Childhood Chronic Conditions, Prevention and Care Coordination

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Dr. Perrin has no financial or other conflicts of interest to disclose

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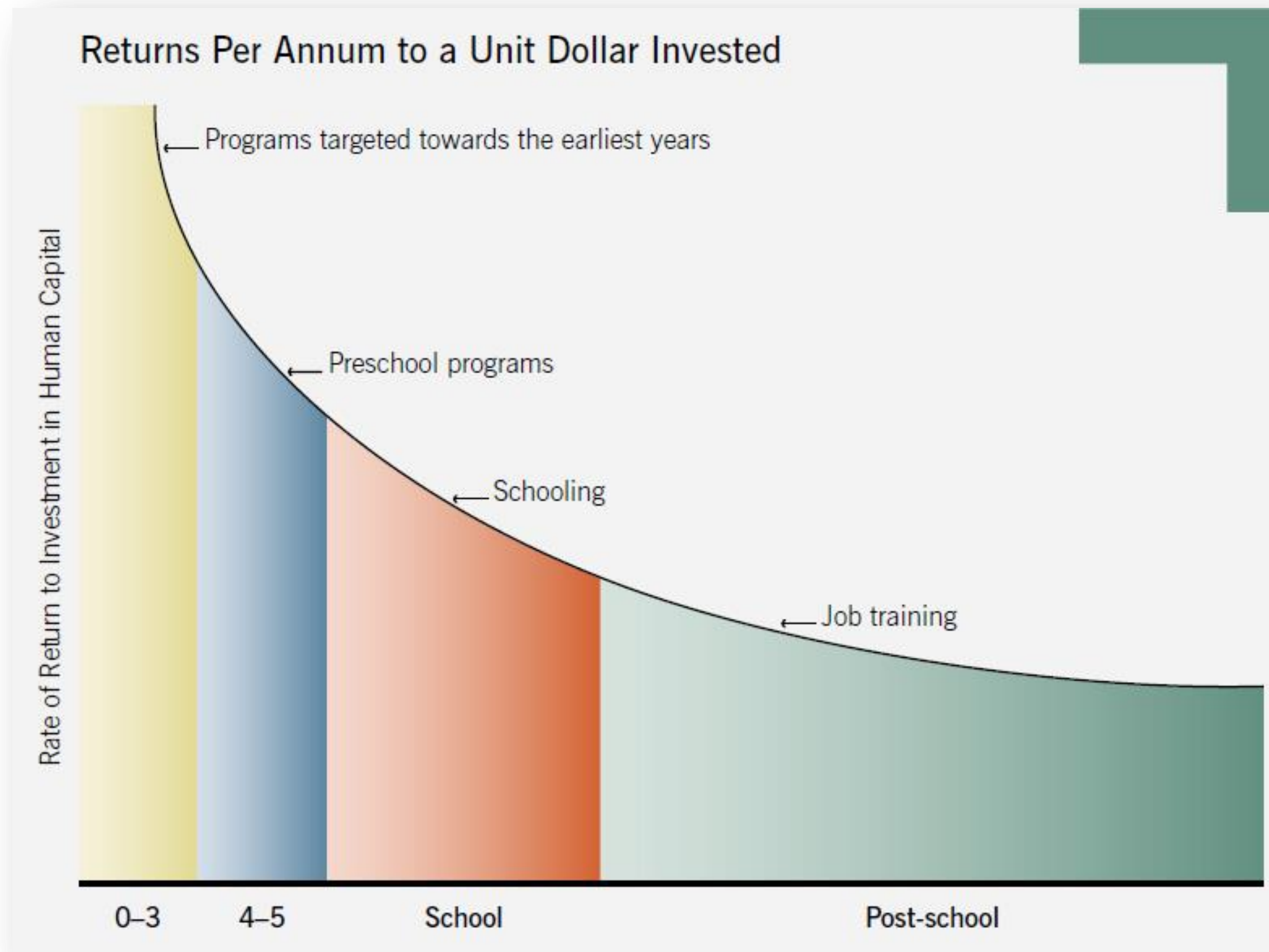
Investing in Children

- Short-term benefits
  - Keeping children healthy today increases parents' workforce participation, productivity
  - Immunizations
- Long-term benefits
  - Effective work force
  - Healthier parents for coming generations
  - Lower costs for health, other care
  - Prevents many chronic conditions
    - Those beginning in childhood
    - Those with childhood antecedents

The Heckman Equation



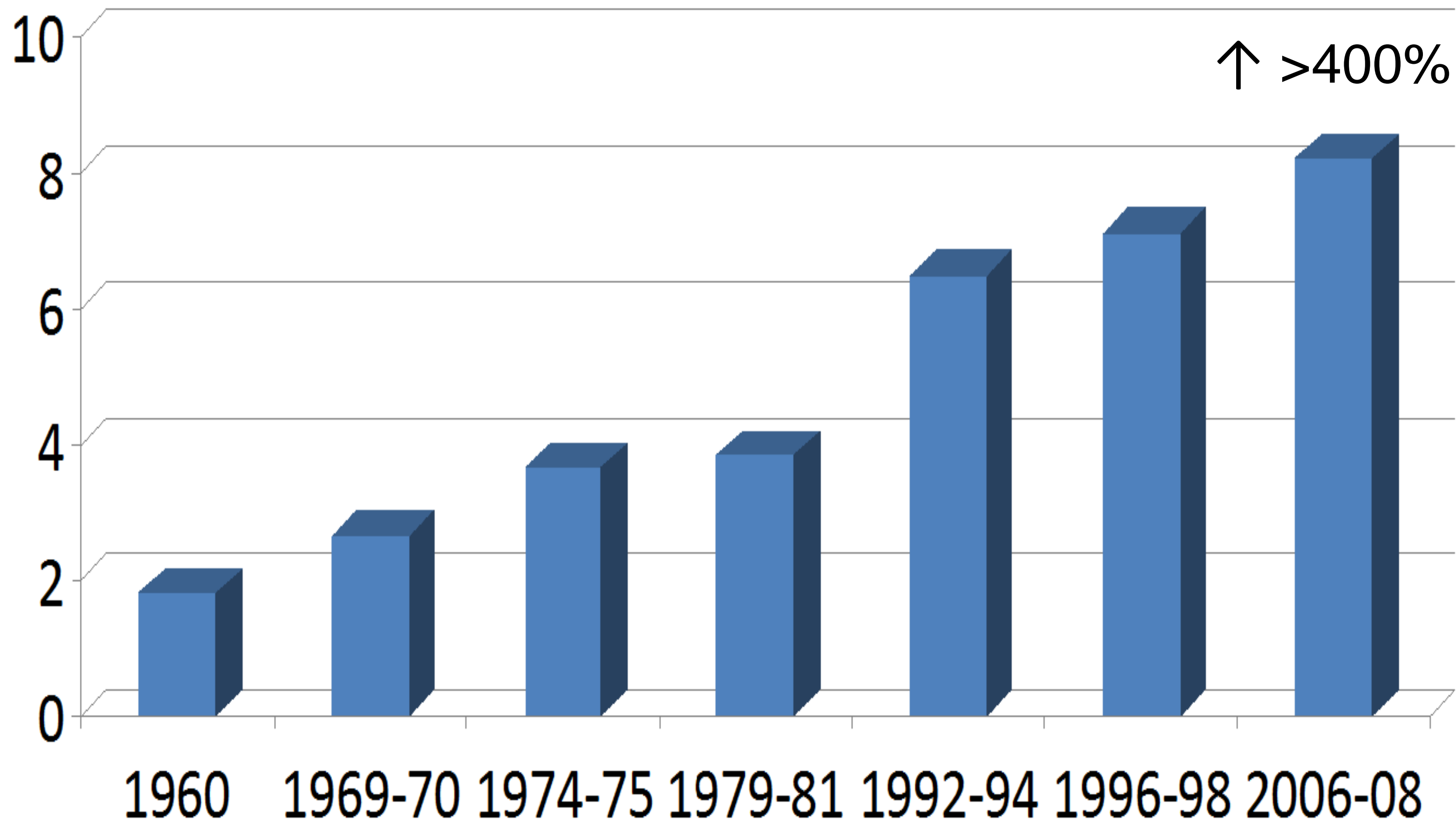
Investing in early childhood development builds the human capital needed for economic success

Presentation Overview

- Childhood chronic conditions
  - Huge growth in rates
- Childhood poverty
  - Effect on health and wellbeing
- Transforming health care to address chronic care

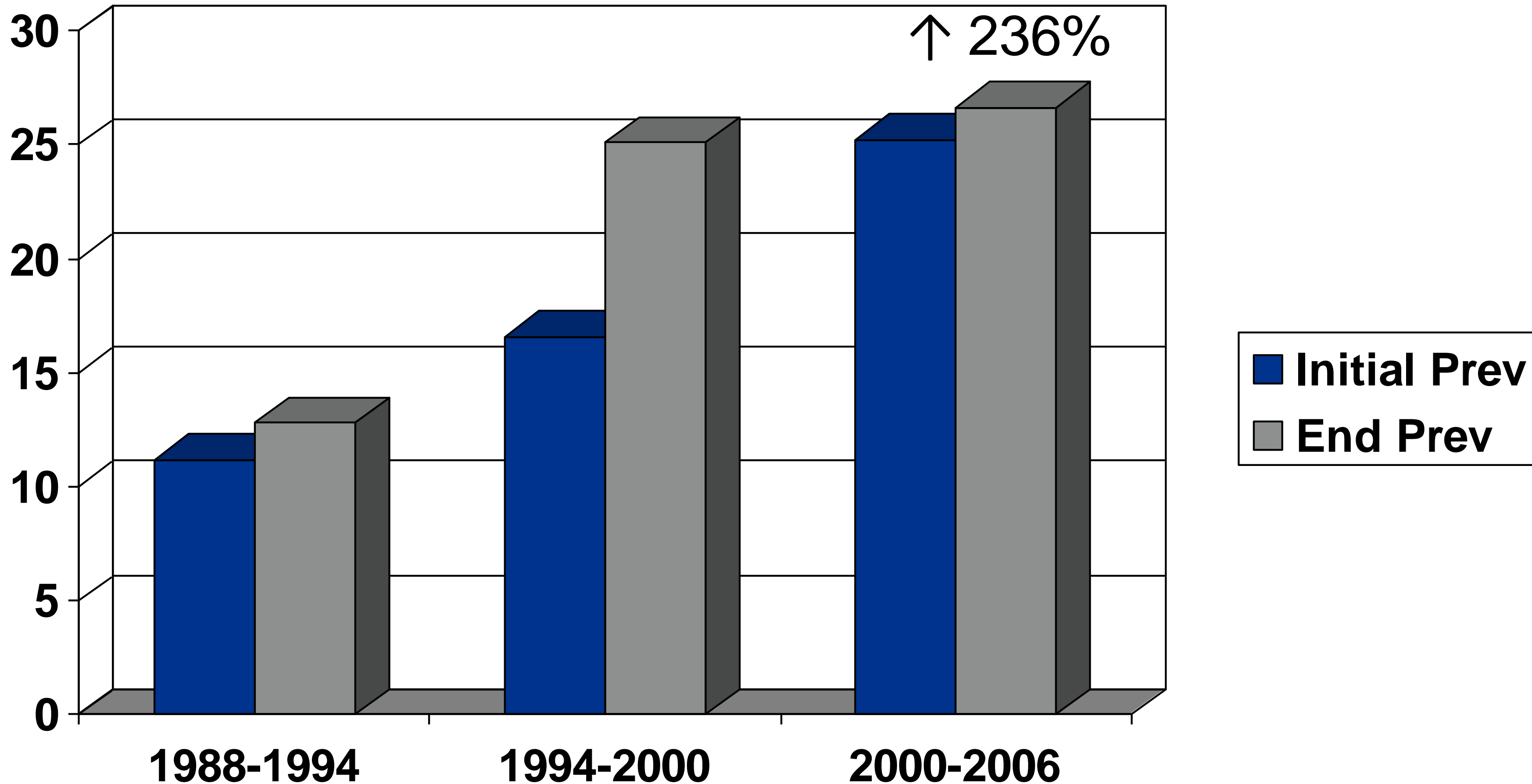
Epidemics
Of Childhood Chronic
Health Conditions

Activity-Limiting Chronic Conditions



Newacheck, NHIS Analyses; IOM analyses

All Chronic Conditions



Cohorts of 2-8 year olds followed for six years; initial and end chronic condition prevalence; ***Van Cleave, Gortmaker, Perrin, JAMA, 2010***

Changing Patterns of Childhood Chronic Conditions

- **1960-1980:** Improvements in survival led to increased rates of several chronic conditions
  - >80% survival in 1980; >95% survival today
  - Marginal impact of newer conditions
    - VLBW, *in utero* toxins, AIDS
- **1980-now:** New epidemics of common chronic conditions

Perrin, Bloom, Gortmaker, JAMA, 2007

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Less Common Chronic Conditions

Condition	Number (prevalence)
Cystic fibrosis	22,500 (3:10,000)
Spina bifida	60,000 (7.5:10,000)
Sickle cell anemia	37,500 (5:10,000)
Hemophilia	7,500 (1:10,000)

80,000,000 children/youth in US

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New Epidemics: Mainly Among School-age Children and Youth

▪ Obesity	13,440,000 (16.4:100)*
▪ Asthma	7,200,000 (9:100)
▪ ADHD	4,800,000 (6.4:100)
▪ Depression/Anxiety	3,200,000 (4:100)
▪ Autism Spectrum Disorder	900,000 (1:100)

**Population estimates, late 2000s*

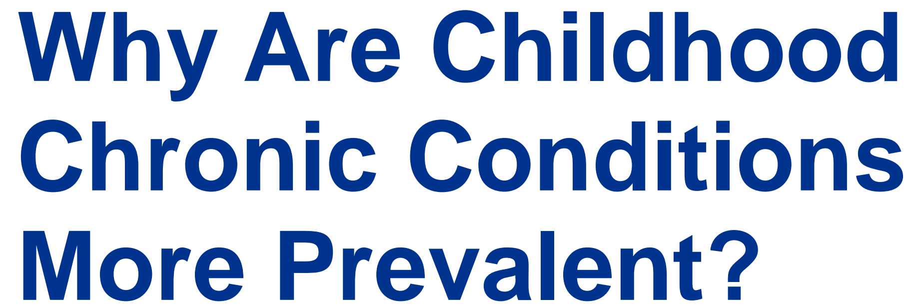
80 million children/youth in US

Grouping Childhood Chronic Health Conditions

- ***Low prevalence, (usually) high severity***
  - **(~2million)**
  - Substantial involvement of pediatric subspecialists in care
  - CF, spina bifida, leukemia, arthritis, diabetes …
- ***Very complex, multisystem conditions***
  - **(<.4 million)**
- ***Common, high prevalence, wide spectrum of severity***
  - **(~6-8 million)**
  - Asthma
  - Obesity
  - Mental health conditions (anxiety, depression, ADHD)
  - Developmental conditions (incl. autism spectrum disorders)

Long-term Implications/ Prevention Critical

- Rapid rise in young adult disability from:
  - Cardiovascular disease (overweight and diabetes)
  - Pulmonary disease
  - Mental and developmental conditions
- Major increases in:
  - Health care costs
  - Unemployment
  - Reliance on disability programs



Why Are Childhood Chronic Conditions More Prevalent?

- Biomedical/surgical advances, coupled with
- Regressive social changes

Genes and Environment

- Genetics
  - Many conditions have clear genetic disposition, usually requiring environmental triggers for manifestation
  - *But*, genetic drift alone cannot explain these rates
- Changing physical and toxic environments and the cleanliness hypothesis
  - Growth of autoimmune disorders in all age groups
  - Increasing evidence of toxins affecting fetus
- Children's social environments

Low Birthweight and Poverty Do Not Explain Growth

- Increasing rates of very low birth weight and survival
- Poverty
  - Increases rates of most conditions
  - Increases severity of many conditions
  - Affects response to treatment
- Little evidence for changes in poverty rates

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Children's Social Environment has Changed

- Parenting
- **Media**
  - **including phones**
- **Physical activity and indoor time**
- Diet

Television and Media Affect Child Health

- 75% of children have TV in room
  - 35% of children < 2 years old
- Advertising fast, high-calorie food
- Children indoor, sedentary
- Fast-paced, rapid-cycling visual, auditory stimulation
- Replaces tasks requiring more attention
  - Reading, model-building
- Violence presented as harmless; gratification immediate
- Tracks from preschool to adolescence

Children are Less Physically Active

- Limited recreation, parks, playgrounds, sports programs
- Dangerous neighborhoods
  - Effects on social interactions
- Decreased school physical education
- Lower rates of walking, bicycling

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Poverty and Child Health

Household Income in 2012

- 1 in 10 children live in homes with incomes less than $12,000
- More than 1 in 5 with incomes less than $24,000
- Close to half with incomes under $48,000
- Poverty rates in Israel – also about 20%

Health Consequences of Poverty

- Increased infant mortality
- Low birth weight, subsequent problems
- Chronic diseases: asthma, obesity, MH, development
- Food insecurity, poorer nutrition and growth
- Less access to quality health care
- Increased accidental injury, mortality
- Higher exposure to toxic stress

Moore KA et al. Children in poverty: trends, consequences, and policy options. 2009. Child Trends Research Brief

Poverty and Well-Being

- Poorer educational outcomes
  - Low academic achievement, higher HS dropouts
- Less positive social and emotional development
- More problem behaviors
  - Early unprotected sex with increased teen pregnancy
  - Drug and alcohol abuse
  - Increased criminal behavior as adolescents and adults
- More likely to be poor adults

Transforming Care and the Pediatric Medical Home

Putting it all together

Changing Environment of Health Care – Payment Reform

- Decreasing fee-for-service
  - FFS offers little incentive for practice transformation
- New payment arrangements
  - ACOs and other bundled methods
  - Per member per month – different levels of risk sharing
- Greater capitation allows more investment in team care to enhance care, improve efficiency
- New payment arrangements can enhance integration between primary, subspecialty care

Changing Technologies – *Beyond EHRs*

- Home/community monitoring via iPhone, other web methods – e.g., followup for IBD, monitoring ASD progress
- Text messaging, follow up
  - Newborn care (Text for Babies)
  - Immunization reminders
  - Behavior guidance
- Out of office diagnostic, treatment technologies
  - E.g., iPhone otoscopy

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Disruptive Innovations

- New clinical arrangements
  - Pharmacy clinics and others
  - Convenience and cost
- Web-based clinical care
- Other telehealth efforts
  - Direct care – in office or home
  - Shared care – in office
  - Distributing knowledge to local providers (Project ECHO)

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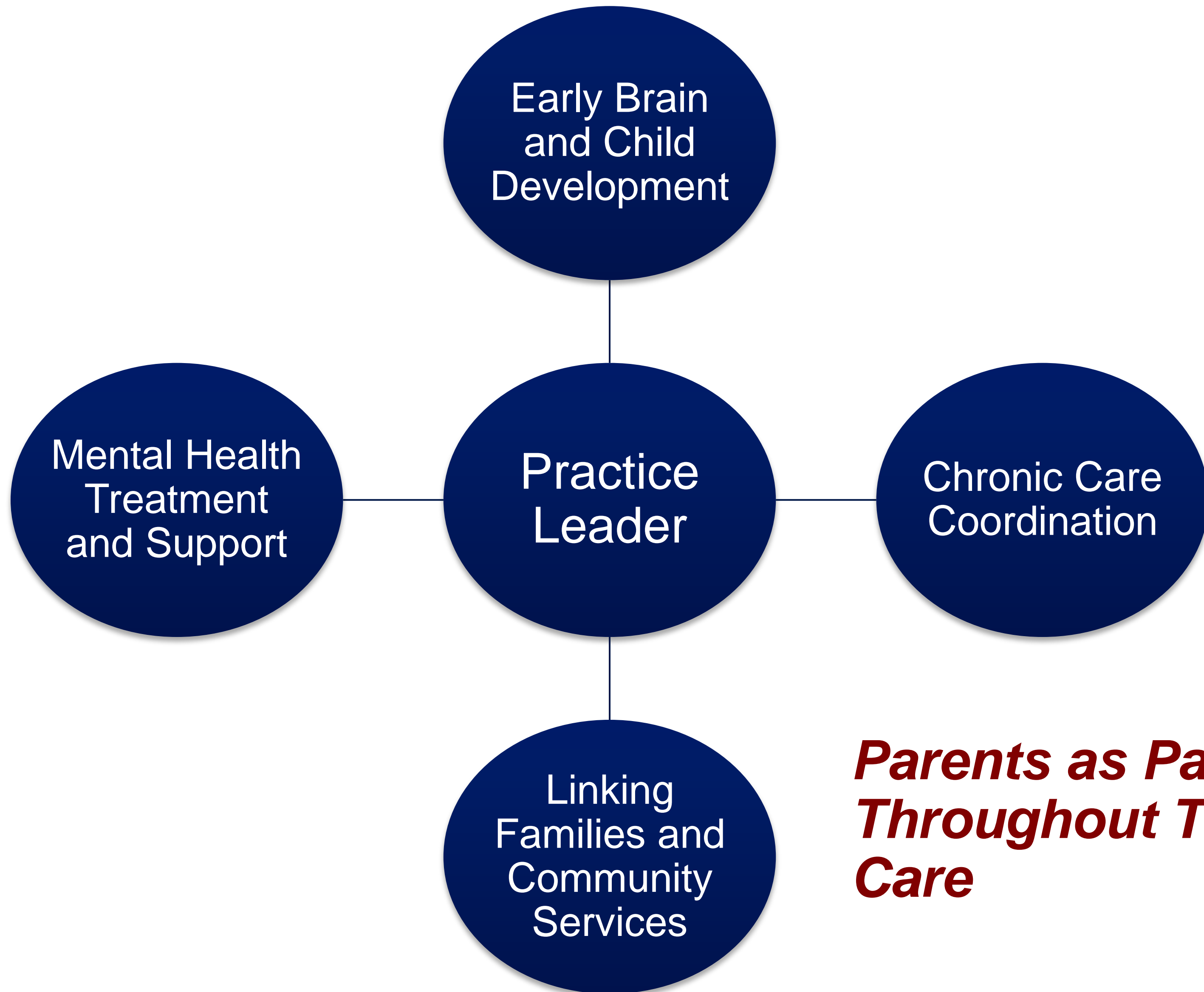
Practice Transformation in Pediatrics

- New practice arrangements
  - Team based community care
  - Population health
- Embracing payment reform
  - Moving from FFS to various bundled arrangements and incentives for performance
  - Linking pediatrics with public/private reform activities
- Harnessing new technologies to strengthen care
  - Beyond EHRs to iPhones and telemedicine
- Leadership training in change

Team Care in the Pediatric Medical Home



Parents as Partners Throughout Team Care

Summary

- Alarming rates of chronic health conditions among children/youth
- Poverty persists among American children
  - Major impact on child health and development
- Transformation in health care
  - Much happening!

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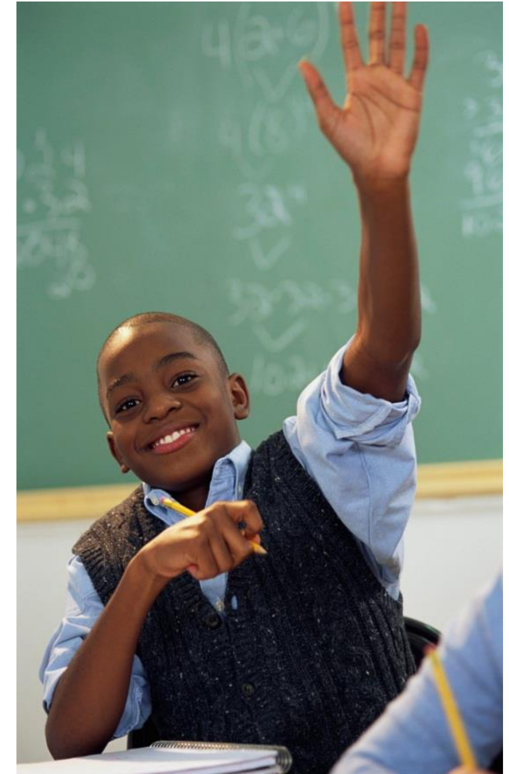
Questions



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