**Supplementary material**

**Appendix S1:** **CONCEPTT Collaborative Group** (listed according to recruitment numbers):

Cambridge University Hospitals NHS Foundation Trust, Cambridge, UK: Helen Murphy, Jeannie Grisoni,

Carolyn Byrne, Sandra Neoh, Katy Davenport, (43); Alberta Health Services, University of Calgary, Calgary,

Canada: Lois Donovan, Claire Gougeon, Carolyn Oldford, Catherine Young (39); King’s College Hospital,

London, UK: Stephanie Amiel, Katharine Hunt, Louisa Green, Helen Rogers, Benedetta Rossi (29); Mount

Sinai Hospital, Toronto, Canada: Denice Feig, Barbara Cleave, Michelle Strom (22); Hospital de la Santa

Creu i Sant Pau, Barcelona, Spain and CIBER‐BBN, Zaragoza, Spain: Rosa Corcoy, Alberto de Leiva, Juan

María Adelantado, Ana Isabel Chico, Diana Tundidor (22); The Ottawa Hospital General Campus, Ottawa,

Canada: Erin Keely, Janine Malcolm, Kathy Henry (15); Ipswich Hospital NHS Trust, Ipswich, UK: Damian

Morris, Gerry Rayman, Duncan Fowler, Susan Mitchell, Josephine Rosier (13); Norfolk and Norwich

University Hospital, Norwich, UK: Rosemary Temple, Jeremy Turner, Gioia Canciani, Niranjala

Hewapathirana, Leanne Piper (13); St. Joseph's Health Centre, London, Canada: Ruth McManus, Anne

Kudirka, Margaret Watson (13); Niguarda ca’ Granda Hospital, Milano, Italy: Matteo Bonomo, Basilio

Pintaudi, Federico Bertuzzi, Giuseppina Daniela Corica, Elena Mion (12); Sunnybrook Health Sciences

Centre, Toronto, Canada: Julia Lowe, Ilana Halperin, Anna Rogowsky, Sapida Adib (11); Glasgow Royal

Infirmary, Glasgow, UK: Robert Lindsay, David Carty, Isobel Crawford, Fiona Mackenzie, Therese McSorley

(10); McMaster University, Hamilton, Canada: John Booth, Natalia McInnes, Ada Smith, Irene Stanton,

Tracy Tazzeo (8); Centre hospitalier universitaire de Québec, Quebec City, Canada: John Weisnagel (6);

Queen’s Medical Centre, Nottingham, UK: Peter Mansell, Nia Jones, Gayna Babington, Dawn Spick (6);

Royal Victoria Infirmary, Newcastle Upon Tyne, Newcastle, UK: Malcolm MacDougall, Sharon Chilton, Terri

Cutts, Michelle Perkins (6); Leeds Teaching Hospitals NHS Trust, Leeds, UK: Eleanor Scott, Del Endersby

(6); Royal Infirmary of Edinburgh, Edinburgh, UK: Anna Dover, Frances Dougherty, Susan Johnston (6);

Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK: Simon Heller, Peter Novodorsky, Sue

Hudson, Chloe Nisbet (6); Izaak Walton Killam Health Sciences Centre (IWK), Halifax, Canada: Thomas

Ransom, Jill Coolen, Darlene Baxendale (5); University Hospital Southampton NHS Foundation Trust,

Southampton, UK: Richard Holt, Jane Forbes, Nicki Martin, Fiona Walbridge (6); Galway University

Hospitals, Galway, Ireland: Fidelma Dunne, Sharon Conway, Aoife Egan, Collette Kirwin (4); Central

Manchester University Hospitals NHS Foundation Trust, Manchester, UK: Michael Maresh, Gretta

Kearney, Juliet Morris, Susan Quinn (4); South Tees Hospitals, NHS Foundation Trust, Middlesbrough, UK:

Rudy Bilous, Rasha Mukhtar (4); Centre de Recherche du Centre Hospitalier de Université de Montréal

(CR‐CHUM), Montreal, Canada: Ariane Godbout, Sylvie Daigle (3); The Dudley Group NHS FT, Russells Hall

Hospital, Dudley, UK: Alexandra Lubina Solomon, Margaret Jackson, Emma Paul, Julie Taylor (3); Kingston

General Hospital, Queen’s University, Kingston, Canada: Robyn Houlden, Adriana Breen (3); Guys and St

Thomas’ NHS Foundation Trust, London, UK: Anita Banerjee, Anna Brackenridge, Annette Briley, Anna

Reid, Claire Singh (2); Royal University Hospital, Saskatoon, Canada: Jill Newstead‐Angel, Janet Baxter (2);

Grampian Diabetes Centre, Aberdeen, UK: Sam Philip, Martyna Chlost, Lynne Murray (2); William Sansum

Diabetes Center, Santa Barbara, USA: Kristin Castorino, Lois Jovanovic, Donna Frase (2). The Centre for

Clinical Trial Support (CCTS) at the Sunnybrook Research Institute, Toronto, Canada: Sonya Mergler,

Kathryn Mangoff, Johanna Sanchez, and Gail Klein. The Jaeb Center for Health Research, Tampa, USA:

Katrina Ruedy and Craig Kollman. Juvenile Diabetes Research Foundation (non‐clinical collaborators):

Olivia Lou and Marlon Pragnell.

**Appendix S2: Definitions of outcomes used in the CONCEPTT trial.**

**Birth Injury is defined by any of the following**:

* Spinal cord injury
* Basal skull fracture or depressed skull fracture
* Clavicular fracture
* Long bone fracture (humerus, radius, ulna, femur, tibia or fibula)
* Subdural or intracerebral hemorrhage of any kind [confirmed by cranial ultrasound, computerized tomography (CT) scan, or magnetic resonance imaging (MRI)])
* Peripheral Nerve Injury/Brachial Plexus

**Composite fetal outcome includes one or more of the following:**

* Pregnancy loss: miscarriage, stillbirth, neonatal death (death ≤28 days of life)
* Birth injury
* Neonatal hypoglycaemia
* Hyperbilirubinemia
* Respiratory distress
* High level neonatal care > 24 hours.

**Hyperbilirubinemia:**

Significant jaundice based on bilirubin levels requiring treatment with either phototherapy > 6 continuous hours, or an exchange transfusion, or receiving intravenous gamma globulin or requiring readmission into hospital during the first 7 days of life.

**Neonatal hypoglycemia:**

A plasma glucose <2.6 mmol/L on one or more occasions, starting at 30-60 minutes after birth, and necessitating intravenous dextrose, within the first 48 hours of life.

**Preterm birth:**

Preterm birth (<37 weeks and early preterm <34 weeks).

**Respiratory distress:**

Respiratory difficulties requiring any positive pressure ventilation ≥ 24 hours beyond resuscitation period (10 minutes), and/or given surfactant within 72 hours after birth.

**Shoulder Dystocia:**

Documentation of any shoulder dystocia in the delivery records, plus 3 or more of the following: McRoberts maneuver, suprapubic maneuver, episiotomy, delivery of the posterior arm, Woods maneuver, Rubins maneuver, All fours Gaskins maneuver, intentional fracture of the clavicle, and/or Zavenelli maneuver.

**Table S1:** Comparison of GROW, INTERGROWTH and WHO growth standards in infants born to women of European/Mediterranean ethnicity and women of other ethnic groups. Data are presented as mean (SD) or n (%).

|  |  |  |  |
| --- | --- | --- | --- |
| BIRTHWEIGHT MEASURES | All infants  n=225 | Mediterranean/  European ethnicity  n=194 | Other ethnic groups  n=31 |
| Birthweight g | 3583.6 (705) | 3606.3 (688) | 3441.4 (800) |
| Macrosomia >=4kg | 59 (26.2) | 55 (28.4) | no observations |
| GROW centile | 82.1 (25.9) | 82.0 (25.9) | 82.0 (25.9) |
| INTERGROWTH centile | 85.7 (20.8) | 85.9 (20.6) | 84.3 (22.4) |
| WHO centile | 63.9 (32.0) | 64.4 (31.5) | 60.5 (35.2) |
| GROW >90th centile | 140 (62.2) | 119 (61.3) | 20 (64.5) |
| INTERGROWTH >90th centile | 150 (66.7) | 130 (67.0) | 20 (64.5) |
| WHO >90th centile | 67 (29.8) | 59 (30.4) | 8 (25.8) |
| GROW <10th centile | 5 (2.2) | 3 (1.55) | 1 (3.2) |
| INTERGROWTH <10th centile | 3 (1.3) | 2 (1.0) | 1 (3.2) |
| WHO <10th centile | 20 (8.9) | 15 (7.7) | 5 (16.1) |

**Table S2:** Comparison of GROW, INTERGROWTH and WHO growth standards in male and female infants. Data are presented as mean (SD) or n (%).

|  |  |  |  |
| --- | --- | --- | --- |
| BIRTHWEIGHT MEASURES | All infants  n=225 | Male infants  n=115 | Female infants  n=110 |
| Birthweight g | 3583.6 (705) | 3588.6 (695) | 3578.3 (719) |
| Macrosomia >=4kg | 59 (26.2) | 29 (25.2) | 30 (27.3) |
| GROW centile | 82.1 (25.9) | 81.9 (25.5) | 83.1 (25.2) |
| INTERGROWTH centile | 85.7 (20.8) | 85.9 (19.9) | 85.4 (21.8) |
| WHO centile | 63.9 (32.0) | 61.8 (31.6) | 66.1 (32.3) |
| GROW >90th centile | 140 (62.2) | 72 (62.6) | 67 (60.9) |
| INTERGROWTH >90th centile | 150 (66.7) | 78 (67.8) | 72 (65.5) |
| WHO >90th centile | 67 (29.8) | 29 (25.2) | 38 (34.6) |
| GROW <10th centile | 5 (2.2) | 1 (0.9) | 3 (2.7) |
| INTERGROWTH <10th centile | 3 (1.3) | 1 (0.9) | 2 (1.8) |
| WHO <10th centile | 20 (8.9) | 10 (8.7) | 10 (9.1) |

**Table S3:** Comparison of GROW, INTERGROWTH and WHO growth standards in infants delivered at term or preterm. Data are presented as mean (SD) or n (%).

|  |  |  |  |
| --- | --- | --- | --- |
| BIRTHWEIGHT MEASURES | All infants  n=225 | Term infants  n=136 | Preterm infants  n=89 |
| Birthweight g | 3583.6 (705) | 3787.0 (606) | 3272.7 (735) |
| Macrosomia >=4kg | 59 (26.2) | 45 (33.1) | 14 (15.7) |
| GROW centile | 82.1 (25.9) | 81.6 (25.0) | 84.0 (25.8) |
| INTERGROWTH centile | 85.7 (20.8) | 85.4 (20.8) | 86.2 (21.0) |
| WHO centile | 63.9 (32.0) | 73.3 (26.7) | 49.5 (34.0) |
| GROW >90th centile | 140 (62.2) | 80 (58.8) | 59 (66.3) |
| INTERGROWTH >90th centile | 150 (66.7) | 91 (66.9) | 59 (66.3) |
| WHO >90th centile | 67 (29.8) | 52 (38.2) | 15 (16.9) |
| GROW <10th centile | 5 (2.2) | 1 (0.7) | 3 (3.4) |
| INTERGROWTH <10th centile | 3 (1.3) | 1 (0.7) | 2 (2.3) |
| WHO <10th centile | 20 (8.9) | 4 (2.9) | 16 (18.0) |