Methods The study was conducted by members of CHARGE (Child Health Applied Research Group: East-midlands) using a methodology informed by The PRISMA Statement (Preferred Reporting Items for Systematic reviews and Meta-Analysis).

A clinical question using a standard PICO (Patient, Intervention, Comparison, Outcome) format was used to inform the search terms and search strategy. The search was executed on Medline, Embase, The Cochrane Library, two meta-search engines and ISI-Web of Science. In addition, a search of the grey literature was conducted. Retrieved studies were independently appraised by two reviewers for relevance and quality using the Cochrane Collaboration's tool for assessing risk of bias. Data was extracted onto a standardised proforma.

Results Only one small clinical trial (n=39) could be included in our final analysis and this showed statistically non-significant effects for parentally reported improved behaviour (58% [drug] vs. 53% [placebo]). There was no difference between the two groups for adverse outcomes.

This trial and two excluded trials highlighted the critical importance of proper methodology for conducting future trials in autism. These include the need for appropriate: power, outcomes and follow-up, and due consideration of the clinical spectrum of autistic patients involved in the trials.

Conclusion There is insufficient evidence to support the use of dimethylglycine for the treatment of children with autism. Further robust research is required on this topic.

634 DIGEORGE SYNDROME: COGNITIVE AND BEHAVIOURAL DEVELOPMENT FROM BIRTH TO ADOLESCENCE

doi:10.1136/archdischild-2012-302724.0634

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Background and Aims DiGeorge syndrome (DGS) is a rare disease associated with a microdeletion of chromosome 22q11.2. Among clinical signs: heart defects, immunological alterations, psychiatric disorders. DGS children present developmental delay. The aim of this study is to assess cognitive and behavioural development of DGS paediatric patients.

Methods Cognitive profile was assessed in a prospective cohort of DGS children referred to Paediatrics Department-Padua University (1993–2012). For a sample of 20 children (11 females, 9 males; 25% < 2 yrs, 25% 3–5 yrs, 50% > 6 yrs), informations were collected on diagnosis, surgical interventions, hospitalizations, treatments/rehab training programs. Cognitive profile was assessed using Griffith's Mental Development Scales (GMDS) and Wechsler Intelligence Scale for Children-III (WISC-III), depending on children's age. Behavioural profile was assessed using Child Behavior Checklist (CBCL). Univariate and multivariate descriptive analyses were performed.

Results For younger children (GMDS, 10 children), global mental development resulted: 15.4% moderate retardation, 61.5% mild retardation, 30.8% borderline, 7.7% low normal, 15.4% normal. Worse scores are observed in the subscales: language, performance, eye-hand coordination and practical reasoning. For older children (WISC-III, 10 children), 76.9% had Mental Retardation (15.4% moderate MR, 61.5% mild MR), and 23.1% got low Global IQ scores (7.7% borderline, 15.4% low normal). Behavioural profile is barely normal in pre-school children and becomes borderline/clinical in school children (100% disadaptative functioning, 40% internalizing problems, 20% externalizing problems).

Conclusions DGS patients have a wide spectrum of developmental delays, which require tailor-made rehab programs, and a worsening in behavioural profile in pre-adolescence and adolescence.

635 DEFICITS OF MOTION PERCEPTION IN CHILDREN WITH TREATED CONGENITAL HYPOTHYROIDISM (CI)

doi:10.1136/archdischild-2012-302724.0635

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Background and Aims Thyroid hormones have an important role throughout prenatal and postnatal nervous system development. They are involved in several processes such as neurogenesis, gliogenesis, myelination, as shown in many cases of deficiency like CI. Some could be reversed after adequate supplementation of thyroid hormones at birth, however there are other cellular processes highly sensitive to low levels of thyroid hormones and lasting a limited period of time during which if thyroid hormone action is lacking or deficient, the functional and structural damages would produce permanent defects. Visual system is particular vulnerable to thyroid hormones and for this reason we decided to study children with CI early treated by means of visual motion tasks to evaluate basic and high level functions.

Methods and results: Ten children with early treated CI and ten controls matched for sex and age and Intelligence Quotient were enrolled in the study. We found no differences in basic visual functions. Motion perception was assessed by two alternative forced choise of direction of motion for different levels of noise corruption displayed on the screen for a limited lifetime. Three types of coherent motion were studied: rotational, radial and translational motion. We found a statistical difference in the thresholds for radial motion.

Conclusions Our results seem to confirm that CI can influence the development of the visual dorsal stream, a pathway particularly vulnerable during the last three months of intrauterine life.

636 BIPOLAR DISORDER AND PREGNANCY - NEURODEVELOPMENTAL OUTCOME OF CHILDREN EXPOSED TO MATERNAL ILLNESS WITH OR WITHOUT LITHIUM DURING PREGNANCY

doi:10.1136/archdischild-2012-302724.0636

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Background and Aims Bipolar disorder (BD) is a chronic psychiatric condition. Lithium is the most common mood stabilizing drug during pregnancy. It is unknown whether lithium exposure *in utero* may have negative effects on neurodevelopment. This study aims to investigate the health and cognitive development of preschool children born to mothers with BD.

Methods 10 women with BD who had given birth 2006 or 2007 were recruited from a psychiatric center. 4 of them had been medicating with lithium during pregnancy. 4 women without psychiatric illness were included. At age 4–5 the children were tested by a child psychologist, using Wechsler Preschool and Primary Scale of Intelligence (WPPSI) and physically examined. The mental health and social situation of the mother was assessed by a psychiatric nurse or psychiatrist.

Results WPPSI results were available for 9 children. Mean full scale IQ of children exposed to lithium during pregnancy (n=3) was 108 and for unexposed children (n=6) 111, no significant difference. One child, born to a mother with bipolar disease but not exposed to lithium, was born prematurely and tested in the lower normal range of the IQ scale. One child, not exposed to lithium, had been diagnosed with ADHD. All children were in good general health.

Conclusions These preliminary results show that children to mothers with bipolar disorder, with or without intrauterine exposure to lithium, had a normal to high IQ at preschool age. 5 more children have been tested, results to be analyzed, and additional children will be recruited.

637 PRENATAL EXPOSURE TO HYDROXYLATED POLYCHLORINATED BIPHENYLS IS ASSOCIATED WITH THE QUALITY OF THE MOTOR REPERTOIRE IN THREE-MONTH-OLD INFANTS

doi:10.1136/archdischild-2012-302724.0637

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Background and Aim Polychlorinated biphenyls (PCBs) are ubiquitous environmental toxins, potentially toxic to the developing brain. Hydroxylated PCBs (OH-PCBs) are suggested to be even more toxic because of hydroxylation by the fetus and active transplacental transport of OH-PCBs. Still, little is known about their short-term health effects in humans. We aimed to determine whether prenatal exposure to OH-PCBs is associated with the neurological condition in three-month-old infants, assessed by the quality of the motor repertoire.
Methods In a Dutch observational cohort study, 97 mother-infant pairs participated. Cord blood samples were analyzed for PCB and OH-PCB concentrations. The quality of the motor repertoire was evaluated at 3 months from video-recordings. We determined the quality of General Movements (GMs) and calculated a Motor Optimality Score (MOS) ranging from 5 to 28 (low to high optimality). We explored correlations between PCB/OH-PCB levels and MOS using Spearman's Rank correlation. Next, we tested whether PCB/OH-PCBs levels differed between infants with 'low' (<26) and 'high' MOS (≥26).
Results We found no association between PCB/OH-PCB levels and the quality of GMs. Associations existed between several PCB/OH-PCB levels and MOS, including detailed aspects of the motor repertoire. High 4-OH-PCB-107 levels were associated with a low MOS (P=0.013). High PCB-187 levels were associated with reduced midline arm and leg movements (P=0.047 and P=0.043, respectively).
Conclusion Prenatal exposure to higher 4-OH-PCB-107 levels was associated with a non-optimal quality of the motor repertoire in three-month-old infants. This negative effect may be mediated by reduced thyroid hormone concentrations in the brain.

638 IMPACT OF WATCHING TV/PLAYING GAMES ON MENTAL HEALTH AND LEARNING OF UAE CHILDREN

doi:10.1136/archdischild-2012-302724.0638

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Background United Arab Emirates (UAE) is a rapidly changing society, and little is known about the children's free-time activities and their interference with the development and behavior. The recommendations of the American Academy of Pediatrics (AAP) state that children older than 2 years should watch quality television (TV) programs not more than 2 hours per day; and those younger than 2 years should avoid any TV viewing. Previous studies linked early TV viewing with later developmental and behavioral problems.
Aims Esstimate average amount of daily time of TV/video games viewing in UAE children; and sociodemographic, behavior and other variables associated with TV/video games viewing.
Methods In a case control study, 211 school children (68% males, mean age 8.7 years) from United Arab Emirates were investigated. The children with developmental and behavioral disorders (n=98) were compared with children without any developmental and behavioral disorders (n=113) in regard to the time of watching TV/video games per day.
Results children who watched TV/playing games over 2 hours/day had significantly ADHD and higher total CBCL scored than the children who watched TV/playing games less than 2 hours/day. The two groups also differed on the following CBCL subscales: withdrawn, attention, aggressive and delinquent behavior. In terms of learning abilities and IQ levels were did not differed from the children who watched TV/playing games less than 2 hours/day.
Conclusions 1/3 of children in UAE viewed TV/video games for more than the recommended 2 hours per day which found to be associated more with behavioral problems.

639 HIGH INCIDENCE OF CHILDHOOD TYPE 1 DIABETES IN QATAR BETWEEN 2006 AND 2011

doi:10.1136/archdischild-2012-302724.0639

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The overall age-adjusted incidence of type 1 diabetes varied from 0.1/100,000 per year in China and Venezuela to 36.8/100,000 per year in Sardinia and 36.5/100,000 per year in Finland. This represents a 350-fold variation in the incidence among the 100 populations worldwide.
Objective The aim of this study was to determine the incidence of type 1 diabetes among children aged 0–14 years in Qatar.
Research design and methods This was a prospective cohort study of the incidence of childhood type 1 diabetes in children aged 0–14 years who were diagnosed with type 1 diabetes from 2006 to 2011 on Qatar. Identified case subjects during this time period were ascertained from several sources and verified using the capture-recapture technique. Data were obtained from the only pediatric diabetes treatment center, Hamad Medical Center (HMC) for children living in Qatar.
Results Over the study period, 385 children aged 0–14 years in Qatar were diagnosed with type 1 diabetes. The incidence of type 1 diabetes in this population over the period 2006–2011 inclusive was 23.11 with a 95% CI of 31.82–40.03.

Abstract 639 Table 1

Year	Incidence/100000
2006	18.63
2007	30.64
2008	21.64
2009	22.91
2010	21.22
2011	23.64

Conclusions Qatar has a relatively high incidence of type 1 diabetes compared to incidences reported worldwide. The incidence increased over the 16-year study period.

640 PREVALENCE OF GESTATIONAL DIABETES AND ASSOCIATED MATERNAL AND NEONATAL COMPLICATIONS IN A FAST DEVELOPING COMMUNITY: GLOBAL COMPARISONS

doi:10.1136/archdischild-2012-302724.0640

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Objective To determine the prevalence of Gestational diabetes, compare the maternal-neonatal complications among women with GDM and non-GDM pregnant women and investigate the risk factors associated with GDM.