**Background:** Oxygen saturation (SpO2) is an important indicator of newborn transition to extra-uterine life, and commonly monitored in the delivery room. A defined reference range for SpO2 exists, with data derived from a cohort of infants that received early cord clamping (ECC) (Dawson 2009). However, this parameter has not been defined in infants following delayed cord clamping (DCC). We aimed to define a reference range for SpO2 in infants receiving DCC ≥90 seconds and compare this to the established reference range where infants routinely received ECC.

**Methods:** A prospective observational study measuring SpO2 in term infants following vaginal delivery. Immediately after birth, a pulse oximeter was applied to the infant’s right hand or wrist, and SpO2 data were collected every 2 seconds for 10 minutes. Infants receiving ECC or resuscitation were excluded.

**Results:** 257 infants were included, 103 studied in the DCC cohort and 154 compared to the Dawson ECC cohort. The mean gestational age and birth weight were similar in both groups. The median (IQR) time for cord clamping in the DCC group was 178 (131, 271) seconds. The mean (SD) SpO2 (%) in the DCC vs ECC groups at 60, 90, and 120 seconds were 76.5 (9.4) vs 68.0 (13.1) (p=0.01), 71.6 (10.9) vs 70.9 (13.7) (p=0.89) and 70.6 (13.4) vs 73.1 (12.0) (p=0.34), respectively.

**Conclusions:** 60 seconds after birth, infants receiving DCC had a higher SpO2 value than those receiving ECC. However, at other recorded time points there were no significant differences in SpO2.

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**AMNION EPITHELIAL STEM CELLS FOR ESTABLISHED BRONCHOPULMONARY DYSPLASIA: A FIRST-IN-HUMAN SAFETY TRIAL**

Malhotra A1,2,3, Lim R2,4, Mockler J2,4, Wallace EM2,4

1Monash Newborn, Monash Children’s Hospital, Melbourne, Australia; 2The Ritchie Centre, Hudson Institute of Medical Research, Melbourne, Australia; Department of 3Paediatrics and 4Obstetrics & Gynaecology, Monash University, Melbourne, Australia

**Email:** atul.malhotra@monash.edu

**Background:** Bronchopulmonary dysplasia (BPD) is a common condition in extreme premature infants. Current management of BPD is largely supportive and no cure exists. Over the last decade, our group has shown that human amnion epithelial cells (hAECs), derived from healthy amniotic membranes can prevent and reverse lung injury in small and large animal models of adult and neonatal lung disease, including BPD.

**Aim:** To assess the safety of intravenously administered allogeneic hAECs in preterm infants with established BPD.

**Methods:** Preterm infants born before 28 weeks of gestation were eligible if they were dependent on pressure support and oxygen at 36 weeks postconceptional age. Primary safety outcome parameters included short term effects - local reaction, anaphylaxis, infection, systemic rejection, and long term effects, including tumorigenesis. CGMP-compliant hAECs were isolated from healthy term placenta donors and delivered to infants using a slow intravenous infusion at a dose of 1 million/kg suspended in saline. Secondary outcomes included changes in respiratory function.

**Results:** Six preterm infants (median birth weight 795 (450-990) grams, gestation 26 (24-28) weeks) with established severe BPD were administered hAECs at 89 (59-187) days of life. There were no immediate or short term adverse effects following hAEC transfusion. Respiratory support parameters in the first few days after cell infusion either improved or showed no significant change from pre-treatment levels.

**Conclusions:** hAECs seem to be well tolerated when given to preterm infants with established severe BPD. This first-in-human study will inform future clinical trials of this novel therapy for BPD.

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**ENABLERS AND BARRIERS FOR WOMEN WITH GESTATIONAL DIABETES MELLITUS TO ACHIEVE OPTIMAL GLYCAEMIC CONTROL: A QUALITATIVE STUDY USING THE THEORETICAL DOMAINS FRAMEWORK**

Martis R1, Brown J1, Judith McAra-Couper2, Crowther C1

1The University of Auckland, Liggins Institute, 2AUT, Auckland University of Technology, Auckland, New Zealand

**Email:** ruth.martis@gmail.com

**Background:** Target glycaemic recommendations for women with gestational diabetes mellitus (GDM) vary widely between international organisations. Although some studies have reported on experiences of women with GDM little is known about how women achieve their recommended glycaemic treatment targets. The aim of this study was to identify enablers and barriers for women with GDM to achieve their optimal glycaemic targets.

**Methods:** Women with GDM who had at least two week’s experience with self-testing capillary blood glucose (CBG) were invited to participate from two large hospitals in New Zealand. A semi-structured interview was developed. Thematic analysis was performed using the Theoretical Domains Framework. The study is nested within the TARGET Trial (ACTRN 12615000282583).

**Results:** Sixty women participated. Behavioural factors for women with GDM in achieving optimal glycaemic control were identified and provided insights as to how most women accept a diagnosis of GDM, adapt to regular self-monitoring, adhere to recommended glycaemic targets, undertake necessary lifestyle changes. Extended family support was reported as valuable for increasing exercise, eating health meals and regular self-monitoring of capillary blood glucose concentrations. Further research considerations include the effectiveness of phone apps, the value of engaging a physical activity therapist and possibly a name change for GDM to reduce maternal anxiety.

**Conclusions:** Women with GDM who reported multiple enablers and barriers to achieving optimal glycaemic control. These findings may assist health professionals and diabetes in pregnancy services to improve their care for women with GDM and support them to achieve optimal glycaemic control.

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**ASSESSING NUTRITIONAL STATUS IN THE NEONATE: USING THE PEAPOD TO MEASURE BODY FAT PERCENTAGE**

McCudden L1, Fyfe R1, Melville P1, McLennan A2, Hyett J1,3

1Royal Prince Alfred Hospital, Sydney, Australia, 2Northern Clinical School, University of Sydney, Australia, 3Central Clinical School, University of Sydney, Australia

**Email:** Lucy.McCudden@sydney.edu.au
Foley Catheter Silicone Versus Latex for Term Induction of Labour: A Randomised Trial

McGee T1,2, Gidaszewski B2, Khajehei M3,4, Tse T1, Gibbs E3
1Department of Obstetrics and Gynaecology, Westmead Hospital, Sydney, Australia. 2Sydney Medical School, University of Sydney, Sydney, Australia. 3Department of Women’s and Newborn Health, Westmead Hospital, Westmead, Australia. 4School of Women’s and Children’s Health, University of New South Wales, Sydney, Australia. 5NHMRC Clinical Trials Centre, University of Sydney, Camperdown, Australia.

Background: Foley catheters are a popular tool for cervical ripening prior to induction of labour. Both silicone and latex single-balloon catheters are widely available but no literature exists to compare them.

Method: Women undergoing Foley catheter cervical ripening were randomised to a silicone or latex catheter. The primary outcome was insertion-related accidental rupture of membranes. Secondary outcomes included catheter insertion failure, need for unplanned hospital admission, insertion-related bleeding and insertion-related discomfort together with general obstetric and neonatal outcomes.

Results: 534 women were recruited, 371 nulliparous and 163 parous. Accidental membrane rupture was significantly more common with a silicone compared to a latex catheter at 7.2% (19/265) versus 1.5% (4/269) (RR 4.8; 95% CI 1.7 – 14.0). Insertion failure was significantly less common in the silicone compared to latex cohort at 2.6% (7/265) versus 9.3% (25/269) (RR 0.3; 95% CI 0.1 – 0.6). Insertion-related hospital admission was higher with silicone at 9.4% (25/265) than latex 4.8% (13/269) (RR 2.1; 95% CI 1.1 – 4.1) with most of the difference due to accidental membrane rupture. All other outcomes were no different between the two groups.

Conclusions: When used for cervical ripening, a silicone Foley catheter is associated with a higher rate of accidental membrane rupture than a latex catheter but a lower rate of insertion failure.

Oxygen Saturation Screening in a Regional Victorian Health Service: Results and Recommendations.

McGrath P1, Batey C2, Oro L1, Garrick D2
1Safer Care Victoria, Melbourne, Australia. 2Goulburn Valley Health, Shepparton, Australia.

Background: Oxygen saturation screening is recommended to detect hypoxemia in an infant who otherwise appears well. In 2016, the Victorian maternity newborn clinical network (VMNCN) published clinical guidance supporting oxygen saturation screening of neonates in Victorian maternity services. A 2017 survey indicated only 60% of Victorian services were providing screening.

Methods: The VMNCN targeted one regional service not providing screening. Ethics approval was sought from the health service. Maternity and neonatal clinicians were invited to attend 1 of 6 training sessions. Training covered clinical guidance, algorithm for care, documentation and parent information sheets. Data was collected electronically, post discharge. An audit was undertaken over a 6 month period to evaluate effectiveness of training, clinical guidance and documentation.

Results: 519 babies were born in the six month period. 463 (89%) had documented saturation screening and 56 no record (11%). 87 (18%) were screened outside the recommended 4 – 48 hour period, the majority >48 hours. No babies presented with Congenital Heart Disease, however 2 were found to have early onset sepsis with immediate treatment initiated.

Conclusions: Oxygen saturation screening supports early recognition and intervention of the unwell neonate. Results of a staff survey are pending. It is anticipated with ongoing education and recommendations to change terminology there will be improvement in numbers of neonates receiving saturation screening within the optimal timeframe.

Probiotics for Necrotising Enterocolitis: Experience of New Zealand Level 3 Neonatal Units

Meyer MP1, Chow SSW2, Alsweiler J3, Bourchier D4, Broadbent R5, Knight D1, Lynn A5, Patel H5, Australian and New Zealand Neonatal Network 1Middlemore Hospital, Auckland, New Zealand. 2University of New South Wales, Sydney, Australia. 3Auckland City Hospital, Auckland, New Zealand. 4Waikato Hospital, Hamilton, New Zealand. 5Dunedin Hospital, Dunedin, New Zealand.

Background: Necrotising enterocolitis (NEC) is a common life-threatening condition and the leading cause of death among premature infants. Evidence suggests probiotics may reduce the incidence and severity of NEC. This study aimed to determine the experience of New Zealand Level 3 Neonatal Units (L3NU) with the use of probiotics.

Methods: A questionnaire was distributed to all 29 L3NU across New Zealand to determine the proportion of units using probiotics, the NICE guidance followed, and the use of ANCNSM/ANZNNI guidelines.

Results: 14/29 L3NU responded (48%). The median % of preterm infants receiving probiotics was 4.3% (range 0 – 71%). The median % of high risk infants (defined by NICE criteria) receiving probiotics was 3.7% (range 0 – 39%). The median % of infants with NEC receiving probiotics was 3.7% (range 0 – 17%). The median % of infants with culture proven NEC receiving probiotics was 15% (range 0 – 100%). The median % of infants with NEC who had resolution of NEC with probiotics was 19% (range 0 – 40%). A significant difference was observed between low and high risk units with regards to the use of probiotics in the prevention of NEC (p = 0.046).

Conclusions: The use of probiotics in New Zealand L3NU varies widely. The majority of L3NU follow NICE guidance on the use of probiotics. Further research is required to determine the optimal NICE criteria for the use of probiotics to prevent NEC.