Improving the System of Care for Children with Neurodevelopmental and Behavioral Disorders

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Short Survey

• Are you doing developmental screening with a standardized instrument? If yes, which one?

• Are you doing autism screening? If yes, what instrument?

• If you are doing screening, are you having any problems with billing?
Objectives: System of Care for Children with Neurodevelopmental and Behavioral Disorders

1. Give the background and review of primary care screening for developmental delay and autism spectrum disorders
Objectives: System of Care for Children with Neurodevelopmental and Behavioral Disorders

1. Give the background and quick review of primary care screening for developmental delay and autism

2. Describe a community program with primary care screening and an early diagnosis clinic
Objectives: System of Care for Children with Neurodevelopmental and Behavioral Disorders

1. Give the background and quick review of primary care screening for developmental delay and autism – Nancy Swigonski, MD, MPH, FAAP

2. Describe a community program with primary care screening and an early diagnosis clinic

3. Recognize that early intervention services for preschoolers with autism and developmental delay improves outcomes and is cost effective
Improve a system of care for children with developmental delay and autism spectrum disorders

Background for Early Identification and Role of Primary Care Screening

Nancy Swigonski, MD, MPH
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• 75% of 18 year olds cannot get a job as a private in the US army because:

Ready, Willing and Unable to Serve A report by Mission Readiness, Military Leaders for Kids www/cdn.missionreadiness.org
• 75% of 18 year olds cannot get a job as a private in the US army because:
  – Lack of diploma
  – Health (obesity, asthma)
  – Criminal record
  – Drug / alcohol

Ready, Willing and Unable to Serve A report by Mission Readiness, Military Learners for Kids www/cdn.missionreadiness.org
Healthy Child Development

- Educational Achievement
- Economic Productivity
- Responsible Citizenship
- Lifelong Health

Successful Parenting of Next Generation

Strong Communities

Healthy Economy

SPECIAL REPORT

HOW A CHILD’S BRAIN DEVELOPS

And what it means for child care and welfare reform
Head circumference-for-age percentiles: Boys, birth to 36 months
Neurodevelopmental Biology and Epigenetic Intersection

Early life experiences trigger epigenetic modifications that alter brain structure and function.
Sensitive Periods in Early Brain Development

High

Pre-school years

Low

School years

Habitual ways of responding

Emotional control

Vision

Hearing

Language

Numbers

Peer social skills

Symbol

Graph developed by Council for Early Child Development (ref: Nash, 1997; Early Years Study, 1999; Shonkoff, 2000.)
Sensitive Periods in Early Brain Development

Pre-school years

School years

Graph developed by Council for Early Child Development (ref: Nash, 1997; Early Years Study, 1999; Shonkoff, 2000.)

- Vision
- Hearing
- Numbers
- Peer social skills
- Language
- Symbol
- Emotional control
- Habitual ways of responding

Years
Sensitive Periods in Early Brain Development

Pre-school years

School years

High

Low

Years

Sensitivity

Graph developed by Council for Early Child Development (ref: Nash, 1997; Early Years Study, 1999; Shonkoff, 2000.)
Sensitive Periods in Early Brain Development

Pre-school years

School years

Graph developed by Council for Early Child Development (ref: Nash, 1997; Early Years Study, 1999; Shonkoff, 2000.)
Age of Diagnosis Autism Spectrum Disorders
US compared to Indiana
Average age of diagnosis in Indiana = 5.3 years
Identifying Infants & Young Children with Developmental Disorders in the Medical Home: Algorithm for Developmental Surveillance & Screening

Pediatrics 2006;118:405-420
Developmental Surveillance and Screening Algorithm Within a Pediatric Preventive Care Visit

Legend:
- Start
- Action / Process
- Decision
- Stop

1. Pediatric Patient at Preventive Care Visit
   - Perform Surveillance
     - Does Surveillance Demonstrate Risk?
       - Yes: Administer Screening Tool
         - Are the Screening Tool Results Positive / Concerning?
           - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
             - Related Evaluation & Follow-up Visits
           - No: Schedule Next Routine Visit
             - Increasing Developmental Concern
           - No: Schedule Early Return Visit
             - Is a Developmental Disorder Identified?
               - Yes: Identify as a Child with Special Health Care Needs
                 - Initiate Chronic Condition Management
               - No: Schedule Early Return Visit
             - Visit Complete
           - No: Schedule Next Routine Visit
             - Increasing Developmental Concern
           - No: Schedule Early Return Visit
             - Visit Complete
     - No: Schedule Next Routine Visit
       - Increasing Developmental Concern
   - No: Schedule Early Return Visit
     - Visit Complete
   - Visit Complete

2. Perform Surveillance
   - Schedule Early Return Visit
     - No: Visit Complete

3. Does Surveillance Demonstrate Risk?
   - Yes: Administer Screening Tool
     - Are the Screening Tool Results Positive / Concerning?
       - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
         - Related Evaluation & Follow-up Visits
       - No: Schedule Next Routine Visit
         - Increasing Developmental Concern
     - No: Schedule Early Return Visit
       - Visit Complete
     - Visit Complete
   - No: Schedule Next Routine Visit
     - Increasing Developmental Concern
   - No: Schedule Early Return Visit
     - Visit Complete
   - Visit Complete

4. Is this a 9-, 18-, or 30-month* visit?
   - Yes: Administer Screening Tool
     - Are the Screening Tool Results Positive / Concerning?
       - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
         - Related Evaluation & Follow-up Visits
       - No: Schedule Next Routine Visit
         - Increasing Developmental Concern
     - No: Schedule Early Return Visit
       - Visit Complete
     - Visit Complete
   - No: Schedule Next Routine Visit
     - Increasing Developmental Concern
   - No: Schedule Early Return Visit
     - Visit Complete
   - Visit Complete

*Because the 30-month visit is not yet a part of the preventive care system and is often not reimbursable by third-party payers at this time, developmental screening can be performed at 24 months of age.
Developmental Surveillance
Developmental Surveillance

A flexible, longitudinal, continuous, and cumulative process whereby knowledgeable health care professionals identify children who may have developmental problems.
5 Parts to Developmental Surveillance

1. Parent concern
2. Developmental history
3. Observation
4. Identifying risk and protective factors
   a) Environmental
   b) Biologic
   c) Genetic
   d) Social and demographic
5. Documentation
Developmental screening

The administration of a brief standardized tool aiding the identification of children at risk of a developmental disorder.
Developmental screening

The administration of a brief, standardized tool aiding the identification of children at risk of a developmental disorder.

Not Diagnostic
Developmental Surveillance
Developmental Surveillance

Developmental Screening
Identifying Infants And Young Children With Developmental Disorders In The Medical Home:
Algorithm For Developmental Surveillance & Screening

- Developmental surveillance at every well-child visit
- Developmental screening using a standardized screening tool at 9, 18, or 24-30 months or when concern is expressed
Developmental Surveillance and Screening Algorithm Within a Pediatric Preventive Care Visit

1. Pediatric Patient at Preventive Care Visit
2. Perform Surveillance
3. Does Surveillance Demonstrate Risk?
   - Yes: Administer Screening Tool
   - No: Schedule Next Routine Visit
4. Is this a 9-, 18-, or 30-month* visit?
   - Yes: Administer Screening Tool
   - No: Schedule Next Routine Visit
5a. If Yes, does Screening Tool Results Positive / Concerning?
   - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
   - No: Schedule Early Return Visit
5b. If No, does Screening Tool Results Positive / Concerning?
   - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
   - No: Schedule Next Routine Visit
6a. If No, does Screening Tool Results Positive / Concerning?
   - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
   - No: Schedule Early Return Visit
6b. If No, does Screening Tool Results Positive / Concerning?
   - Yes: Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
   - No: Schedule Next Routine Visit
7. Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services
8. Developmental and Medical Evaluations
9. Is a Developmental Disorder identified?
   - Yes: Identify as a Child with Special Health Care Needs
   - No: Schedule Early Return Visit
10. Identify as a Child with Special Health Care Needs

Legend:
- = Start
= Action / Process
= Decision
= Stop

Increasing Developmental Concern
Using the algorithm, decide what to do...

- An 18 month old, who you have followed since birth comes in for well child care.
- She was born at term and has met all developmental milestones.
- The toddler stays at home with mother who has a high school education. Mother has no concerns about the child. The family history is negative.
- What should be done at this visit?
Pediatric Patient at Preventive Care Visit

Perform Surveillance

Does Surveillance Demonstrate Risk?

Is this a 9-, 18-, or 30-month* visit?

Administer Screening Tool

Are the Screening Tool Results Positive / Concerning?

Schedule Early Return Visit

Visit Complete

Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services

Are a Developmental Disorder Identified?

Identify as a Child with Special Health Care Needs

Initiate Chronic Condition Management

Schedule Next Routine Visit

Visit Complete

Schedule Early Return Visit

Visit Complete

Legend

= Start

= Action / Process

= Decision

= Stop

Related Evaluation and Followup Visits

Increasing Developmental Concern
Using the algorithm, decide what to do...

- A 12 month old, who you have followed since birth comes in for well child care.
- The child was born at term, has normal growth and has met developmental milestones.
- The baby stays at home with mother who has a high school education. The family history is negative.
- You ask the mother if she has any concerns about the child’s development, behavior or learning. She is worried because this child seems “slower” than his siblings did at this age.
- What should be done at this visit?
Pediatric Patient at Preventive Care Visit

Is this a 9-, 18-, or 30-month* visit?

Administer Screening Tool

Perform Surveillance

Does Surveillance Demonstrate Risk?

Are the Screening Tool Results Positive / Concerning?

Schedule Early Return Visit

Schedule Next Routine Visit

Is this a 9-, 18-, or 30-month* visit?

Administer Screening Tool

Are the Screening Tool Results Positive / Concerning?

Make Referrals for: Developmental and Medical Evaluations & Early Developmental Intervention / Early Childhood Services

Is a Developmental Disorder Identified?

Identify as a Child with Special Health Care Needs

Initiate Chronic Condition Management

Legend

= Start

= Action / Process

= Decision

= Stop

Related Evaluation and Followup Visits

Visit Complete

Visit Complete

Visit Complete

Visit Complete

Visit Complete

Visit Complete

Visit Complete

Visit Complete

Visit Complete

Increasing Developmental Concern
An 8 month old, who just moved to your area comes in for well child care.

The child was born prematurely (28 wk AGA). The family history is negative.

Mother is concerned about when the child will “catch up”. Direct observation shows that the baby fixes and follows, bats at objects but does not yet roll over. Tone in the lower extremities is somewhat increased.

What should be done at this visit?
1. **Pediatric Patient at Preventive Care Visit**

2. **Perform Surveillance**

3. **Does Surveillance Demonstrate Risk?**
   - **Yes**
     - **Administer Screening Tool**
     - **Are the Screening Tool Results Positive / Concerning?**
       - **Yes**
         - **Make Referrals for:**
           - Developmental and Medical Evaluations
           - Early Developmental Intervention / Early Childhood Services
       - **No**
         - **Develop and Medical Evaluations**
   - **No**
     - **Schedule Next Routine Visit**

4. **Is this a 9-, 18-, or 30-month* visit?**
   - **Yes**
     - **Administer Screening Tool**
     - **Are the Screening Tool Results Positive / Concerning?**
       - **Yes**
         - **Make Referrals for:**
           - Developmental and Medical Evaluations
           - Early Developmental Intervention / Early Childhood Services
       - **No**
         - **Develop and Medical Evaluations**
   - **No**
     - **Schedule Next Routine Visit**

5. **Related Evaluation and Followup Visits**
   - **Yes**
     - **Visit Complete**
   - **No**
     - **Visit Complete**

6. **Are the Screening Tool Results Positive / Concerning?**
   - **Yes**
     - **Make Referrals for:**
       - Developmental and Medical Evaluations
       - Early Developmental Intervention / Early Childhood Services
   - **No**
     - **Process**

7. **Visit Complete**

8. **Visit Complete**

9. **Is a Developmental Disorder Identified?**
   - **Yes**
     - **Initiate Chronic Condition Management**
   - **No**
     - **Visit Complete**

10. **Identify as a Child with Special Health Care Needs**

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**Legend**
- **Start**
- **Stop**
- **Decision**
- **Action / Process**
Developmental Diagnostic Evaluation

• Performed by any of the following
  – Trained and skilled general pediatrician
  – Pediatric subspecialist
    • Neurodevelopmental pediatricians, developmental and behavioral pediatricians, child neurologists, pediatric physiatrists, or child psychiatrists
  – Early childhood professional
    • Early childhood educators, child psychologists, speech language pathologists, audiologists, social workers, physical therapists, or occupational therapists.

• Medical home (primary care provider) should develop explicit co-management plans with the family and specialist(s).
Aims of Medical Diagnostic Evaluation

- To identify an underlying etiology
- Provide parents with a greater understanding of their child’s disability
- Treatment planning
  - Specific prognostic information
  - Genetic counseling around recurrence risk and family planning
  - Specific medical treatments for improved health and function of the child
  - Therapeutic intervention programming
Evaluation of the Child with Global Developmental Delay


Identifying Infants And Young Children With Developmental Disorders In The Medical Home:
Algorithm For Developmental Surveillance & Screening

- Developmental surveillance at every well-child visit
- Developmental screening using a standardized screening tool at 9, 18, or 24-30 months or when concern is expressed
- If screening results are concerning, refer to:
  - Developmental evaluation
  - Medical evaluation
  - Early intervention services
- Follow up on referrals made and continually track child’s developmental status
Identifying Infants And Young Children With Developmental Disorders In The Medical Home:
Algorithm For Developmental Surveillance & Screening

• Developmental surveillance at every well-child visit
• Developmental screening using a standardized screening tool at 9, 18, or 24-30 months or when concern is expressed
• If screening results are concerning, refer to:
  – Developmental evaluation
  – Medical evaluation
  – Early intervention services
• Follow up on referrals made and continually track child’s developmental status
Indiana Department of Education

1987: 31 students
2012: 13,020 students

with Autism Special Education

* Date of report changed from the end of the school year to December 1st. There are four years of overlapping format.
**M-CHAT R/F™**

(18-24 months)

- 20 items
  - Shortened from 23
  - No “critical” items
- Items 2, 5, and 12, “YES” indicates risk
- For all other items “NO” indicates risk

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**Validation of the Modified Checklist for Autism in Toddlers, Revised With Follow-up (M-CHAT-R/F)**

Diana L. Robins, Karís Casagrande, Marianne Barton, Chi-Ming A. Chen, Thyde Dumont-Mathieu and Deborah Fein *Pediatrics* 2014;133;37; originally published online December 23, 2013; DOI: 10.1542/peds.2013-1813

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**M-CHAT-R™**

Please answer these questions about your child. Keep in mind how your child usually behaves. If you have seen your child do the behavior a few times, but he or she does not usually do it, then please answer no. Please circle yes or no for every question. Thank you very much.

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If you point at something across the room, does your child look at it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(FOR EXAMPLE, if you point at a toy or an animal, does your child look at the toy or animal?)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>2. Have you ever wondered if your child might be deaf?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Does your child play pretend or make-believe? <em>(FOR EXAMPLE, pretend to drink from an empty cup, pretend to talk on a phone, or pretend to feed a doll or stuffed animal?)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Does your child like climbing on things? <em>(FOR EXAMPLE, furniture, playground equipment, or stairs)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5. Does your child make unusual finger movements near his or her eyes?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(FOR EXAMPLE, does your child wiggle his or her fingers close to his or her eyes?)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>6. Does your child point with one finger to ask for something or to get help? <em>(FOR EXAMPLE, pointing to a snack or toy that is out of reach)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Does your child point with one finger to show you something interesting? <em>(FOR EXAMPLE, pointing to an airplane in the sky or a big truck in the road)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>8. Is your child interested in other children? <em>(FOR EXAMPLE, does your child watch other children, smile at them, or go to them?)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>9. Does your child show you things by bringing them to you or holding them up for you to see – not to get help, but just to share? <em>(FOR EXAMPLE, showing you a flower, a stuffed animal, or a toy truck)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10. Does your child respond when you call his or her name? <em>(FOR EXAMPLE, does he or she look up, talk or babble, or stop what he or she is doing when you call his or her name?)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>11. When you smile at your child, does he or she smile back at you?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>12. Does your child get upset by everyday noises? <em>(FOR EXAMPLE, does your child scream or cry to noise such as a vacuum cleaner or loud music?)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>13. Does your child walk?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>14. Does your child look you in the eye when you are talking to him or her, playing with him or her, or dressing him or her?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>15. Does your child try to copy what you do? <em>(FOR EXAMPLE, wave bye-bye, clap, or make a funny noise when you do)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16. If you turn your head to look at something, does your child look around to see what you are looking at?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>17. Does your child try to get you to watch him or her? <em>(FOR EXAMPLE, does your child look at you for praise, or say “look” or “watch me”)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>18. Does your child understand when you tell him or her to do something? <em>(FOR EXAMPLE, if you don’t point, can your child understand “put the book on the chair” or “bring me the blanket”)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>19. If something new happens, does your child look at your face to see how you feel about it? <em>(FOR EXAMPLE, if he or she hears a strange or funny noise, or sees a new toy, will he or she look at your face?)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>20. Does your child like movement activities? <em>(FOR EXAMPLE, being swung or bounced on your knee)</em></td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
Scoring M-CHAT R/F™
(Modified Checklist for Autism in Toddlers, Revised with Follow-Up)

- Not “at risk” if fails 0-2 items
- If fails 3-7 items
  - Do follow-up questions
  - If score remains ≥ 2, the child has screened positive and should be referred
- If fails 8-20 items, then refer (no follow-up questions)

Validation of the Modified Checklist for Autism in Toddlers, Revised With Follow-up (M-CHAT-R/F) Diana L. Robins, Karís Casagrande, Marianne Barton, Chi-Ming A. Chen, Thyde Dumont-Mathieu and Deborah Fein Pediatrics 2014;133;37; originally published online December 23, 2013; DOI: 10.1542/peds.2013-1813
Next step testing in responding to abnormal developmental screens and results of a community early diagnosis clinic.
Bloomington, Lafayette and Evansville

• Partnership with practices, IU School of Medicine Department of Pediatrics, Indiana State Department of Health, and Riley Children’s Foundation

• Focusing on early diagnosis of autism and developmental delay
  – Drive down age of diagnosis from over 5 years of age to less than 3 years of age
  – Healthy People 2020 goals 24-36-48
Early Diagnosis Visit with Pediatrician

- Diagnostic interview
- Physical exam
- STAT
- Deliver news/counseling
- Referrals
- Next steps

Face-to-face visit lasts 1 ½ hour followed by ½ hour of paperwork
Screening Tool for Autism in Toddlers (STAT)
Empirically based, interactive instrument for autism identification

Set up standard situations that allow observation of behavior in response to social presses

Use between 14 and 47 months

Results in estimate of risk for autism diagnosis
Community Diagnostic Hub Results

Patients 18-42 mos. (n=100)

- ASD: 36%
- No ASD: 61%
- Maybe: 3%

2/10/2014
Average Age of Diagnosis in Community Diagnostic Clinic by Month

Average age of diagnosis = 31.6 months
Early Intervention at Time of Appointment
n=130

- In EI (%): 54%
- Not in EI (%): 46%
Diagnosis of Developmental Delay

- Personal/Social
- Problem Solving
- Expressive Language
- Gross Motor
- Fine Motor
- Developmental Delay (all)

* Number also with ASD: 40
Recognize that early intervention services for preschoolers with autism and developmental delay improves outcomes and is cost effective.
Rand Study
Key Findings of Early Intervention Programs

1. Are high quality early intervention programs effective?
2. What are the attributes of high quality programs?
3. What is the return on investment (ROI)?

Early Childhood Interventions Proven Results, Future Promise; Lynn A. Karoly M. Rebecca Kilburn, Jill S. Cannon. Prepared for Labor and Population, 2005
Studies going back 30 years have shown that intervention in the first 3 years can improve outcomes including increases in IQ.

*Early Childhood Interventions Proven Results, Future Promise;* Lynn A. Karoly M. Rebecca Kilburn, Jill S. Cannon. Prepared for Labor and Population, 2005
• 75% of 18 year olds cannot get a job as a private in the US army because:
  – Lack of diploma
  – Health (obesity, asthma)
  – Criminal record
  – Drug / alcohol

Ready, Willing and Unable to Serve A report by Mission Readiness, Military Leaders for Kids www/cdn.missionreadiness.org
## Benefits of Early Intervention Programs

- Academic achievement
- Behavior
- Educational progression and attainment
- Delinquency and crime
- Labor market success

## Cannot Get a Job as a Private in Army

- Lack of diploma
- Health (obesity, asthma)
- Criminal record
- Drug / alcohol

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*Early Childhood Interventions Proven Results, Future Promise; Lynn A. Karoly M. Rebecca Kilburn, Jill S. Cannon. Prepared for Labor and Population, 2005*

Rand Study
Key Findings of Early Intervention Programs

• Interventions with more favorable results
  – Better-trained caregivers
  – Smaller child-to-staff ratios
  – Parental involvement

Early Childhood Interventions Proven Results, Future Promise; Lynn A. Karoly M. Rebecca Kilburn, Jill S. Cannon. Prepared for Labor and Population, 2005
Well-designed early childhood interventions have been found to generate a return to society ranging from $1.80 to $17.07 for each dollar spent on the program.

*Early Childhood Interventions Proven Results, Future Promise;* Lynn A. Karoly M. Rebecca Kilburn, Jill S. Cannon. Prepared for Labor and Population, 2005
ROI for Proven Early Childhood Strategies

Abecedarian Project (early care and education aged 0-5) - $3.23
Nurse Family Partnership (home visiting prenatal – age 2 for high risk group) - $5.70
Perry Preschool (early education age 3-4) - $9.20

Total Return per $1 Invested

Data Sources: Center on the Developing Child at Harvard University, Karoly et al. 2005, Heckman et al. 2009
Programs targeted at earliest months and years

- Preschool programs
- Primary, secondary schooling and college
- Job training

Source: Early Learning Left Out, Voices for America's Children and the Child and Family Policy Center, 2004.
Brain Growth and Public Investment

Source: Early Learning Left Out, Voices for America's Children and the Child and Family Policy Center, 2004.
Conclusion / Summary
Summary

• Intervention for neurodevelopmental disorders is most beneficial and most cost effective in early childhood

• Primary care providers play a key role in screening and referral for neurodevelopmental disorders—don’t wait!

• Primary and specialty provider coordination is critical—we want to partner with you!
THANK YOU!
Extra Slides
Areas potentially targeted for NDBC-develop mental screening and early diagnosis outreach “hubs”

Counties with IU School of Medicine sites:

St. Joseph
Lake
Allen
Tippecanoe
Delaware
Marion
Vigo
Vanderburgh
Monroe
What is Applied Behavior Analysis (ABA)?

• Use of learning and behavior principles in real life situations

• Through functional/behavioral goal setting across socially relevant skill areas

• Involving reinforcement, environmental supports

• In order to build skills, enhance development and reduce unwanted behaviors

• In manageable steps that are measurable and objective
What ABA is not…

- It is not only Lovaas or Discrete Trial Training
- It is not only performed in a clinic
- It is not “one size fits all programming”
- It does not turn people into “robots”
- It is not just to get rid of problem behavior
- It is not only for people with autism
1000s of individual studies support the effectiveness of ABA methods for:

- **Populations:** Individuals with cognitive disability, autism
- **Skills:** Adaptive behavior, social skills, communication, vocational skills, academics
- **Problem behavior reduction**
What Other Methods Are Empirically Supported?

• Speech and language therapies
• Alternative/Augmentative Communication (PECS, sign language, technology)
• Educational methods, including TEACCH, Early Start Denver Model
Potential Challenges with ABA/DTT

• Concern for developmental appropriateness with younger children—only one meta-analysis supports effectiveness in young children (Howlin, et al., 2009)
• Lack of generalizability across settings
• Availability
• Costs/Insurance