Infant and Family Health

Veronica Meneses, MD, MSHS
Objectives

- Discuss biopsychosocial approach to study infants and families
- Provide overview of infant neglect and abuse
- Describe the intersection of vulnerable infants and families with health services system
- Present models to promote infant well-being in fragile families
Biopsychosocial Approach

• Child’s physical, psychological and socio-emotional functioning as context for medical condition/diagnosis, overall well-being
• Developmental Trajectory (child’s maturation and may include family acceptance of delays, illness)
• Family Factors: barriers to care, strengths, resilience, vulnerability
• Social and legal atmosphere
Biopsychosocial Model

- George Engel (psychiatrist) proposed to incorporate psychosocial components (1977)
- Based on General Systems Theory
- To be scientific, model must include: psychosocial dimensions (personal, family, emotional, community) as well as biological aspects (diseases) of patient
- Multiple components interact
- Joins science and humanism

Smith 2002
Biopsychosocial Process

- “Patient Centered” medicine operationalizes model: patient’s needs, questions, ideas at forefront
- “Family Centered” often referred to in Pediatrics
- “Provider-Patient Relationship” studied
- “Relationship-Centered Care” includes focus on communication among administrators, doctors, nurses, “team”

Smith 2002
Why is Biopsychosocial Approach Relevant for Infants?

• Development is not isolated, happens within a care-giving relationship
• Human baby is very vulnerable and remains dependent longer than the young of any other species
• Parents’ role is intense and protracted
• Quality of parenting impacts development

Mares 2012
Biopsychosocial Framework and Infants

• Ensures examination of physical, psychological, interpersonal, social, and cultural factors of infant and family

• Physical and psychosocial well-being of infant cannot be studied separately

• Infant brings: genetics, experiences in utero (exposure to drugs, alcohol, infections, nutrition, prematurity, illness), temperament

• Parents bring their parenting which may help or hinder infant’s constitutional issues; “goodness of fit”

Mares 2012
Why Biopsychosocial Model for Infants

• Incorporates quality of infant’s attachment to caregivers, which has long-term implications for infant health
• Addresses psychological and relational factors, including parenting style, parents’ expectations, parents’ physical and mental health
• Acknowledges social and cultural factors, poverty, neighborhood, legal climate, service sector

Mares 2012
Psychologically Healthy Infant

• The ability to form close and secure interpersonal relationships
• Drive to explore the environment and learn
• All within the context of family, community, and cultural expectations for the child
• Synonymous with healthy social and emotional development
“Medically” Healthy Infant

- Has appropriate growth for weight, length, head circumference ("thriving")
- Reaches Developmental Milestones on time
- Receives immunizations according to recommendations (access to health care)
- Lives in a home that is safe from toxic exposures (e.g. lead), accidental (dilapidated building, uncovered electrical sockets) and non-accidental trauma (abuse/neglect)
- Is given emotional nurturing, responsive parenting
Maltreatment and the Developing Brain

• Newer brain imaging techniques are available
• Damages physical structure of brain
• Impairs cell growth
• Interferes with formation of health circuitry
• Alters neural structure and function of the brain

Altered Brain Function/Structure

Early Trauma (abuse, neglect, toxins)

Delays DD/ID Mental and Physical Health Problems
Hypothalamic-Pituitary-Adrenal Axis

Physiologic changes involved in the response to chronic stressors alter the regulation of the H-P-A axis.

Adams, 2014
HPA Axis

Hypothalamus

Corticotropin Releasing Hormone (CRH)

Anterior Pituitary

Adrenocorticotropic Hormone (ACTH)

Adrenal Cortex

CORT

Negative Feedback
Early Adverse Experiences

- Early adverse experiences strongly associated with later problems in development of linguistic, cognitive, and social-emotional skills
- Impaired adaptive response to stress
- Child may be more reactive to mild adverse experiences
- Less able to cope with future stress

Shonkoff 2012
As Affected Children Grow Up

• Increased risk-taking behaviors
• Disruption in physiological functions
• Mental illness (depression)
• Physical illness (cardio-vascular, autoimmune, asthma)
• Life-long implications

Shonkoff 2012
Intergenerational Aspects

• Epigenetics: experiences and environment influence gene expression

• Stable, responsive parenting in early childhood is beneficial to development across multiple domains (language, cognition, social-emotional)

• Parents who faced trauma as children less likely to be able to support children during stress and this may result in neglect/maltreatment

Shonkoff 2012
Infant Abuse and Neglect

- Children Birth to 3 are group most likely to be maltreated
- Most are <1
- Account for ¾ of maltreatment fatalities
- 1/3 harmed during their 1st week of life
- Experience negative and sometimes lasting influence on development, health, mental health
- Costs US at least $103.8 billion each year

Disparities/Risks

- Exposure to childhood maltreatment not randomly distributed
- Lower family income
- Lower parental education
- Disadvantaged communities
- Housing stress
- Low social capital
- Lack of social support

Abusive Head Trauma

- Serious traumatic brain injury in children is largely result of abuse
- Significant morbidity and mortality
- Abuse is 3rd leading cause of head injury in US (after falls and motor vehicle accidents)
- During 1st year of life, most head injury due to abuse
- 20-30 cases per 100,000 children less than 1

Infant Abusive Head Trauma

- Substantially higher incidence among children 1 and under; decreases with age
- Thought to be related to episodes of prolonged, inconsolable, unpredictable crying that characterize infancy
- Crying that can trigger shaking behaviors increases in 1\text{st} month after birth, peaks in 2\text{nd} month, and then decreases

Sequelae of Infant Abusive Head Trauma

- Case fatality rate >20%
- 2/3 of survivors with significant disability
- Deaths peak at 1-2 months of age (greater physiologic vulnerability)
- At 3-4 months of age may be more resilient and more likely to survive
- Long term problems: neurological, cognitive, behavioral (visual impairment, seizures, cerebral palsy)

Types of Child Abuse in 2012

- **Neglect**: 78.3%
- **Physical Abuse**: 18.3%
- **Sexual Abuse**: 9.3%
- **Psychological Maltreatment**: 8.5%
- **Medical Neglect**: 2.3%
- **Other/Unknown**: 10.8%

Percentages are calculated against the number of unique victims, and a child may see multiple types of abuse or multiple instances of the same type of abuse.¹

¹ http://www.childhelp.org/pages/statistics
Infant Physical Abuse

• Complex skull fractures
• Rib fractures
• Metaphyseal fractures
• Non-displaced clavicular fractures
• Fractures and injuries reported as accidents that are not consistent with developmental level (e.g. infant not able to crawl, roll over or stand/walk)
• Patterned injury—rope, belt
• Burns-cigarettes, iron
• Injuries on buttocks, palms, soles, thighs, stomach, upper arms
• Bruises at various stages of healing
Infant Sexual Abuse

- Bruising, bleeding of genitalia
- Rectal fissures not consistent with constipation
- Growth of microorganisms that cause sexually transmitted diseases in genital cultures (chlamydia, gonorrhea)
Infant Neglect

- Failure to thrive (growth parameters <5%, decreased growth velocity)
- Poor hygiene
- Severe dental caries
- Inappropriate clothing (with regard to size, weather)
- Severe diaper rash
- Poor supervision by caregiver
# Markers of neglect

## The child’s needs

- Nutrition
- Warmth, clothing, shelter
- Safe environment
- Hygiene and health-care
- Stimulation and education
- Affection

## Effects of neglect

- Failure to thrive; short stature
- Inappropriate clothing; cold injury; sunburn
- Frequent injuries e.g. burns/cuts from playing with matches/knives
- Ingrained dirt (finger nails); headlice; dental caries
- Developmental delay
- Withdrawn or attention seeking behaviour
About 30% of abused and neglected children will later abuse their own children, continuing the horrible cycle of abuse.  
http://www.childhelp.org/pages/statistics
Protective Factors

- Breastfeeding may be protective against child maltreatment, especially neglect (Strathearn 2009)
- Include Father/Significant other
- Nurturing parent skills
- Stable Family Relationships
- Household rules and child monitoring
- Parental employment
Protective Factors

- Adequate housing
- Access to health care and social services
- Caring adults outside the family who can serve as mentors and role models
- Communities that support families and take responsibility for preventing abuse

http://www.cdc.gov/violenceprevention/childmaltreatment/riskprotectivefactors.html
http://mchb.hrsa.gov/programs/healthystart/
Intersection of Infants and Families with Health Services

Pre-conceptual: General Medical Care/Primary Care Physician, Mental health

Prenatal: OB-GYN Care, High Risk needs

Labor/Delivery, Neonatal Care for Premature or Ill Infant

Lactation Support Clinics: breast feeding support and education

Well-Child Visits with Pediatrician or PCP: at least 7 visits in 1st year

Visits for common childhood illnesses (“sick”) or close follow-up of chronic medical conditions
Vulnerable Infants and Families Lacking Access May Rely on Government Sponsored Programs

- Medicaid (if qualify)
- Community Clinics with “sliding fee” scales
- If no health insurance, may go without essential services, compromising general health and overall wellbeing
- Other Barriers to Access: Transportation, Language and Cultural Factors, home stressors, substance use, immigration status
Well-Child/Health Supervision Visits

- MD, DO, PNP, FNP, PA
- Pediatrics, Family Practice, Medicine-Pediatrics
- Hospital based clinics, Academic Centers, Private Practice, Community Clinics
Well Child/Health Supervision Visits

Elicit Parental Concerns
- Open ended questions, Listen to parent

Observe Parent-Child Interactions

History-taking
- Structured questions

Developmental Surveillance
- Formal Screening at 9, 18, and 24/30 months

Physical Data: Measurements, Comprehensive Physical Examination

Immunizations:

Other Screening: Vision, hearing, lead, anemia, TB, Blood Pressure, Oral

Additional Screening if premature, low birth weight, known conditions or risks
Developmental Domains

- Cognitive
- Fine Motor
- Gross Motor
- Communication
- Personal-Social
Pre-conceptual

• General Health Status of Parents
• Maternal BMI
• Smoking and Substance Use status
• Diabetes Mellitus Type I or II, hypertension, autoimmune disorders; ?medications
• Infertility history
• SES
• Mental Health: Depression, Anxiety, Bipolar
• Family History
• Access to medical care
Pre-conceptual

- Partner?
- Exposure to domestic violence
- Environmental exposures
- Neighborhood safety
- Immigration status
- Education level
Interconceptual Health

- Maternal and family health between pregnancies
- Unplanned pregnancy prevention
- “Baby Spacing,” short interval may increase risk for small for gestational age (SGA) infant or preterm birth

Prenatal

- High Risk pregnancy?
- Access to Obstetrical/Gynecological care
- Family-centered, culturally appropriate care
- Opportunity for Prenatal Visit with Pediatrician
Prenatal Visit

- Establish Medical Home for Child
- Discuss and prepare for: high risk pregnancy, known genetic condition, prenatal diagnosis of complex medical condition, multiples
- Acknowledge previous perinatal or infant death
- Prepare to be single parent
- Prepare to adopt a child
- Meet medical team

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
Prenatal Visit

- Become familiar with typical newborn care in hospital, especially for first time parents
- Learn about purpose of NICU
- Review early newborn care needs, what to expect, challenges and resources

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
Newborn Visit

• Optimally, infant’s pediatrician will begin caring for him/her during hospital stay
• Mother must begin to recover and learn to feed and care for infant
• “Is our Baby OK?”
• Early physical examination allows parents to wonder at newborn’s abilities

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
Newborn Visit

• Elicit the newborn’s response to voices and noises in the room, touch, light, movement, being undressed, and being comforted
• Observe parents’ interactions with infant
• Model behaviors that engage and support infant, promote bonding and attachment
• Answer questions, Reassure

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
First Week

- Based on known infant health risks
- Prematurity
- Blood Group Incompatibility
- Follow-up feeding issues, hyperbilirubinemia, jaundice, dehydration, sepsis, anemia
- Ethnic groups at greatest risk for hyperbilirubinemia: Asian, Native American
- Examine for congenital malformations not immediately apparent at birth

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
1 Month

- Support parents as they become more attuned to infant’s cues; temperament and personality
- Responses to behaviors influence behaviors
- Newborn Screening Results
- Routine health surveillance
- Growth, Nutrition, Development: for premature infant, highly specific calorie needs, special formulas, focus on feeding skills
- Transition to consistent sleep and wake cycle
1 Month

• Practical Guidance
• For infant with special needs, referrals to ECI, subspecialty care, community-based supports
• Guidance re: Child Care
• Reduce injury risk: education
• Evaluate family stress, postpartum mental health

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
2 Months

• Social Development: smiling, cooing
• Reciprocal interactions between parents and infant: facial expressions, cuddling, singing
• Infant’s pleasure give parents feedback that they are “doing a good job”
• Parents’ enjoyment teaches infant teach trust and cause and effect

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
2 Months

- Review of early developmental milestones
- Review safety, sleep position and practices: family may modify based on perceived needs of infant and family
- Infant “may choke on spit-up if on back”
- If consistent schedule at home, infant now with fairly regular feeding and sleep schedule
- Living circumstances, gender roles, functioning and health of parents, financial issues

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
4 months

- Assess infant’s mastery of early social, motor, language skills that emerge from interaction with parents
- Infant increasingly interested in world around him and may need less stimulating setting for feeding (may refuse if distracted)
- Continuing breastfeeding for 2 more months may aid neuromotor development and reduce risk of diarrhea, allergies, infection
- For mother breastfeeding helps with maintenance of milk supply, weight loss, birth control
- Parents need specific strategies if crying episodes remain concern
- Evaluate parent and infant temperaments: “goodness of fit”

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
6 months

- Infant smiles, vocalize, but may not quite be mobile
- Emphasize safety strategies in preparation for greater mobility
- Toys should be sturdy with no small parts that could be inhaled
- Reciprocal, face-to-face interactions build trust and self-efficacy; happier baby

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
6 Months

- Marked Social-Emotional Development
- Infant with little interest in engaging with others and exploring raises red flags regarding developmental delay or neglect
- Rolling over and crawling are enormous milestones and require education regarding close supervision to prevent falls
- Inappropriate behaviors or reactivity to threatened safety need developmentally appropriate redirection

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
9 Months

- Increasing independence, mobility and expression of opinions
- Object permanence, but still doesn’t trust that an object that has disappeared will reappear
- “No!” Shakes head, screams (may involve feeding)
- May awaken during night, realize she is alone and cry in distress
- How do parental attitudes and expectations (based in childhood experiences) help them cope with child’s increasing independence (physical and mental)?
9 Months

• Infant at height of stranger awareness (intensity depends on individual child)
• May fight physical examination with new vigor
• Parents need discipline strategies to teach appropriate behaviors and remove focus from punishment (negative behaviors)
• Build safe environment vs. using “no” to teach child how to be safe

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
9 Months

• Yelling, spanking, and hitting are inappropriate in changing behaviors
• Child of this age is not yet able to learn or remember “rules”
12 Months

- May begin walking
- New conflicts with environment because more autonomous and more mobile
- Can reach new dangers: hot coffee cups, sharp objects
- Social Feedback Loop: Recognizes pleasure and displeasure in caregivers resulting from his behavior, helpful in preventing future disruptive behavior (hitting, biting)

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
12 Months

• More active, yet rate of weight gain decreases; parents may struggle with feeding issues
• Important to offer nutritious foods consistently, even if child eats inconsistently
• May speak a few words; more willful
• Reading aloud helps language development
• Child thrives when parents accommodate needs but also have strong parental presence, set limits

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
12 Months

- Anemia Screen
- Lead Screen (based on risk factors)
- Examination for dental caries, demineralization, referral to dentist
- Examine eyes: pupils, red reflex, eye movements
- Observe gait
- For males, are testes fully descended?

https://www.pediatriccareonline.org/pco/ub/view/Bright-Futures/135121/0/Prenatal_Visit
Infant Mortality

• 25,000 infants die every year in US (before 1\textsuperscript{st} birthday)
• Mortality rate for non-Hispanic Black infants is almost twice that of non-Hispanic White infants

Infant Mortality Risk Factors

- Serious Birth Defect (20% of all infant deaths)
- Born too small and too early (low birth-weight, pre-term birth, before 37 weeks gestation)
- Sudden Infant Death Syndrome
- Maternal complications of pregnancy
- Injuries, Infections

Neonatal Deaths (Birth to 27 Days)

- 2/3 of all infant deaths
- Birth Defects
- Maternal health conditions
- Complications of labor and delivery
- Lack of access to appropriate care at time of delivery
Postnatal Deaths (28-364 Days)

• Sudden Infant Death Syndrome
• Injury
• Infection
• Increasing proportion are infants born preterm who survived neonatal period

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6231a3.htm
Opportunities to Support Infant Health

- Pre-conceptual
- Interconceptual
- Prenatal
- 0-12 months

Disparities in Access to Infant Health Care

• In Washington state, infants enrolled in Medicaid whose primary familial language was not English were less likely to receive pediatric preventive care

• Disparity seen in White, Hispanic, and African-American infants

Cohen 2006
Interdisciplinary Connections

• Team Based Care
• Community linkages: clinics, schools/child care centers, faith-based, neighborhood centers
• Outreach: Home Visits, School Visits
• Therapies that coach parents and occur in natural settings (home, schools, community sites in child’s neighborhood)
Public Health Approach

• Campaign to raise awareness of infancy as sensitive period
• Long-term impact of insults
• Inclusion of community and societal interventions
• Prevention of child abuse and neglect
NOT THINKING ABOUT HELMET HAIR NOW, ARE YOU?
THERE ARE NO GOOD EXCUSES.

Wearing a helmet can prevent serious head and face injury. Make it an essential part of bicycling.
www.bphc.org/helmetsafety

Brought to you by Mayor Thomas M. Menino and the Boston Public Health Commission
Prevention of Child Maltreatment as Public Health Priority

- Public Education efforts to change social norms and behavior (as has been used for “Back-to-Sleep,” smoking, car seats)
- Neighborhood activities that engage parents
- Public policies and institutions that support children and families
Reactive Vs. Proactive Approach

**Poor Parenting**
- Upbringing, substance use, parental choice

**Lack of formal/informal societal Support and access to new info**
- Society with short-term vision, Outdated theories on raising children, Community decline

**Police, CPS, Foster Parents, Parents fixing themselves**

**Community leaders with vision, faith groups, schools, doctors, health care friends, neighbors**

**Rescue children, punish parents, children heal themselves (baby bootstrap)**

**New info about development, more social interaction and parent support, reinforcement of positive behaviors**
