384 QUANTIFICATION OF IGM AND IGA ANTI-PNEUMOCOCCAL POLYSACCHARIDES BY A NEW ELISA ASSAY. A VALUABLE DIAGNOSTIC AND PROGNOSTIC TOOL FOR HYPOGAMMAGLOBULINEMIAS

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CVID are a group of heterogeneous conditions characterized by reduced immunoglobulin levels and absent or poor antibody responses. The latter diagnostic criterion has not been clearly defined leading to a highly variable number and type of immunizations performed among centres. Specific antibody responses cannot be evaluated in patients who are already on immunoglobulin replacement, due to the interference of passively administered IgG. Classification schemes are based on cellular phenotyping and offer instruments for recognition of patients at risk for CVID-associated clinical conditions, but do not take advantage of the possibility to evaluate in vivo antibody responses as a prognostic marker for infectious complications. We immunized 91 CVID patients with a 23-valent pneumococcal polysaccharide vaccine (Pneumovax®) and measured the IgM and IgA to single pneumococcal polysaccharides before vaccination and 4 weeks later. Results were compared with those obtained using a new IgM and IgA anti-pneumococcal polysaccharides 23-valent assay (PC23). We demonstrated that the IgM/IgA response to PC23 allows stratifying CVID patients into groups with different risk to experience pneumonia and to develop bronchiectasis. Immunological IgM/IgA responders had the lowest risk for pneumonia (0%) and bronchiectasis (1.2%), while non responders had the highest risk (37% and 41.5% respectively) and IgM-only responders had an intermediate risk (8.8% and 8% respectively). The antibody response correlated with the frequency of IgMpos and switched memory B cells. The IgM and IgA PC23 assay represents a valuable prognostic tool for CVID patients and allows investigating the residual antibody production capacity, even in patients on substitutive immunoglobulin replacement.

385 A DOUBLE BLIND, RANDOMIZED CONTROLLED TRIAL ON THE RESUSCITATION OF PRETERM INFANTS WITH 30% VERSUS 65% OXYGEN AT BIRTH

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Background Resuscitation of term infants at birth with 100% oxygen increases oxidative stress with concomitant deleterious effects. Optimal levels for preterm infants are unknown. We hypothesized that resuscitation of preterms with initial FiO_2 of 30% is safe, decreases oxidative stress and improves outcome compared to an initial FiO_2 of 65%.

Design Preterm infants (GA<32 weeks) were randomized to start resuscitation after birth with 30% or 65% oxygen. FiO_2 was adjusted based on oxygen saturation and heart rate. Primary outcome was survival without bronchopulmonary dysplasia (BPD) at 36 weeks postmenstrual age. Oxidative stress was determined by urinary DNA and protein oxidation markers, and plasma non protein bound iron.

Results We included 194 infants, mean GA ($28^4/_7 \pm 2^1/_7$ weeks) and birth weight (1076±347 gram) were not different between groups. FiO_2 was significantly different during the first 5 minutes following birth. Clinical outcomes (table) and oxidative stress markers were not statistically different between groups.

Abstract 385 Table 1 Clinical outcome

FiO_2	30% (n=99)	65% (n=95)
Mortality (%)	6.1	10.5
BPD (%)	23	15
Survival without BPD (%)	72	75
Intraventricular hemorrhage ≥stage 2 (%)	8.1	10.5
Retinopathy of prematurity ≥stage 2 (%)	6.1	5.3
Necrotizing enterocolitis ≥stage 2 (%)	4.0	3.2

Conclusion Resuscitation of preterm infants at birth with 30% oxygen is as safe as resuscitation with 65%, but does not offer benefits with regard to survival without BPD.

386 A COUNT OF THREE NEONATAL MORBIDITIES MAY SUBSTITUTE FOR LONG-TERM NEURODEVELOPMENTAL FOLLOW-UP IN VERY LOW BIRTH WEIGHT (VLBW) INFANTS

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Background In very preterm infants who survive to a postmenstrual age (PMA) of 36 weeks, a count of BPD, brain injury and severe ROP predicts the risk of a later death or neurosensory impairment at 18 months (JAMA 2003; 289:1124).

Objective To validate this count of 3 neonatal morbidities as a predictor of poor long-term outcome in VLBW infants who participated in the CAP Trial.

Methods Five-year follow-up of 1514 CAP trial participants who survived to a PMA of 36 weeks. Poor outcome was a late death or survival with one or more disabilities.

Results The incidences of BPD, brain injury and severe ROP were 40%, 13%, and 6.0%, respectively. Each morbidity was similarly and independently correlated with a poor 5-year outcome. Table 1 shows the risks of a poor long-term outcome with none, any 1, any 2, and all 3 neonatal morbidities.

Abstract 386 Table 1

Neonatal morbidities	No. of Infants	Poor Outcome at 5 Years	95% CI
None	759	11%	9 to 14%
Any Single Morbidity	590	23%	20 to 27%
Any 2 Morbidities	139	44%	36 to 53%
All 3 Morbidities	26	62%	41 to 80%

Conclusions In VLBW infants who survive to a PMA of 36 weeks, a count of BPD, brain injury and severe ROP predicts the risk of a later death or survival with disability at age 5 years. This morbidity count may substitute for long-term outcome assessments in very preterm infants whose families do not comply with neurodevelopmental follow up.

387 POLYUNSATURATED FATTY ACIDS IN COLOSTRUM AND COGNITIVE DEVELOPMENT IN BREASTFED CHILDREN OF THE EDEN MOTHER-CHILD COHORT STUDY

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Background and Aims Epidemiological studies suggest that breastfeeding could be beneficial for child cognitive development, but pathways involved remain to be elucidated. We aimed to investigate the potential role of breast milk content in polyunsaturated fatty acids (PUFAs), by studying their associations with later cognitive development.

Methods We analyzed lipid contents of colostrum samples collected from 613 breastfeeding mothers of the EDEN mother-child cohort. Cognitive development at 3 years was assessed with the Ages and Stages Questionnaire (ASQ, score between 0 and 300). We investigated associations between colostrum PUFAs and ASQ score using multiple linear regressions adjusted for centre, child's age, gender and gestational age, maternal tobacco and alcohol consumptions, parental education, siblings, caregivers, preschool attendance and exclusive breastfeeding duration.

Results Mean ASQ score was 274.2 (±25.1). Total PUFAs and *n*-6 PUFAs means were respectively 14.3% (±2.0) and 12.1% (±1.9) of total lipids in colostrum. Mean *n*-6/*n*-3 ratio was 5.7 (±1.3). After adjustment, ASQ score was negatively associated with total PUFAs (β= –1.8 [–2.8; –0.8]), *n*-6 PUFAs (–1.95 [–3.0; –0.9]) and *n*-6/*n*-3 ratio (–1.7 [–3.3; –0.2]). No association was found with *n*-3 PUFAs. Associations did not differ according to breastfeeding duration ($P_{interaction}$>0.57).

Conclusions After adjustment for confounders, especially maternal education, colostrum content in *n*-6 PUFA was negatively associated with child cognitive development, independently of exclusive breastfeeding duration. These results suggest that *n*-6 PUFAs provided in excess might compete with *n*-3 PUFAs biosynthesis necessary for early brain maturation and impact negatively on later cognitive development.

388 THE PRESCHOOLERS ACTIVITY TRIAL (PAT): A RANDOMIZED CONTROLLED TRIAL OF PHYSICAL ACTIVITY INTERVENTION IN THE EARLY YEARS

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Background Physical activity (PA) provides widespread health benefits, including pediatric obesity prevention, but less than 10% of Canadian children meet PA guidelines and one in three are overweight or obese. Since PA levels track from childhood into adulthood, early intervention may increase the likelihood of a physically active lifestyle and associated health benefits throughout the lifespan.

Aim To evaluate the efficacy of an intervention with day care providers on volume and intensity of PA, motor skill development, and body mass index (BMI) in 3–5 year old children attending daycares.

Methods A randomized controlled trial comparing children (n=40) whose daycare providers received intervention designed to promote PA versus children (n=43) whose providers implemented the normal preschool curriculum. Intervention included two, 3-hour workshops plus 12 bi-monthly "booster" sessions. Children were assessed at baseline and 3-months, with a plan to collect data at 6-months. PA was measured objectively using accelerometry. Motor skills were measured using the Test of Gross Motor Development-2. BMI was assessed by measured heights and weights (kg/metres^2).

Results Compared to controls, the intervention produced greater increases in mean steps/day (–83 vs. +1,185, p<0.01), gross motor percentile scores (+6 vs. +16, p<0.05) and reductions in BMI (+0.21 vs –0.22, p<0.001) at 3-months but not moderate to vigorous PA (MVPA).

Conclusions Intervening with daycare providers may be an efficacious method of increasing preschoolers' volume of PA, promoting motor skill development that is critical to PA and sport participation later in life, and reducing adiposity.

389 IS THE HIGHER PREVALENCE OF ASTHMATIC SYMPTOMS FOLLOWING PRETERM BIRTH RESTRICTED TO CHILDHOOD?

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Background and Aim Preterm birth is associated with increased risk of asthmatic symptoms in childhood, but it seems uncertain whether this association persists into adulthood. We have investigated the association between gestational age (GA) and the use of prescription asthma medication in young adults.

Methods This is a register study of a Danish national cohort of all infants born 1980–1989 and followed up at the age of 21–30 years. The retrieval of prescription asthma medication (inhaled beta-2 agonists and/or inhaled corticosteroids and/or oral leukotriene antagonists) in 2009–2010 was evaluated. Logistic regression analyses were performed to determine the relationship between the use of asthma medication and gestational age, adjusted for gender, small-for-gestational age and multiple births.

Results Data were obtained on 516 337 individuals (72.7% of all infants born in the period). The prevalence of asthma medication use in young adults born term was 6.33%, compared to 6.91% in those born preterm. Comparing with the term group, we found slightly increased adjusted OR for the use of asthma medication for individuals born at GA 32–36 weeks (n=20 848) OR=1.12 (95% CI=1.06–1.18) and GA 28–31 weeks (n=2 256) OR=1.23 (95% CI=1.05–1.44). In the extremely preterm group (GA=24–27 weeks, n=355) the association was not significant: OR=1.04 (95% CI=0.68–1.58).

Conclusion There was an association between gestational age and the use of asthma medication at 21–30 years, but it was weak. The adjusted OR increased slightly with decreasing GA except in adults born extremely preterm. Further analyses will be performed to investigate our findings.

390 CEREBRAL PALSY AND NEONATAL DEATH IN SINGLETONS BORN SMALL FOR GESTATIONAL AGE AT TERM

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