Developmental delay

What is development?

Development is the process by which every child learns skills sequentially in an expected order, from a new born to becoming fully functioning adult. Development is split in to 4 different areas; Gross motor, Fine motor and Vision, Communication and hearing, social development. A number of different factors can determine a child's development including inherent differences; gender, familial norms, underlying conditions and extrinsic factors such as social and physical environment, nutrition and physical health.

What is developmental delay?

Global developmental delay is when a child falls more than 2 standard deviations below the average for their age in 2 or more areas of development. Global developmental delay affects 1-3% of children in the UK [(2)]. It is important that children with developmental delay are identified and investigated and supported appropriately. In the majority of cases an underlying cause is not identified. Some underlying conditions are reversible with treatment. Early diagnosis of genetic conditions leading to developmental delay such as Duchennes muscular dystrophy can lead to appropriate and timely genetic counselling for families.

The term developmental delay is used in children less than 5 years of age and learning disability in those over 5 years.

Learning difficulty vs. learning disability?

A learning difficulty is a specific difficulty in an area of learning, there is no effect on intellect, learning difficulties include dyspraxia and dyslexia. A learning disability is reduced intellectual ability and difficulty with every day activities.

Assessment of developmental delay

History and examination should include:

Antenatal history: Maternal infection such as toxoplasmosis, rubella, CMV. Toxins (alcohol, smoking). Drugs (cytotoxics, antiepileptics), recreational drugs, alcohol and smoking.

Delivery/ Neonatal course: Gestation at birth, Resuscitation, C-section/ NVD, difficulties at time of birth, neonatal admission/ intervention.

Past medical history: Infection, head injury, malnutrition, toxins, metabolic disorders, physical health problems, seizures.

Family history: Consanguinity, physical and mental health, learning disability, death in childhood.

Social: Domestic violence, maltreatment, under stimulation, parental mental health.

Examination: Height, weight, head circumference (plot on

Red Flags:

- Loss of skills at any age
- Concerns about vision, fixing, or following an object at any age
- Hearing loss at any age
- Persistently low muscle tone
- No speech by 18 months, especially if they do not try to communicate by other means such as gestures
- Asymmetry of movements or features suggestive of cerebral palsy
- Persistent toe walking
- Complex disabilities
- Head circumference above the 99.6th centile or below 0.4th centile or if circumference has crossed two centiles
- Unable to sit unsupported by 12 months
- Unable to walk by 18 months (boys) or 2 years (girls) or run by 2.5 years
- Unable to hold object placed in hand by 5 months
- Unable to reach for objects by 6 months
- Unable to point at objects to share interest by 2 years

appropriate charts), dysmorphism, neuro-cutaneous markers. General examination including evidence of organomegaly and full neurological examination.

Structured assessment of child's developmental ability.

Developmental regression is when a child loses skills that they have previously learnt, this may be in one of more areas of development.

Tools for assessment of developmental delay

Screening questionnaires include:

Ages and stages questionnaire
Parents evaluation of developmental status

Measurement Tools include:

Denver developmental screening test
SOGS II (Schedule of Growing skills II)
Bayley scale of infant development
Griffiths mental development scale

IQ tests can be performed in older children, usually by educational psychologists, to support a diagnosis of learning disability. In the UK this is rarely used and assessment through functional ability is more common.

Investigation of Developmental delay?

Investigations should be tailored to the history and examination. In most cases there are no additional clues such as seizures or microcephaly.

First line investigations: FBC, U&E, LFT, bone profile, Microarray, TFT, Creatinine Kinase (boys). Assessment of hearing and vision.

Second line/ dependent on other findings in history/ examination: Plasma amino acids, ammonia, lactate, urine organic acids, urine amino acids, urine glycosaminoglycans, VLCFA, biotinidase, lead levels, ferritin, urate, TORCH serology (infants), Neuroimaging (MRI), Fragile X

If other features are identified discussions with other specialities such as neurology and genetics may be warranted.

Management of children with developmental delay?

Irrespective of the diagnosis (if found) children with developmental delay should be supported through a multidisciplinary team including speech and language, occupational therapy, physiotherapy as required. Children and families will require support around learning and education and this will include pre-school workers (services are dependent on area eg. Portage) and links with school. Communication with health visitors, school nurses and GPs is also vital to support families.

References:

Coysh T, Hogg SL, Parker AP. Fifteen-minute consultation: Efficient investigation of the child with early developmental impairment in the era of genomic sequencing. *Archives of Disease in Childhood - Education and Practice* 2020;**105:**13-18.

Bellman Martin, Byrne Orlaith, Sege Robert. Developmental assessment of children BMJ 2013; 346 :e8687

For families: www.mencap.org.uk