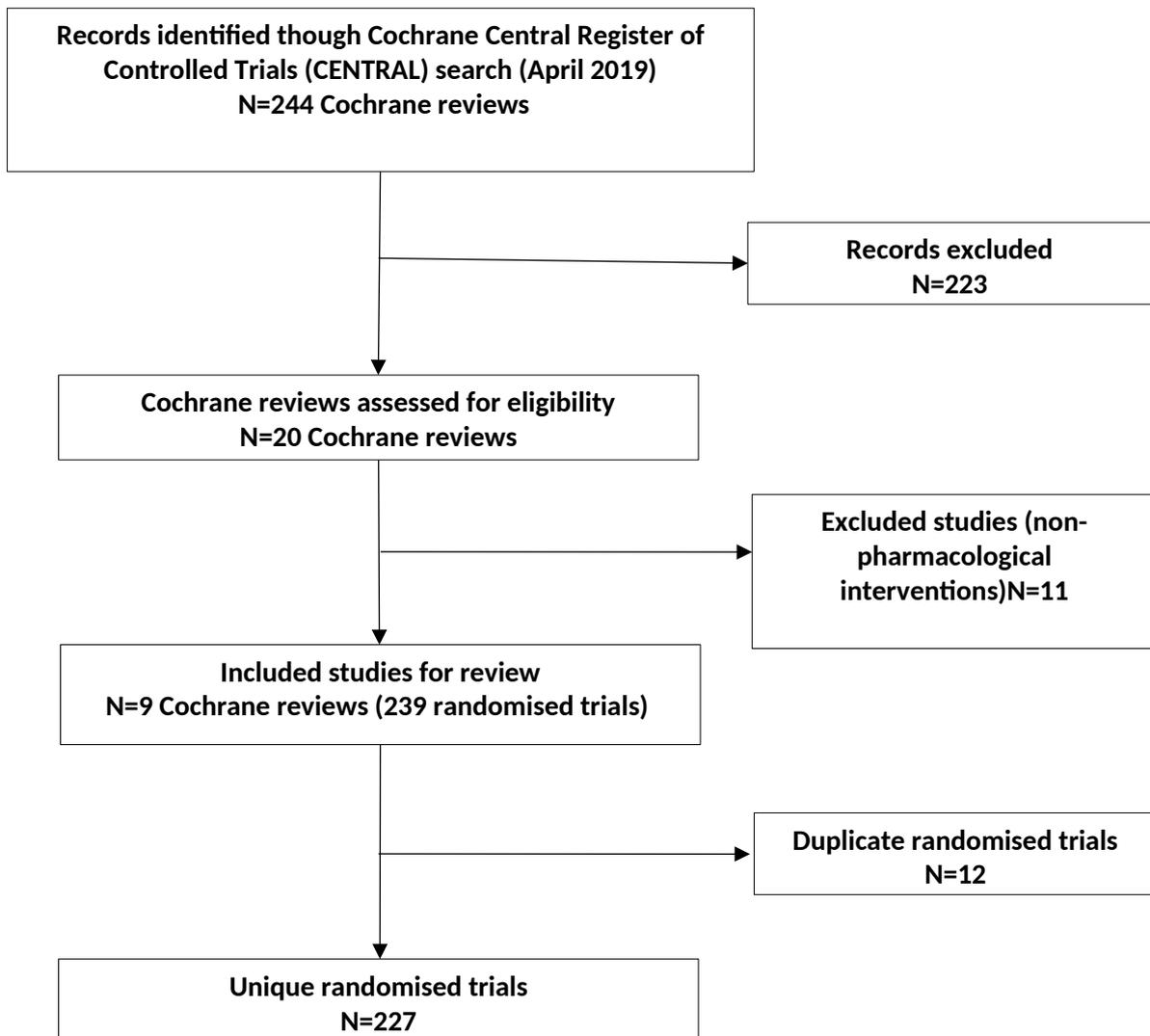


Table 1. Frequency of outcomes reported in N=236 studies (Cochrane reviews and RCTs).

Domain	Number of Outcomes N=146	Number of Studies (reviews and trials) N=236
Maternal outcomes	92/146 (63.0)	236/236 (100)
Pain-related	4/92 (4.3)	172/236 (72.9)
Women's perspectives¹	6/92 (6.5)	143/236 (60.6)
Labour and childbirth	22/92 (23.9)	208/236 (88.1)
Physiological	12/92 (13.0)	172/236 (72.9)
Infection-related	2/92 (2.2)	20/236 (8.5)
Mental health	3/92 (3.3)	17/236 (7.2)
Immediate postpartum	3/92 (3.3)	39/236 (16.5)
Side effects	28/92 (30.4)	194/236 (82.2)
Other ²	12/92 (13.0)	186/236 (78.8)
Fetal outcomes	7/146 (4.8)	147/236 (62.3)
Neonatal outcomes	34/146 (23.3)	218/236 (92.4)
Physiological	8/34 (23.5)	207/236 (87.7)
Cardio-respiratory	7/34 (20.6)	80/236 (33.9)
Nutrition	5/34 (14.7)	90/236 (38.1)
Neurological	6/34 (17.6)	40/236 (16.9)
Infection	2/34 (5.9)	14/236 (5.9)
Metabolic	3/34 (8.8)	14/236 (5.9)
Other ³	3/34 (8.8)	30/236 (12.7)
Child health outcomes	1/146 (0.7)	4/236 (1.7)
Health service outcomes	9/146 (6.2)	105/236 (44.5)
Maternal	5/9 (55.6)	49/236 (20.8)
Neonatal	4/9 (44.4)	83/236 (35.2)
Provider outcomes	3/146 (2.1)	57/236 (24.2)
Provider's perspective	1/3 (33.3)	56/236 (23.7)
Adverse effects on provider	2/3 (66.7)	1/236 (0.4)
Economic outcomes	1/146 (0.7)	15/236 (6.4)

¹ Examples of women's perspectives include a woman's satisfaction of pain relief and childbirth experience, sense of control in labour and memory of labour, as defined by trialist

² This includes but is not limited to the onset, time and duration of analgesia used during labour and childbirth

³ Includes long-term neonatal complications, morbidity and mortality

