An integrated transdisciplinary approach to early intervention

A better start for high-risk infants

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Parents
Background

Managing existing challenges

An integrated approach
High risk infants:

Infants disadvantaged by

**Biological** (preterm birth, perinatal brain injury)

and/or

**environmental** (parenting / socioeconomic)

**risk factors**
Critical periods of brain development

- Prematurity or early brain lesion interferes with migration & wiring
- First 3-6 months critical for structural tract development (e.g. CST)
- ‘Neurons that fire together wire together’ – Hebbian theory
- Stimulation (or lack of) drives early synaptic wiring

Window often missed due to referral delay

Kolb et al, 2011
What is Early Intervention

• Intervention early age <12 months (as early as possible)

Goal: minimise cognitive, motor and social emotional impairments for high-risk infants

Promote adaptive parenting and overall family function

Preventative intervention for high-risk infants:
Improved cognition at preschool age and small effect on early motor outcomes

High risk of Cerebral Palsy:
‘Weak positive’ favouring EI for motor outcomes
Morgan et al (2016); Hadders-Algra et al, 2017
Challenges in experimental clinical EI research

• Difficulty with early and stable diagnosis (e.g. CP)

• Samples and study heterogeneity

• The challenge of the control group

• Inadequate evaluative outcome measures

• Definition of multifaceted intervention programmes

Largest effect:

- Child initiated movement
- Task specific training
- Environmental enrichment
- Adequate dosing
- Multifaceted interventions (no one intervention superior)

Morgan et al (2013; 2016)
Programmes are most effective when they support the development of a responsive parent–infant relationship over time, as well as the parent’s well-being.

(P.67 van Wassenaer-Leemhuis et al. 2016)
Widespread challenges

- Only small proportion of the 1800 children born with CP every year receive early and intensive intervention
- Partly due to poor understanding of the condition
- Insufficient proactivity in assessment and diagnosis
- Partly insufficient resourcing of educational and therapeutic services

The UK lacks common sense of what good should look like for infants with CP and their families
Modified Nominal Group Selection
EI SMART Committee: Parents and specialist EI MDT members

• Evidence informed – literature review
• Parent experience: fend for themselves - work out best provision

Consensus:
• MDT approach best – but needs to be more integrated
• Need joined up learning between MDT
• Should start with therapists ...
• **Clinical reasoning framework:** therapists can use to deliver relationship based EI
• **Integrates** intervention components across development domains
• Promote **shared** understanding and **language**
• Promote consistent **family-centred care**
• Facilitate shared aims and goals
• Progress towards more effective early intervention

**Eismart is not alternative to professional expertise of specific therapies but vehicle by which it may be delivered more effectively**
A smart start for high-risk infants

Sensory
Motor
Attention/Regulation
Relationships
Therapy Practice
Sensory

Motor, sensory and cognitive development are all strongly interrelated

(Hadders-Algra M. 2016)
• Motor, behavioural, emotional & attention responses are result of how brain processes sensory information (Schaaf 2010)

• Sensory information interpreted - used to modify movements & organise postural control system based on task (Dusing 2016)

• Adaptive responses basis for more complex developmental processes including cognition (Thelen & Smith 2007)
Emphasis of intervention for sensory development:

• Provide the appropriate sensory environment
  - Support infant’s self-regulation for interaction & attachment
  - Keeping infant engaged not over-stimulated

• Help parents and carers observe and interpret
Complexity & Variability seen in typical motor development

Motor

Dynamic Systems Theory
(Thelen 1995)

Neuronal Group Selection Theory
(Edelman 1989; Hadders-Algra, 2000)
Environmental motor enrichment to promote motor and cognitive development

- High-risk infants more limited movement repertoire (Dusing et al, 2016)
- Increase trial and error opportunities in task specific activity
- Offering exploration variety
- Appropriate activities challenge postural control strategies
- Self-produced actions by infant
- Repetition & Integration into daily routines

(Morgan et al, 2013)
Scaffolding to promote motor and cognitive development

Scaffolding:
- Observe/analyse infant ability
- Identifying challenging areas
- Activities into achievable steps

Zone of Proximal Development
Attention / Regulation
Brazelton and colleagues:

Understanding Infant behavioural cues

Positive and sensitive parental awareness and responsiveness to infant’s cues

Support for Infant’s self-regulatory competence to reduce parental and infant stress

Outcomes enhanced when parent-infant relationship supported in EI

(van Wassenaer-Leemhuis et al, 2016)

Nugent JK (2013)
Relationships
Relationships integral to early intervention:
Parent-therapist relationship

- Anticipatory Guidance
- Positive Expectations
- Collaborative Goal setting
- ‘Scaffolding’
- Shared Expertise
1. Involve & educate (coaching) parents in biopsychosocial of infant's care
2. Support consistent & responsive parent-infant relationship
3. Recognise & support infant's self-regulatory behaviours
4. Scaffold infant's next developmental cognitive, motor, sensory & communication steps
5. Modify environment ensure challenge remains in variety of self-initiated motor activities
6. Promote parental well-being
Practical www.eismart.co.uk

• Consider multifaceted approach – self reflect & team

• Use website knowledge skills framework as prompt

• Read more in article (includes signposting)

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