

Early Childhood Intervention: Why does it work?

4th National Early Childhood Intervention
Conference. 7th -9th June 2012
Sibu, Sarawak, Malaysia



Early Years

- The interaction of young child with the social environment exert a powerful impact on the child's readiness to learn and on future success
- "Give me a child until he is seven and he is mine for life" (St.Francis Xavier quotation)

Adoption

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Learning opportunity

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Childhood Developmental Issues

The Child

- Biological risk e.g low birth weight, genetic disorders
- Developmental Delay
- Developmental Disability
- Neurological disorders

The Family

- Poverty
- Single parent
- Child abuse
- Domestic violence
- Neglect
- Drug abuse
- Poor parenting
- Health related issues
- Exposure to acute and chronic stressor



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General Approach to Early Child Health Program

- Enhance children's growth and development
- Strengthen families as the primary nurturers
- Provide children with educational, health, and nutritional services.
- Link children and families to needed community services e.g early detection, crisis management
- Ensure well-managed programs that involve parents in decision making.(empower parents)



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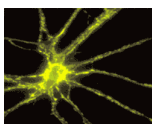
- Children with special needs or who are at risk for developmental delays hinder normal developmental trajectories.
- Early intervention-
 - Minimize the effects of the disability or risk
 - Maximize the child's development
- Intervention can be provided directly to the child, or indirectly through the family and environment.

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Is Early Intervention Effective?

Neuroscience Evidence

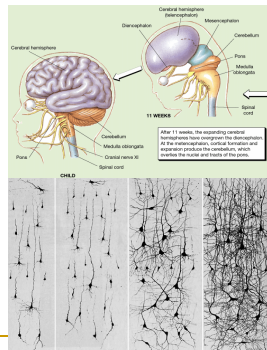


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The Early Brain Growth

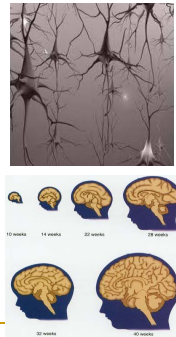
- During the first 2 years of life, there is genetically determined sequential growth, proliferation, and overproduction of axons, and synapses in different regions of the brain.



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Early Brain Growth & the Environment

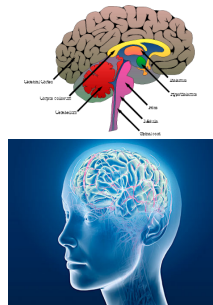
- The process is followed by apoptosis
- Synaptic 'pruning' is an activity-dependent process and environmentally regulated
- This period of plasticity has potential for change.
- Neuronal circuit that has constant activities stimulation will establish and stabilized



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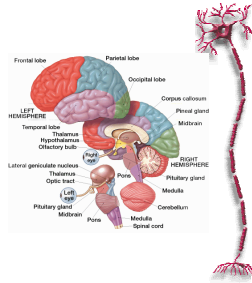
- Repeated and appropriate early environmental stimulation** will serve to guide the molding and establishment of brain circuits that are essential for the individual's brain function.
- Plasticity typically embedded in a 'developmental program'. It **requires appropriate timing and quality of the information**



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- Neglect and failure of environmental stimulation during critical periods of brain development may lead to permanent deficits in cognitive abilities.



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Failure of Environmental Stimulation

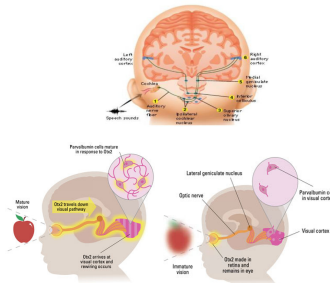
Deafness:

Auditory experiences, which are required for the development of language, fail to reach the appropriate brain area.

- importance of new born hearing screening

Visual impairment:

Irreversible reduction in visual acuity occurs if an eye is deprived of visual input e.g. cataract or a squint beyond the age of 8-10 years



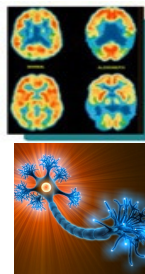
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Evidence from PET Study

Critical Period of Brain Development (Preventive medicine 27(2):184-8,1998)

- New born-highest degree of glucose metabolism
- 6-12 months, glucose utilization increases in frontal cortex
- These changes correspond to the emergence of various behaviour during 1st year of life



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- There is a rise in the rates of glucose utilization from birth until about 4 years.
- The child's cerebral cortex uses over twice as much glucose as that of adult
- From age 4 to 10 years, these very high rates of glucose consumption are maintained.
- After that, gradual decline till adult value at age 16-18



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Critical periods of brain growth and cognitive function in children

Brain (2004), 127, 321-329

- Postnatal head growth was significantly greater in children whose mothers were educated to degree level or of higher socio-economic status.
- There was no relation between IQ and measurements of head size at 18 weeks gestation or at birth.
- These results suggest that brain growth during infancy and early childhood is more important than growth during foetal life in determining cognitive function.



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Evidence Base Report on Effectiveness of Early Intervention

Karoly *et al* 1998, comprehensive review of early childhood intervention program from 1960s. Researchers concluded that intervention groups showed better outcomes in a number of domains compared with control groups

- Improved parent-child relationships
- Cognitive, emotional and academic measures in childhood
- Long-term benefit in later life such as increased labour force Participation, reduced welfare dependency, higher income and reduced criminal activity.
- The programs were both effective and efficient use of public funds

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What is the outcome measure?

Campbell FA et al Early Childhood Research Quarterly 2008

A more targeted approach,

- Beginning in infancy
- High-quality early childhood education
- Home visits to improve the home learning environment
- Targeted at high risk groups from a very early age
- Result in positive cognitive and academic achievement outcomes as well as greater early adult self-sufficiency.
- Higher quality program with more qualified staff and close supervision from experts

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Larger Scale early childhood intervention

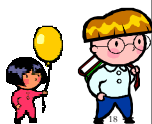
Reynolds AJ et al, 2007 Archives Pediatrics Adolescence Medicine

- Higher percentage of the EI group completed high school and college
- Fewer dropped out of school or placed in special education or experienced grade retention.
- In terms of crime and life success, there were lower proportions of overall and violent arrests
- Higher rates of full-time employment, fewer cases of child maltreatment
- Higher coverage by health insurance and a lower percentage of depressive symptoms

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What are the Important Component of Early Intervention Program ?



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Components of effective early Intervention (General)

- **Early identification** & entry into early intervention program
- **Family** involvement
- **Transdisciplinary** collaboration
- Inclusion into community (**natural settings/environment**)
- **Transition** process
- **Highly qualified professionals**



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Early Detection and Intervention

US

- Average age of referral is **15.5 months** (Hebbeler et al., 2007. US).
- Longitudinal study of birth cohort, using standardized tools assessed at 9 and 24 months (Rosenberg et al., 2008)
- About 13% had developmental delay at 9 months required intervention service
- At 24 months, 10% of children with delay received services

Singapore

- Mean Age of referral : 3 years old. (Goh et al 2009)
- Estimated new case incidence is 2.5% of live births.



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What Determines Age of Referral

- Age of detection
- Health care surveillance
- Universal hearing screening
- High risk infant
- Public awareness
- Well trained primary health care providers and nursery teachers



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Family centered practice & its effectiveness.

Hielkema et al. BMC Public Health 2011, 11:636

In Dutch Preventive Child Healthcare (PCH), a new family-centered method has been implemented

To identify Social-emotional and behavioral problems in early childhood. Main features are consideration of the child's developmental context and empowerment of parents to enhance the developmental context.

- 2 regions that are comparable in regard to socio-demographic characteristics. 3500 new born babies, 18 months follow-up data collection.

- 5 domain: Competence of the parent, Role of the partner, Social support, Perceived barriers or life events within the care-giving context, and Wellbeing of the child.

-Effective in identifying the risks for psychosocial development

-Parents concern are accurate predictor.

-Parents experience family centered practice

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Family Centered Service

- Earlier models directed by professionals
- New model move towards consideration of the family's needs, priorities and available resources.
 - Affirming the family's competence and participation (equal partners)
 - Involved in decision-making and supportive of their decision
 - Assessment of family stressors (e.g special need child), **acknowledging the importance of the family's interaction patterns in improving the child's development.**



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Are Parents Satisfied with EIPIC?

N=655

PSQ 1

10-item survey of general parental satisfaction.

PSQ 2

MPOC-20
Parent Stress
Social Support
Coping Efficacy
N=305

Focus Group Discussions
N=70

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PSQ 1 (N=655) Parents are generally satisfied with EIPIC in the 10 items measured.

3 statements with highest agreement

- Child has benefited from EIPIC.
- Parents received regular & helpful feedback from the teacher.
- Child's progress and goals are regularly reviewed with parents.

3 statements with lowest rating

- The EIPIC fees
- The frequency and duration of service
- Approaching the staff if parents have personal problems & stress in coping with their child & other demands.



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Phase 2, MPOC 20

Parental involvement has been identified consistently in early intervention studies as a contributing factor to effective intervention.

- MPOC: A standardised questionnaire to assess the level of parental involvement.
- Questionnaire are measured on a Likert scale, which ranges from 1 (strongly disagree) to 7 (strongly agree)

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The Findings (N = 305)

MPOC Factors	Means	Means (overseas research)
Partnership & Enabling	4.40	6.34
Provide specific information	4.84	6.31
Provide general information	3.94	3.56
Respectful & Supportive Care	4.80	6.66

The levels of service in three aspects were comparably lower than that in western countries

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Parenting Stress Index (MPOC n=305) Goh et al (2009)

Factor	Parent Response
Parental Stress	53% reported significant level of stress.
Child Difficulty	30% perceived special needs child as having significant problems in self-regulating behaviors.
Parent-Child Dysfunctional Interaction	29% perceived that their interactions with child do not meet their expectations & that their interactions do not reinforce them as parents.
Total Stress Index	54% of parents experience clinically significant level of stress that require professional assistance.

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EIPIC Service & Parenting Stress

Parents perceived that :

- Provision of **specific information** about the care of their child
- **Respectful and supportive** care significantly reduce their parenting stress

Where parent-child interactions are perceived to be difficult, EIPIC service that offers **partnership**, is **enabling** and perceived as **respectful** and **supportive of parents** significantly reduced parenting stress.



Increasing social support and coping efficacy



Less parenting stress

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Parenting skill & parent mental wellness

Lindsay et al. BMC Public Health 2011, 11:962

- The UK government's Department for Education allocated each programme (Incredible Years, Triple P and Strengthening Families Strengthening Communities) to six local authorities
- A total of 1121 parents completed pre- and post-course measures.
- Significant improvements on all measures for each programme
 - Parenting satisfaction and self-efficacy
 - Parental mental well-being
 - Improvements in child behaviour were found for all programmes

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Parents Interview n=70

Satisfied with

- Child benefitted and makes improvement in EIPIC
- Satisfied with structured & holistic program, positive staff attitudes



Improvement sought

- To better prepare the child for transition
- More integration with main stream
- Tailor-made parent training for home and community use
- Highlighted parents' worries, anxieties and stress in caring for child
- Need for care-giving facilities.
- Better service coordination
- Facilitate parent-parent support

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Are EIPIC Services Family Centered?

The Measure of Processes of Care – Service Providers (MPOC-SP)

- Measuring the perspective of service providers towards family-centred care-giving¹
- Measure of Beliefs about Participation in Family-Centred Service (MBP-FCS)
- Questionnaires are measured on a Likert scale, which ranges from 1 (strongly disagree) to 7 (strongly agree)

¹ MPOC-SP; Woodside, Rosenbaum, King & King, 1998

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Measure the extent to which service providers perceived that family-centred services were implemented in the program (MPOC-SP) (N = 218)

MPOC –SP Factors	Means	Means (overseas research)
Show interpersonal sensitivity towards parents and children	4.59	5.07
Communicate specific information about the child	4.64	5.50
Provide general information	4.28	4.68
Treat parents and children respectfully	5.22	5.83

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Service-provider's beliefs about a family-centred service (MPOC-FCS) N = 218

MPOC-FCS Factors	Means
Beliefs about positive outcomes from FCS	5.36
Beliefs about the practical feasibility of implementing FCS	2.93
Beliefs about absence of negative outcomes from FCS	4.90
Beliefs about self-efficacy to implement FCS	5.09
Beliefs about FCS principles	5.42

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Transdisciplinary Collaboration

- Multi-disciplinary approach
 - Family having to repeat information
 - Services are not coordinated
 - Do not have comprehensive understanding
- Interdisciplinary teams
 - Assessment and planning of services among professional
 - Professional delivers services Independently
 - Family member interact with individual team members

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Transdisciplinary

- High level of communication
- One main service provider meeting the child and family's needs
- Supported by other team members
- Boundaries of each professional's role less well defined
- More coordinated, with regular communication

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Inclusion Into The Community (Natural settings)

- Ensures that the child and family's learning experiences can occur throughout the day
- Services should be provided in natural settings or the least restrictive environment as far as possible
- "inclusion in mainstream services is now recognized both as a right and as a major intervention strategy" (Moore 2008)



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Transition Process

A stressful time

Useful practice:

- Provide specific information
- School option
- Planned transition
- Interagency collaboration
- Information on child's need
- Child preparation
- Visiting new environment

Parent's desire :

- Centre preparation for child's transition to mainstream settings
- Tailor-made parent training for home and community use
- More teaching of parents in management of child

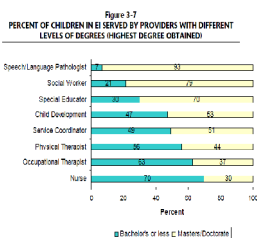
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Highly Qualified Professionals

- Extensively trained in assessing family
- Professional workforce providing extra training to equip parents
- Comprehensive and flexible interventional strategy
- Address more than one area of need while retaining a core set of objectives

US Study (Hebbeler et al, 2007)



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Outcome Measure

The Early Childhood Outcomes Center US

<http://projects.fpg.unc.edu/~eco/index.cfm>



■ What is Family Outcome?

- A benefit experienced by families as a result of services and supports received
 - An outcome is not the receipt of services or satisfaction with services
 - An outcome is what happens as a result of services provided to families

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Family outcome Family-Centered Principles



Family-Centered Principles

- Shared philosophy
- Families as partners
- Focus on strengths
- Family choice of goals and services
- Collaboration and coordination of service
- Effective communication
- Flexibility
- Community-based

Program Activities

- Referral and intake
- Child assessment
- Family assessment
- Team meetings and decision-making
- Service provision and coordination
- Parenting practices
- Community support

Family Outcomes

- Understand child's abilities and special needs
- Know rights and advocate effectively
- Help child develop and learn
- Have support systems
- Access the community

Early Childhood Outcomes
Center-US
May 2011

WG/KKH/NCSS
WG/KKH/NCSS

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FAMILY OUTCOMES SURVEY		Referral Services		Section A: Family Outcomes	
<p>Instructions: Section A of the Family Outcomes Survey focuses on the ways in which you support your child's needs. For each statement below, please select which option best describes your family right now, not at all, a little, somewhat, almost, or every day.</p>					
		Not at all	A little	Somewhat	Almost every day
<p>Outcome 1: Understanding your child's strengths, needs, and abilities</p>					
1. We know the next steps for our child's growth and learning.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. We understand our child's strengths and abilities.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. We understand our child's delays and needs.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. We are able to tell when our child is making progress.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Outcome 2: Knowing your rights and advocating for your child</p>					
5. We are able to find out about the services and programs available to us.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. We know our rights related to our child's special needs.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. We know who to contact and what to do when we have questions or concerns.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. We know what options are available when our child leaves the program.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. We are comfortable asking for services & supports that our child and family need.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Outcome 3: Helping your child develop and learn</p>					
10. We are able to help our child get going with activities.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. We are able to help our child learn new skills.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. We are able to help our child take care of his/her needs.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. We are able to work on our child's goals during everyday routines.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Outcome 4: Having a support system</p>					
14. We are comfortable talking to family and friends about our child's needs.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. We have friends or family members who listen and care.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. We are able to talk with other families who have a child with similar needs.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. We have friends or family members we can rely on when we need help.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. I am able to take care of my own needs, and do things I enjoy.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<p>Outcome 5: Accessing the community</p>					
19. Our child participates in social, recreational, or religious activities that we want.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. We are able to do things we enjoy together as a family.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Our medical and dental needs are met.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22. Our child care needs are met.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Our transportation needs are met.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Our food, clothing, and housing needs are met.		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Measure of Child Outcome



- Apply to all children with developmental Needs
- Be compatible with best practice (esp. transdisciplinary service models, functional behaviors)
- Have potential to influence practice in a positive way
- Captures multiple sources of information and child's functioning across settings
- Doesn't require programs to change assessments
- Relates to age-expected child functioning
- Measures progress over time
- Is inexpensive
- Is ready to be implemented now
- Is valid and reliable

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Three Child Outcomes



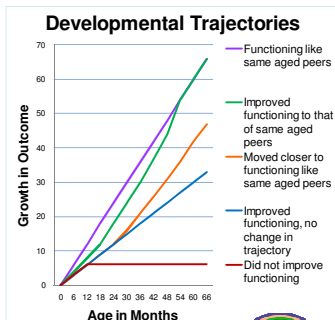
- **Positive social emotional skills** (including positive social relationships)
- **Acquisition and use of knowledge and skills** (including early language/communication [and early literacy])
- **Use of appropriate behaviors** to meet their needs

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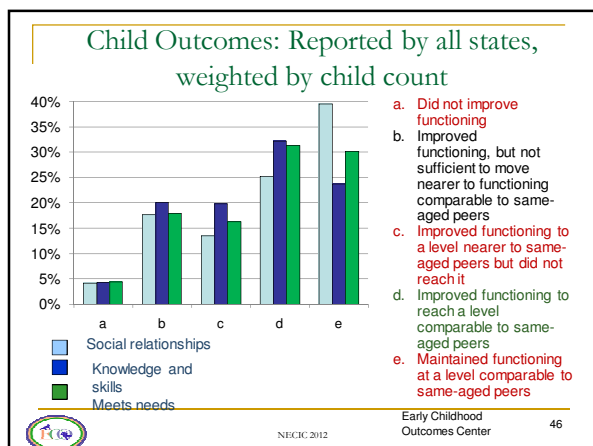
5 Functional Level of Reporting:

- a. Did not improve functioning
- b. Improved functioning, but not sufficient to move nearer to functioning comparable to same-aged peers
- c. Improved functioning to a level nearer to same-aged peers but did not reach it
- d. Improved functioning to reach a level comparable to same-aged peers
- e. Maintained functioning at a level comparable to same-aged peers



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Long Term Impact: Family Outcome
Family centered program (Moore & Larkin 2005)

1. Greater satisfaction with services, lower parental stress and better parental well-being
2. Improved functional performance in natural environment
3. Important predictors of parental well-being were the absence of behavioural problems

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Child & Society Benefit

- Cost-benefit (Masse and Barnett)
- Fewer of the children enrolled in EIP required placements in special education
- Neonatal hearing screening
- 'Early intervention has been shown to achieve, at relatively modest cost, changes to prevent harms that are very expensive to remediate' (Valentine and Katz (2007))

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Effective Program for Child & Society Benefit

School readiness

- Invest in program for early education and care

Improved in overall child and family well-being

- To increase parenting knowledge and skills

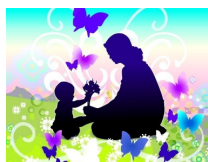
Reduced need for intensive and crisis services

- Early intervention into a range of child disabilities, especially behavioural disorders and speech delays, can improve transitions to school and early test scores.
- Reduction in need for crisis intervention

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Thank You



Train a child in the way he should go, and when he is old he will not depart from it. (Pro. 22:6)



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