Innovative Models for Preventing School Readiness Disparities in Pediatric Primary Care

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The problem:

Poverty-related disparities across developmental domains begin in early childhood and impact educational, economic and health outcomes throughout life.
Guiding Principles

- Need for *primary prevention* beginning in *early childhood*, prior to emergence of problems

- *Positive parenting activities* are an important target for intervention given cross-domain impacts

- *Pediatric primary care* represents a low-cost, universal, population-scalable platform for promotion of parenting and school readiness
More than 50% of Children in Poverty Fail to be Ready for School: *Major Public Health Crisis*

Brookings Institution, 2012 Analysis of ECLS-B
Early disparities become persistent gaps that **widen over time**

![Graph](image)

**Fig. 1.** Average percentile rank on Peabody Individual Achievement Test–Math score by age and income quartile. Income quartiles are computed from average family income between the ages of 6 and 10. Adapted from (3) with permission from MIT Press.

Heckman JJ. Skill formation and the economics of investing in disadvantaged children. Science. 2006;312:1900
Disparities begin in very early childhood & across developmental domains

Hart & Risley, 1995
Parent-Child Interactions: Account for 50% of disparities
“The 30 million word gap”

Cumulative # Words Heard by Age 3 (Millions)

75% difference
In word exposure

10 Million

Poverty

40 Million

High Income

Hart & Risley, 1995
Brooks-Gunn & Markman, 2005
Positive Parenting Behaviors that Facilitate Parent-Child Interactions are Important Targets for *Intervention*

Shared bookreading

Adult-supported play
Pediatric Primary Care: Universal Platform for Promoting Parenting and School Readiness

**Population-level accessibility:**
- Medicaid and CHIP expansion
  - ~90% of children now covered for primary care
  - >90% children 0-5 attend well-child care each year
- 13-15 recommended visits from birth - 5 yrs

**High engagement:**
- Opportunity to build on existing relationships and parent goals
- Medical home models further promotes this relationship

**Early, population-scalable interventions**

**Low cost:**
- Builds on existing staff, infrastructure, and visits
Most studied, proven primary care intervention: *Reach Out and Read*

Waiting room volunteers & staff:
- Model reading activities

Health care providers:
- Counsel parents about the importance of reading
- Distribute free children’s books (10-14 books over 5 years)

Boston City Hospital, 198
Barry Zuckerman, M.D.
Robert Needlman, M.D.
Kathleen Fitzgerald Rice, M.S.Ed
Perri Klass, M.D. (now NYU)
ROR: 50% Increase in Toddler Vocabulary

High, LaGasse, Becker et al, 2000, Pediatrics
ROR experience has **proven** that pediatric primary care can be effectively utilized as a **universal, population-scalable** platform for **low cost** prevention

- >15 studies show impacts (reading aloud, vocabulary)
- >25% of all low income US children ages 6 months to 5 years are reached by ROR: 4.7 million children
- Estimated cost: $25/child/year
  - 1% cost of home visiting
  - Policy perspective: **rounding error**
Birth to 5 program designed as enhancement to ROR:

1. Coach working 1-on-1 with families

2. Promotion of play, reading aloud, teaching and talking

3. **Core activity:** Video-recording of parent-child interaction followed by review of video to promote self-reflection

Relatively low cost:

~$175-$200 / child / year
Video Interaction Project (VIP)

Program structure

Coach meets with family in one-on-one sessions at every well-child visit
- Sessions last 25-30 mins
- 14 sessions birth to age 3

Key program components

1. Provision of toys & books to take home

Anticipated Outcomes

Access to materials that facilitate interactions
Video Interaction Project (VIP)
Provision of Learning Materials

Infant

Toddler
Video Interaction Project (VIP)

Program structure

Coach meets with family in one-on-one sessions at every well-child visit
- Sessions last 25-30 mins
- 14 sessions birth to age 3

Key program components

1. Provision of toys & books to take home
2. Parent guides with suggested activities and guided planning

Anticipated Outcomes

Access to materials that facilitate interactions
Knowledge & skills
# Video Interaction Project (VIP)
Interactive Pamphlets Build on Parent’s Goals

<table>
<thead>
<tr>
<th>VIP Guide</th>
<th>Caregiver’s Name:</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>________ is __ months old!</td>
<td>What I’ve noticed:</td>
<td></td>
</tr>
<tr>
<td><strong>My Baby Today</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>What to look for:</td>
<td>Tips:</td>
</tr>
<tr>
<td></td>
<td>• Coos and squeals.</td>
<td>• When your baby smiles or makes a sound, you smile too or can make the same sound back.</td>
</tr>
<tr>
<td></td>
<td>• Imitates your smiles.</td>
<td>• Talk about things you are doing while feeding, bathing, dressing.</td>
</tr>
<tr>
<td></td>
<td>• Lifts her head to look during tummy time.</td>
<td>• Talk as your baby lifts his head.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Say a word that describes what she’s looking at.</td>
</tr>
<tr>
<td><strong>My favorite moments:</strong></td>
<td><strong>My Video</strong></td>
<td><strong>My Plan for Home</strong></td>
</tr>
<tr>
<td>Ideas for today's toy:</td>
<td>• My goals:</td>
<td>Find time every day to read, play, and talk (best with TV off).</td>
</tr>
<tr>
<td>• See if your baby watches as you move the toy.</td>
<td>• What I liked:</td>
<td>Looking forward to our visit at ___ months!</td>
</tr>
<tr>
<td>• Label parts and colors on the toy.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Place the toy near the baby so he can feel the texture.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Toy: Mindshapes Blocks or Bug Jug

Interventionist: ________________

2m
Video Interaction Project (VIP)

Program structure

- Coach meets with family in one-on-one sessions at every well-child visit
  - Sessions last 25-30 mins
  - 14 sessions birth to age 3

Key program components

1. Provision of toys & books to take home
2. Parent guides with suggested activities and guided planning
3. Videotaping and guided review of parent-child reading and/or play

Anticipated Outcomes

- Access to materials that facilitate interactions
- Knowledge & skills
- Parenting self-efficacy
Video Interaction Project (VIP)
Making of the Video recording

Watched together by parent-child specialist and parent
- Positive interactions observed and reinforced
- Additional opportunities for interactions identified
- DVD/video given to parent to take home to share with family
Video Interaction Project
Video Interaction Project Research
BELLE Project: *Factorial RCT*

**Enrollment (Birth)**
- 2005 To 2008

**0-3 years**
- VIP: 0-3
- Routine care
- n=225

**3-5 years**
- VIP: 3-5
- Routine care
- Re-randomize at age 3 years

**Study Impact**
- 6 mos to 3 years: baseline impact of VIP: 0-3
- 54 mos and 2nd grade: added impact of VIP: 3-5

Parent-child interactions
Parent coping with stressors
School readiness/early achievement

*NIH-funded*
- HD047740 01-04
- HD047740 05-09
- HD047740 08S1
VIP Research: Published findings

- Increased parent-child interactions
  - Enhanced reading, play, talking, teaching (Mendelsohn, 2011a; Cates, in press)
  - Reduced screen time (Mendelsohn, 2011b)
  - Reduced physical punishment (Canfield, 2015)

- Enhanced psychosocial functioning
  - Reduced maternal depressive symptoms (Berkule, 2014)
  - Reduced parenting stress (Cates, 2015)

- Improved child development
  - Enhanced social-emotional development (Weisleder, 2016; Mendelsohn, 2018)
VIP 0-3 impacts on **Social-emotional Development:** Large Reductions in Behavior Problems at 3 years


$d$: Cohen’s $d$

**$p$**<.05, $t$$p$<.10

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**BASC Subscale**

- Hyperactivity (H)
- Aggression (A)
- Externalizing Composite (H + A)
Trajectories (MLM) of VIP 0-3 and 3-5 - impacts on behavior: Age 3 to 4.5 years

Mendelsohn et al, *Pediatrics*, 2018
Trajectory (MLM): **Main effect of VIP 0-3**
**Sustained impacts 1.5 years after completion**

Mendelsohn et al, *Pediatrics*, 2018
Trajectory (MLM): *Group by age interaction showing VIP 3-5 additive impacts*

Mendelsohn et al, *Pediatrics*, 2018
VIP 0-3 impacts on Behavior Problems: Impacts on Clinical Level Hyperactivity at 4.5 years

All p<.05

Number Needed to Treat (NNT):
All: 16
Highest Risk: 6

Mendelsohn et al, *Pediatrics*, 2018
Dose impact: *Extending* VIP to 5 years *doubled* reductions in behavior problems

Mendelsohn et al, *Pediatrics*, 2018
Pathways of Impact: VIP ➔ Parent Child Interactions ➔ Psychosocial functioning ➔ Behavior

VIP ➔ 6 mos ➔ Cognitive stimulation ➔ 36 mos ➔ Stress about parent-child relationship ➔ Maternal depressive symptoms ➔ .24*** (.05)

VIP ➔ 6 mos ➔ Cognitive stimulation ➔ 36 mos ➔ Stress about parent-child relationship ➔ Maternal depressive symptoms ➔ .20** (.06)

6 mos ➔ Stress about parent-child relationship ➔ Maternal depressive symptoms ➔ .28*** (.05)

36 mos ➔ Stress about parent-child relationship ➔ Maternal depressive symptoms ➔ Behavior Problems

Weisleder et al, under review
VIP: Work in Progress
VIP: Preparation for Scaling

- Full manualization of VIP 0-3
  - VIP 3-5 in progress
- 3 day training course for interventionists
- Design of materials to support fidelity
- Blueprint for VIP Center of Excellence to support implementation:
  - Nonprofit business plan, organizational structure
VIP: Scaling Presently Underway

**New York City**

- **New York City Council: City’s First Readers (NYC)**
  - Citywide primary prevention linking health care (ROR+VIP) to community (libraries, home visiting); DHHS/HRSA Bridging the Word Gap Research Collaborative
  - Implementation sites: Bellevue Hospital Center, Woodhull Medical Center (Brooklyn), Children’s Aid (Harlem; foster families)

- **NYC DOHMH early childhood initiative**
  - Elmhurst as prototype for implementation across NYC H+H (Queens, in progress)

- **NYU Community Service Plan**
  - NYU Langone Family Health

- **Public Health Solutions**
  - WIC Programs (in progress)

- **NYU Center for the Study of Asian-American Health**
  - Gouverneur (NIMHD Research COE; Chinese-American families; in progress)

**National**

- **Pittsburgh, PA**
  - Integration within Smart Beginnings model (VIP+home visiting; NICHD-funded)
  - Allegheny County Department of Health (in progress)

- **Flint, MI**
  - Hurley Medical Center (in context of community-level trauma)
Smart Beginnings: Integrated, tiered model linking VIP to home visits for families at increased risk

• Universal 1° prevention in primary care
  • ROR+VIP at every well child visit for all families
• Tiered 2°/3° prevention through home visiting
  • Family Check Up at 6, 18 and 30 months
  • Families with identified risks (mental health, child behavior)
• Two site RCT: NYC and Pittsburgh
  • NICHD: 1R01HD076390 (MPI Morris, Mendelsohn, Shaw)
• Progress to date
  • Enrollment of 400 parent-child dyads complete
  • Follow up through 2 years in progress (n~100)
  • Preliminary findings: large impacts on parenting and behavior
Smart Beginnings Conceptual Model

All families

Identification / engagement in medical home

1° prevention

VIP (primary Care)

1° prevention

↑ Interactional skills/resources
Prevent depressive symptoms, parenting stress

Psychosocial functioning

Parenting

Initiate positive parenting
Prevent harsh parenting

Families with emergent or pre-existing family / child problems (~50%)

2°/3° prevention

FCU (home visiting)

↑ Interactional skills/resources
Reduce depressive symptoms, high parenting stress

Enhance positive parenting
Reduce harsh parenting

NIH

Eunice Kennedy Shriver National Institute of Child Health and Human Development
Health research throughout the lifespan

Children's Hospital at NYU Langone
Smart Beginnings (Integrated VIP + FCU)
Reduction in Externalizing Behavior at 24 months
n=94

% with ↑ Externalizing (CBCL Borderline Clinical, T>60)

Control

Smart Beginnings (VIP+FCU)

Morris, Mendelsohn, Shaw
R01 Preliminary Data
International adaptation of work (Boa Vista, Brazil)

- Partnership with:
  - City of Boa Vista: Mayor-led initiative
  - Instituto Alfa e Beto: Non-profit foundation
- Challenges: low literacy, severe material hardship
- Intervention modeled on:
  1. ROR: Book-lending program, anticipatory guidance
  2. VIP: Identification of strengths / self-reflection during parent groups
- Cluster RCT: 22 Centers, 500+ children
- Large impacts on reading aloud and child development

(Weisleder, Pediatrics, 2018)
Policy Implications of Findings

Level of prevention

• Need for $1^o$ prevention for all families in poverty given broad risk
  • Low intensity $1^o$ prevention programs can have large impacts
  • *Integrated $1^o + 2^o/3^o$* likely to have greatest population-level impact

Platform

• Pediatric primary care: potential for universal access and linkage to other platforms such as home visiting; need for increased research

Strategies

• Facilitate engagement and maximize impact through specific strategies: relationship/strengths-based, universal/non-stigmatizing, family-centered
  • Enhancement of positive parenting can have cascading impacts across domains of development
Support

• NIH / NICHD:
  • HD047740 01-04; HD047740 05-09; HD047740 08S1 (Mendelsohn)
  • 1R01HD076390 (MPI Morris, Mendelsohn, Shaw)
• Foundations:
  • Tiger Foundation
  • Marks Family Foundation
  • Children of Bellevue, Inc.
  • KiDS of NYU Foundation, Inc.
• New York City Council
  • City’s First Readers
  • Discretionary funding
• Academic Pediatric Association:
  • Young Investigator Programs (Reach Out and Read, MCHB/Bright Futures)
BELLE/Smart Beginnings Collaborators and Project Team

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Thank you!

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Questions?