This study aimed to determine the character and severity of DSD in a cohort of autistic children and to identify possible prognostic indicators for targeting specialist support.

Methods 13 able children with autism, sequentially receiving a tertiary neuro-ophthalmic diagnosis of DSD, were followed up over 6 years. Records were retrospectively reviewed for neuro-developmental and neuro-ophthalmic examination results.

Age-inappropriate configural disruption of elements of drawings was identified in the Beery-VMI Test of Visual-Motor Integration (VMI) as evidence of SIM and standard VMI scores (VMIS) were used to measure the severity of SIM. Still-frame analysis of video was used to confirm diagnoses of OA using the criterion of impaired terminal grip size relative to the target grasped. Severity of visual functional impairment was rated on mean individual Cerebral Visual Impairment Inventory scores (MCVIS) using as reference the 90th percentile cut-off MCVIS of 0.74 for the typically developing population.

Correlation between MCVIS and VMIS was determined by linear regression analysis. Method agreement analysis for OA in central vision and motor coordination impairment (MCI), measured by the Beery Motor Coordination assessment, was determined by Cohen's weighted Kappa statistic (K).

Results Significant correlation was found between MCVIS and VMIS: $r = -0.77$ [95%CI: -0.93 to -0.83], $p = 0.002$. Five children required specialist visual impairment (VI) support. The MCVIS for this group (3.05) differed significantly from the MCVIS for the non-support group (1.91) [difference 95% CI 0.74–1.55], $p < 0.0001$. Agreement for severe MCI (≤ 5 th percentile) with central OA was significant: $K = 1$ [95% CI: 0.46 to 1.54], $p = 0.0002$.

Conclusions SIM may account for the visual perceptual impairment seen in ASD and OA may underpin motor impairment. MCVIS and VMIS may be useful indicators of the need for specialist VI support.

G419(P) DEVELOPMENTAL DECODING: NOVEL METHODS TO TACKLE THE MENACE OF CHILDHOOD NEURODISABILITY IN NORTHERN INDIA

R Bharat, S Choudhary, S Niranjana. *Paediatrics, Geniuslane Child Development Centre, Lucknow, India*

10.1136/archdischild-2018-rcpch.408

Background There is a lack of integrated services for childhood neurodisability in Northern India.

Methods A Child Development Centre was set up by UK-trained Paediatricians to understand existing problems, plan new interventions and compare outcomes. Children with a diagnosis of neurodisability (developmental delay, behaviour issues and learning problems) were eligible. Children with blindness, deafness, severe quadriplegia and progressive neurological disorders were excluded.

This study was conducted in 2 phases (table 1). In phase 1 (November 2014–November 2016) children were treated using existing interventions led by therapists. Problems were identified and an intervention programme based on developmental decoding and home-based environmental modification was developed and piloted in Phase 2 (December 2016 onwards).

Problems: phase 1

- Lack of integrated services.

- Delayed diagnosis and lack of individualised support after diagnosis.
- Independent therapists working in isolation.
- Inadequate parental counselling and support. Parents expecting 'magic cure'. High drop out rate.

Changes for phase 2

- Interventions based on Griffith's 3 developmental assessment and modified based on diagnosis and individual profile. An interventional algorithm (software) was developed which provided individualised intervention plans, monitored child's progress and parental compliance.
- All children work towards functional goals. Final (long-term) goals broken into levels (short-term goals).
- Use of multimedia for parental counselling.
- Parental training for home environment modification.

Results

Abstract G419(P) Table 1

Total (n=468)	Phase 1 (n=357)			Phase 2 (n=111)		
	No of children	Target progress achieved	Drop outs	No of children	Target progress achieved	Drop outs
Autism Spectrum Disorder(ASD)	138	24 (17.4%)	114 (82.6%)	37	19 (51.4%)	18 (48.6%)
Cerebral Palsy	108	18 (16%)	90 (83.3%)	40	26 (65%)	14 (35%)
Global development delay	50	12 (24%)	38 (76%)	17	12 (70%)	5 (29%)
Intellectual disability	47	9 (19%)	36 (76%)	10	7 (70%)	3 (30%)
Dyslexia	14	3 (21%)	11 (78.5%)	7	4 (57%)	3 (43%)

Phase 2

- Marked improvement in target progress and decline in dropout rate was noted.
- Parents felt motivated and empowered.

Conclusion

- Developmental decoding and environmental modification have shown promising results in the management of childhood neuro-disability across a diaspora of diagnosis.
- Information technology was useful in implementation.

G420(P) BEHAVIOURS THAT CHALLENGE: IMPORTANT PROMPTS FOR COMPREHENSIVE PAEDIATRIC ASSESSMENT?

S George, KA Horridge. *Department of Paediatric Disability, City Hospitals Sunderland NHS Foundation Trust, Sunderland, UK*

10.1136/archdischild-2018-rcpch.409

Aim To determine the incidence of previously unrecognised chromosomal, neurodevelopmental (e.g. autism spectrum and attention deficit, learning disability) and other conditions in

young people with behaviours reported as challenging referred for assessment in the paediatric disability clinic.

Method This was a retrospective observational study. The hospital's electronic clinic calendar was systematically searched to identify all young people referred because of challenging behaviours

- by the local Youth Offending Team and
- by Education, where medical advice was required for Education, Health and Care planning, September 2015–August 2017.

Data were extracted from individual electronic medical records (table 1).

Result 21 males and 2 females aged between 13 and 18 years were referred by the Youth Offending Team. 16 males and 5 females aged between 4 and 15 years were referred by Education. All underwent Single Nucleotide Polymorphism (SNP) array testing along with blood and other investigations tailored to the individual.

Abstract G420(P) Table 1

Condition identified	Youth Offending Team Referrals (n=23)	Education Referrals (n=21)
Learning Disability (LD) confirmed	1	5
Red flags for LD awaiting outcome of further assessment	5	5
Autism spectrum disorder (ASD) confirmed	0	1
Red flags for ASD awaiting outcome of further assessment	7	2
Red flags for Attention Deficit Hyperactivity Disorder awaiting outcome of further assessment	0	5
Chromosomal condition confirmed	3	0
Awaiting SNP microarray result	1	2
New-onset Epilepsy confirmed	1	0
Acquired Brain Injury confirmed	1	0
New safeguarding referral	2	0
Additional diagnosis confirmed, already known neurodevelopmental diagnosis	4 (1 in 5)	3 (1 in 7)
Total number of new needs identified	24	21

Conclusion This small study suggests that young people who present with behaviours that challenge may benefit from paediatric assessment that includes screening for red flags of neurodevelopmental, chromosomal and other conditions and for safeguarding concerns. Behaviours that challenge should prompt paediatric assessment undertaken with the same diligence as for physical symptoms and signs, even in those with already identified neurodevelopmental conditions.

G421(P) AUDIT ON COW'S MILK PROTEIN INTOLERANCE IN CHILDREN WITH DOWN SYNDROME

N Nallapeta, K Clarke, S Puri. *Child Development Centre, Wortleybeck Health Centre, Leeds Community Healthcare NHS Trust, Leeds, UK*

10.1136/archdischild-2018-rcpch.410

Aims Cow's milk protein intolerance (CMPI) is common in infancy, with a prevalence rate of approximately 2%–3% in the UK. The average of age diagnosis of CMPI is 3.5 months

in typically developing infants. The clinical symptoms suggestive of CMPI are gastroesophageal reflux, change in bowel pattern, faltering growth, irritability, eczema and respiratory symptoms. These clinical symptoms are commonly present in infants with Down syndrome. In this study we wanted to determine the prevalence of CMPI in children with Down syndrome and if there was delay in diagnosis due to diagnostic overshadowing.

Methods One hundred and forty-eight children (0–19 years) were identified with Down syndrome, thirty-six children were under the five years. All 36 case notes of children under the age of five years were audited using the NICE (2015) guidance for CMPI.

Results 30/36 children (83.3%) had one or more symptoms (respiratory, gastrointestinal, skin, feeding difficulties and faltering growth) that could have been related to CMPI (table 1). 8/36 children (22.2%) were treated for CMPI. Mean age at diagnosis was 4.6 months and average symptoms per child was 2.8 with gastrointestinal symptoms present in 100% and feeding difficulties in 87.5% of children with CMPI. No children were identified as having IgE mediated CMPI. All eight children were initiated on a cow's milk protein free diet, with an improvement of symptoms.

Conclusion In our study shows that in children with Down syndrome there is an increased prevalence of non-IgE mediated CMPI and there is a potential delay in diagnosis. We recommend that CMPI should be considered all infants with Down syndrome who have difficult to manage gastroesophageal reflux and more than one system involvement and consider using CoMiSS scoring, to prevent diagnostic overshadowing and prompt management according to current CMPI guidance.

Abstract G421(P) Table 1

Number of children	Gastrointestinal	Feeding difficulties	Faltering growth	Respiratory	Skin
Total	28 (77.7%)	20 (55.5%)	9 (25%)	9 (25%)	7
n=36					(19.4%)
CMPI positive	8 (100%)	7 (87.5%)	3 (37.5%)	2 (25%)	3
n=8					(37.5%)

G422 WHY WE NEED TO INVEST MORE IN YOUNG PEOPLE'S HEALTH

R Shah, A Hagell. *Research Department, The Association For Young People's Health, London, UK*

10.1136/archdischild-2018-rcpch.411

Background Emphasis on securing the 'best start in life' is often thought to mean younger children but prevention and early intervention are also critical for young people aged 10–24. This is when life-long health behaviours are established, which have a huge impact on young people's future health.

Aim To provide evidence to support further investment into young people's physical health.

Method We use publicly available datasets that draw on significant sample sizes, provide generalisable data on young people, use reliable survey instruments and adhere to standards of ethical research methods.

Results The teenage years are a 'peak age' for health risks, with lifelong implications

- 11–18 year olds consume 8 times the recommended sugar allowance, which has not significantly decreased compared to 4–10 year olds.
- 46% of 15 year olds have decay in their permanent teeth
- 20% of secondary school aged children are already obese and trends show no improvement in obesity prevalence for children in Year 6 compared to children in reception.
- 5% of 15 year olds smoke regularly
- 10–14 is peak age for diagnosis of Type 1 diabetes, with low rates of secondary complication screening
- Average age for child sexual exploitation concerns to be raised is 15–17 years

Contrary to popular understanding, young people are frequent users of health services

- Half of Year 10 pupils report visiting their GP in the last 3 months.
- 369 out of 1000 young people aged 15–19 had an A&E attendance in 2014/2015

Despite being frequent users of health services, services are not youth friendly

- Only a third of young people aged 18–24 report their GP appointment as good/very good.
- Training in adolescent health is not mandatory for GP practices

Conclusions The health of young people is not improving at the same rate as that of younger children, particularly in relation to obesity. These data provide a strong case for making young people's early intervention and age-appropriate health promotion a priority. It is vital that we collect data and commission services specially to meet the health needs of young people in order to prevent non-communicable diseases; caused by lifestyle behaviours that commonly start in adolescence.

G423(P) FROM REFLECTION TO ACTION: A MULTIMODAL, INTERACTIVE APPROACH TO ENHANCING TRAINING ON CHILD REFUGEE HEALTH

¹G Singh, ²C Sen. ¹Community Child Health, London North West Healthcare Trust, London, UK; ²Academic, Royal Society of Medicine, London, UK

10.1136/archdischild-2018-rcpch.412

Aims Child refugees have specific but complex health needs that place significant demands on health systems and those working within them. Public and professional expectation is that health workers are proficient in caring for this vulnerable population.^{1–3} Despite increasing numbers of child refugees to the UK,⁴ health professionals report feeling ill-equipped to address these needs, and unable to fulfil their ethical obligations.⁵

We designed a training course to address this gap, and evaluated the impact on professional confidence and competency in caring for child refugees.

Methods Our interdisciplinary, one-day course for child health professionals aimed to deepen understanding of: the geopolitical origins of the 'migration crisis'; the physical and mental health needs of child refugees; and advocacy for vulnerable populations. Following established pedagogical theory,⁶ we utilised a multimodal and interactive model: digital technology; skills workshops; first-hand testimonies and the use of literary and visual art were employed alongside more traditional

lectures. An online pre- and post-course questionnaire with multiple-choice and free-text questions captured professionals' perceptions about confidence and competence.

Results Of the 190 course delegates, responses were as follows (table 1):

Abstract G423(P) Table 1

'I feel confident to deal with child refugee...'	Pre-course	Post-course
• Physical needs	34% (31/91)	88% (60/88)
• Mental health needs	9% (8/88)	43% (32/74)

For delegates, the biggest obstacles to managing the 'migrant crisis' were: lack of awareness of problems faced by refugees (47% – 50/107) and lack of collaboration between health and social care (31% – 33/107). Free-text responses consistently reflected a desire to learn how to: advocate for child refugees in both local and national spheres; educate other professionals and the public about refugee needs; and be more active politically and as a volunteer.

Conclusion This study confirms significant demand for professional training around child refugee health needs. Our interdisciplinary, multimodal and interactive approach increased confidence of delegates to manage child refugee physical and mental health, stimulated interagency collaboration and provided a platform for actualising professional ethical and advocacy responsibilities to vulnerable populations. This model has potential for professional training elsewhere.

G424(P) THE IMPACT OF AGE AND DEDICATED AGE-APPROPRIATE SERVICES ON TRANSITION OUTCOMES FROM PAEDIATRIC TO ADULT HEALTH SYSTEMS: A REVIEW OF REVIEWS

AA Yassae, D Hale, A Armitage, R Viner. General Adolescent Paediatrics Unit, Institute of Child Health, University College London, London, UK

10.1136/archdischild-2018-rcpch.413

Aims To identify healthcare transition models associated with positive outcomes, and review evidence regarding the optimum age of transfer and the value of existing age-appropriate services.

Methods A systematic search strategy was used across multiple databases to identify systematic reviews addressing two review questions.

- What is the evidence for a delayed transition?
- What is the value of existing age-appropriate services?

Reviews that were not systematic, did not cover healthcare transitions, did not concern long-term conditions, or were not reviews of primary literature were excluded. Reviews of quantitative, qualitative or mixed methods studies were included. Quality was assessed using the R-AMSTAR tool. Studies with a score below 22 were excluded. The search strategy was initially applied in April 2015 and was repeated in May 2017 to include newly published literature.

Results The initial search strategy produced 2533 results with 11 systematic reviews meeting all inclusion criteria. Repeating the search criteria produced 3616 new results published between April 2015 and May 2017, with an additional 13