HBSE I

Growth Charts

Infant Feeding Disorders

Failure to Thrive

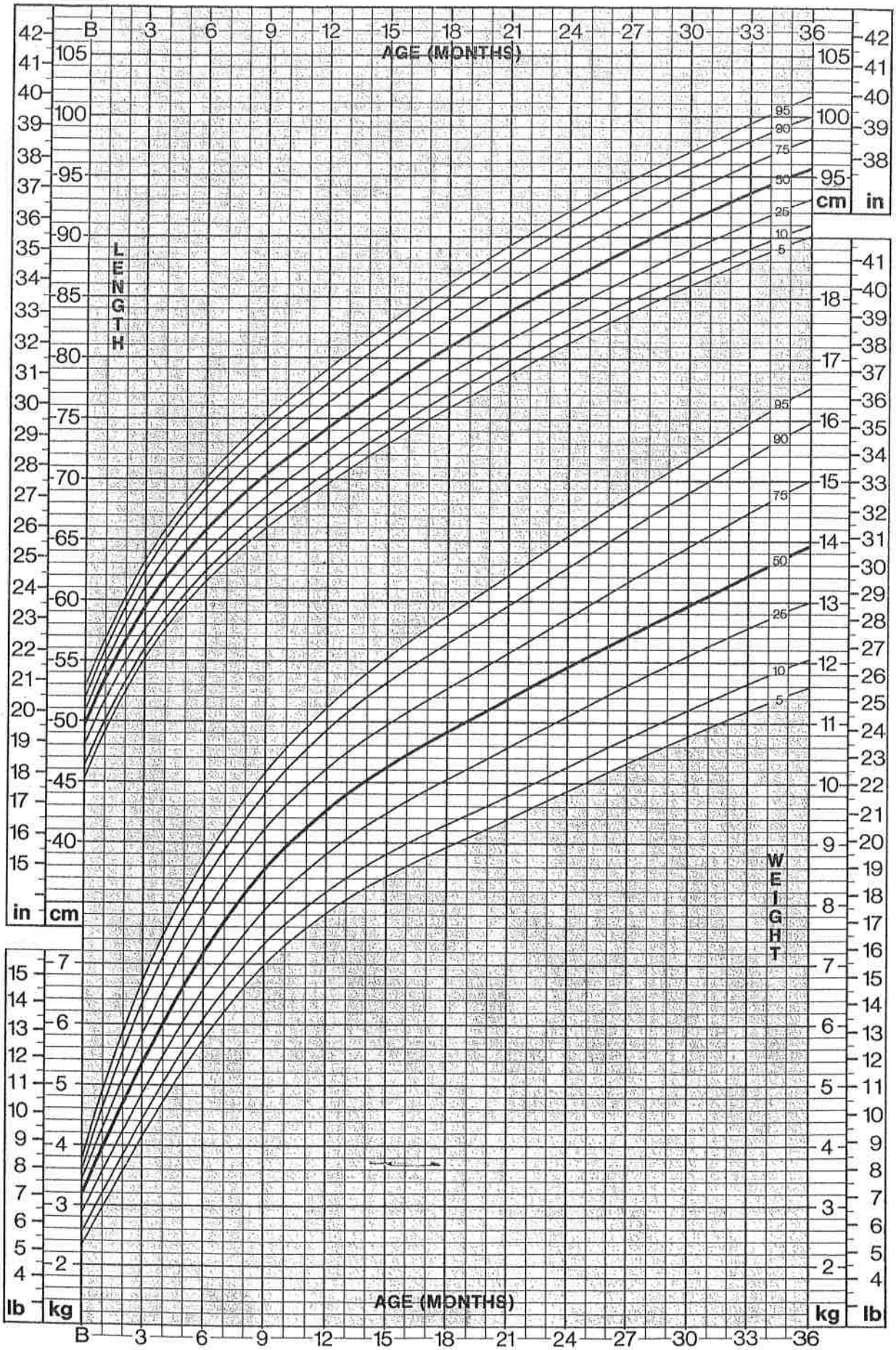
Allergies

SIDS

Smoke Exposure

GIRLS: BIRTH TO 36 MONTHS
PHYSICAL GROWTH
NCHS PERCENTILES*

NAME _____ RECORD # _____



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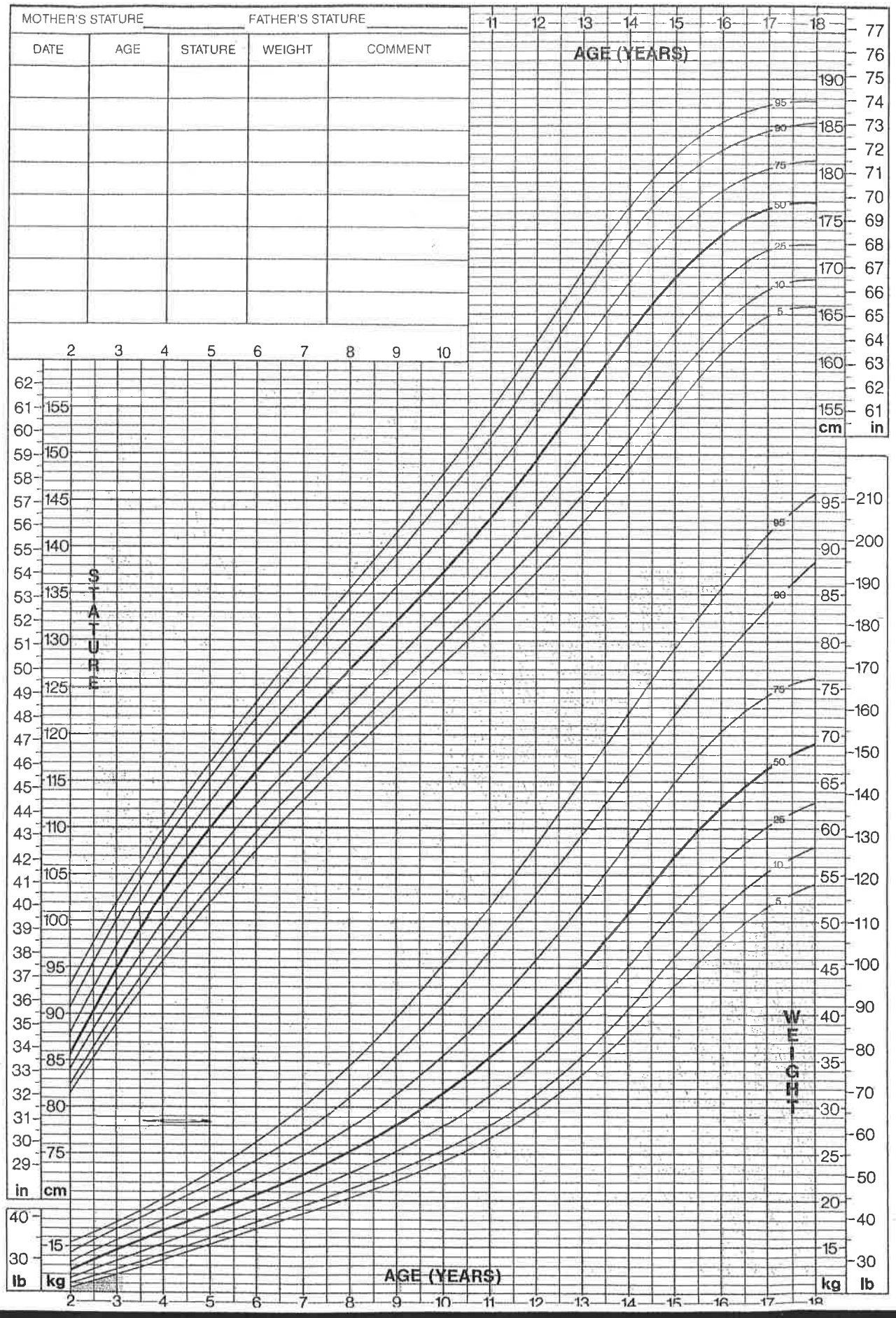
BOYS: 2 TO 18 YEARS
PHYSICAL GROWTH
NCHS PERCENTILES*

NAME _____ RECORD # _____

MOTHER'S STATURE _____ FATHER'S STATURE _____

DATE	AGE	STATURE	WEIGHT	COMMENT



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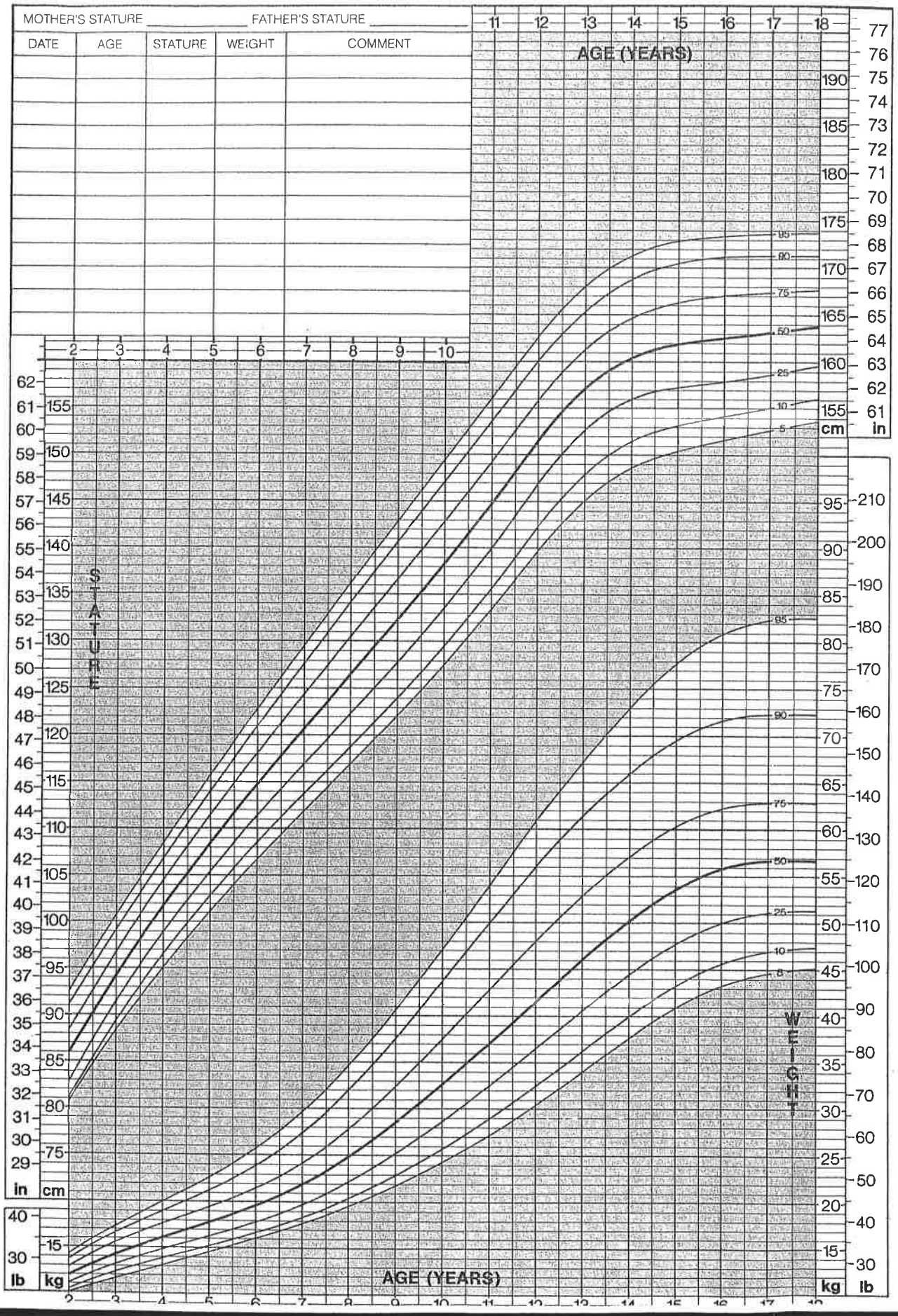

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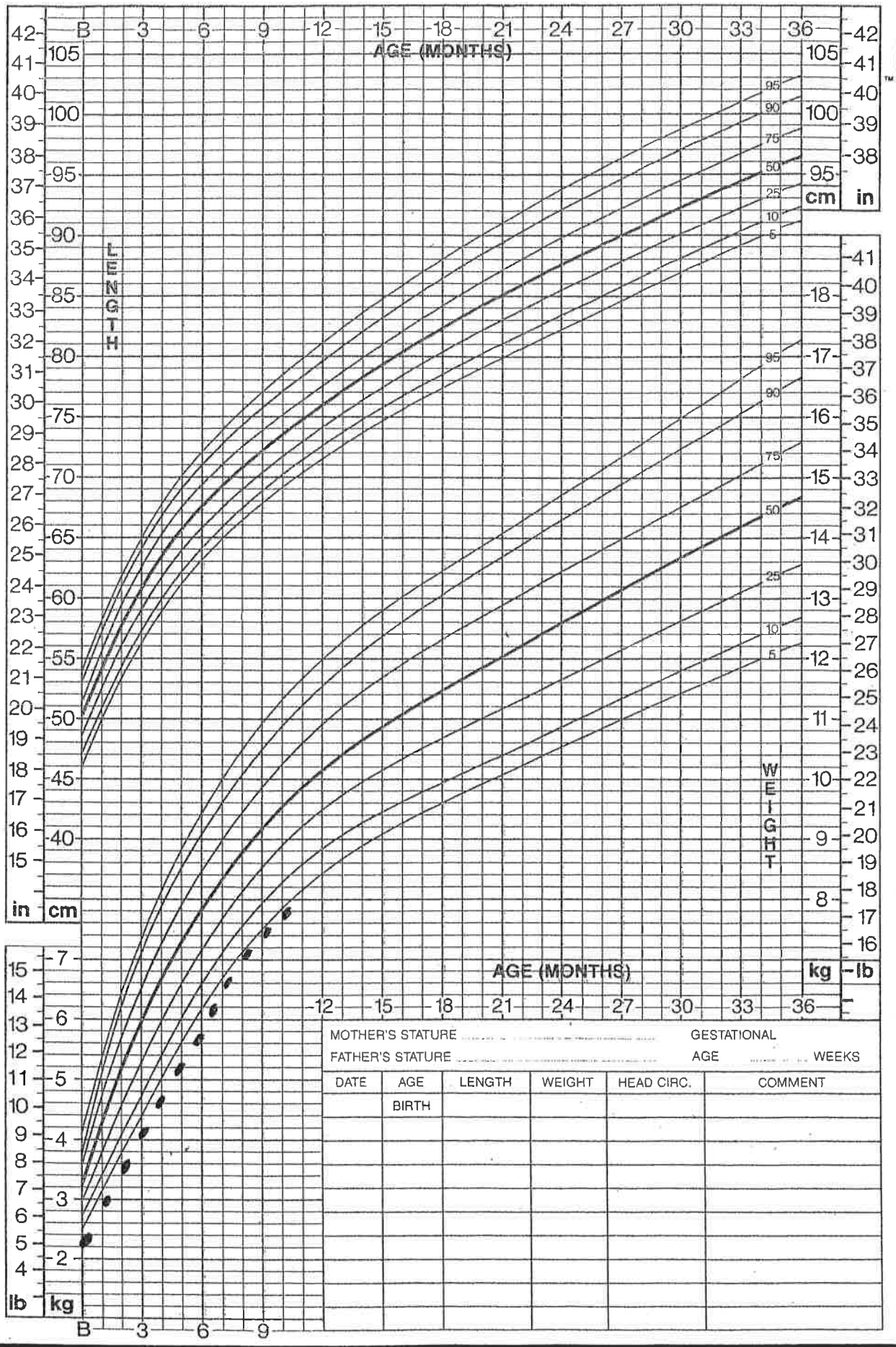

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MOTHER'S STATURE		GESTATIONAL	
FATHER'S STATURE		AGE	WEEKS

DATE	AGE	LENGTH	WEIGHT	HEAD CIRC.	COMMENT
	BIRTH				

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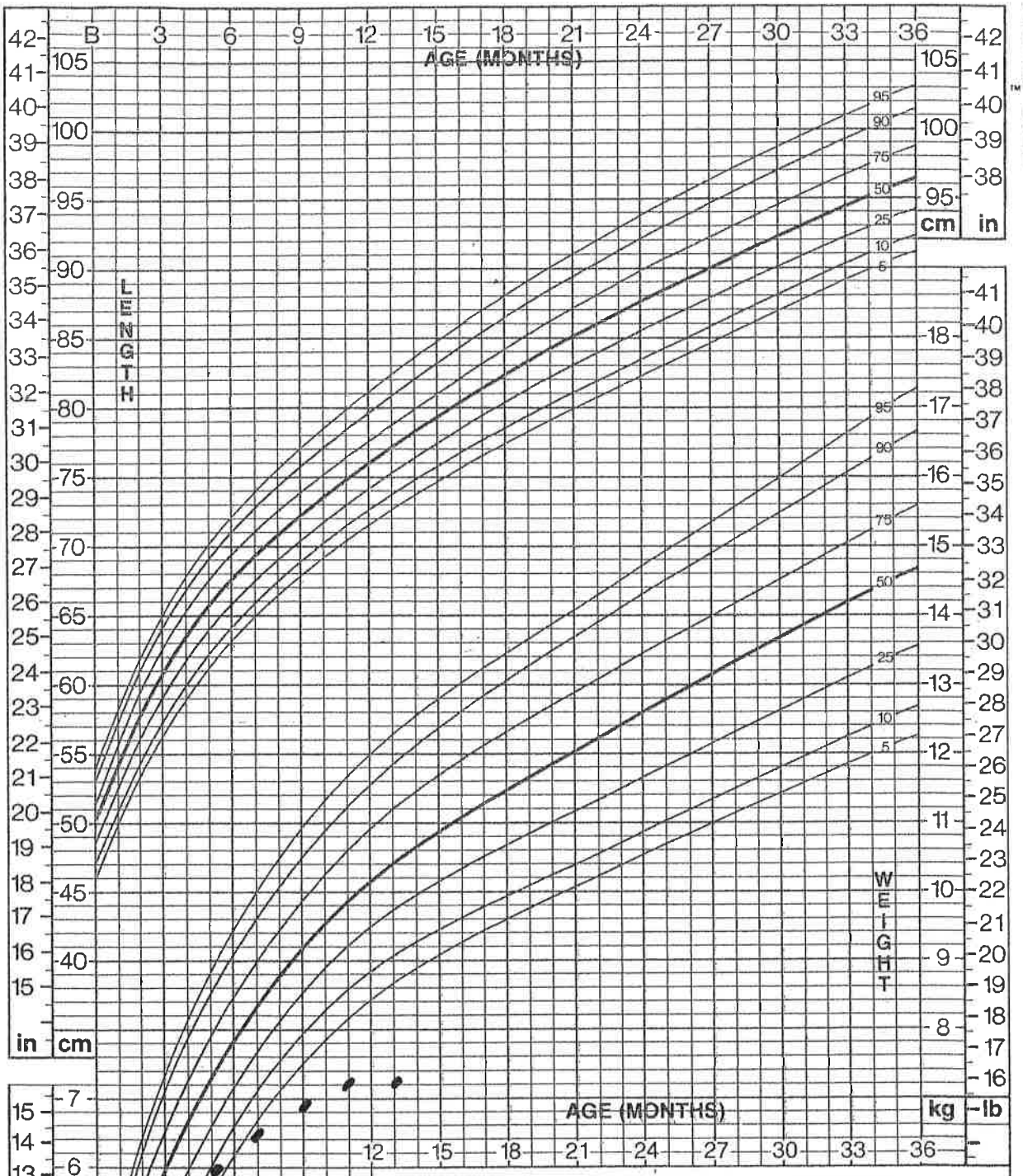

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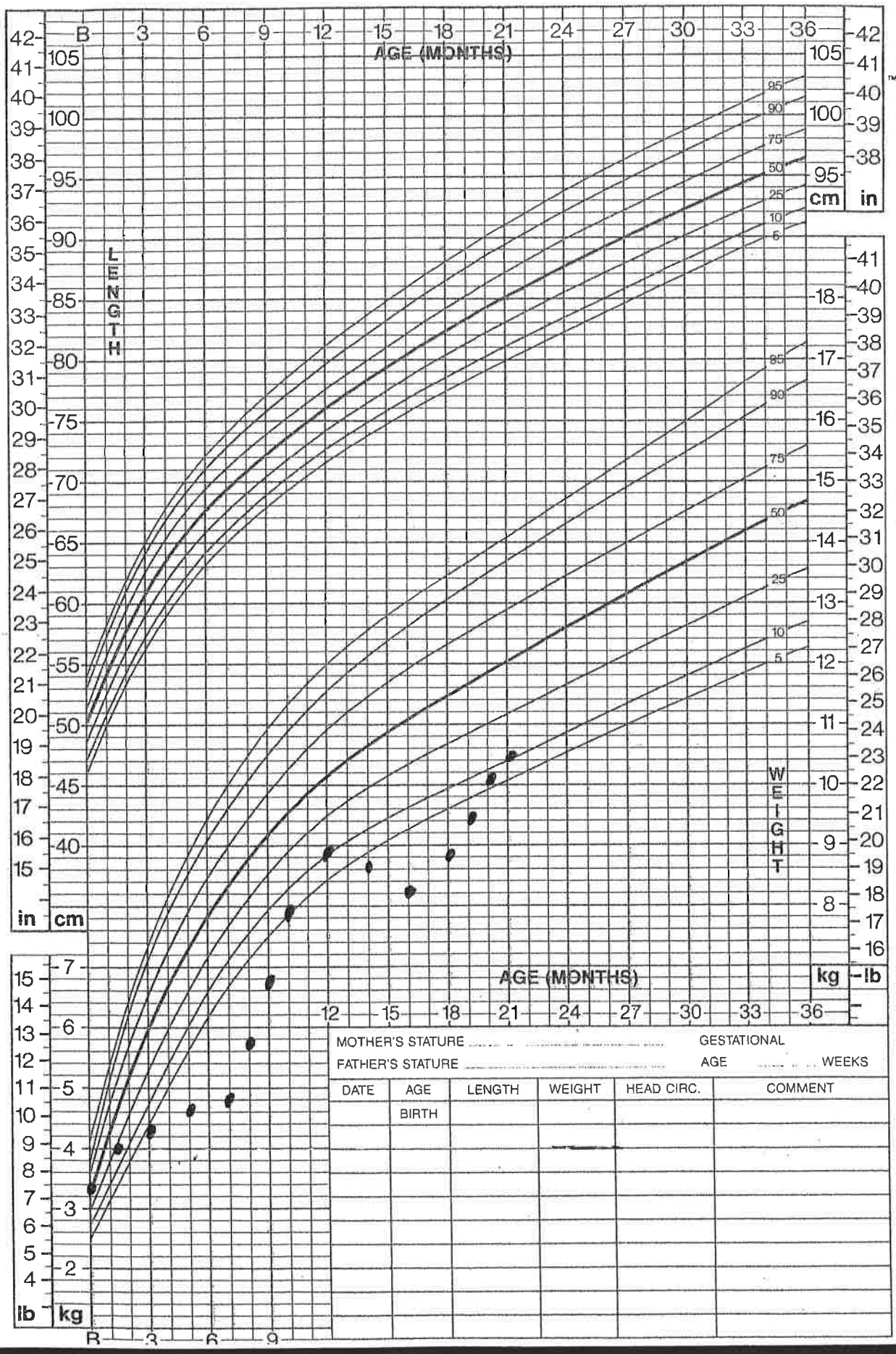

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Feeding Disorders in Infants

If baby does not suck within first few weeks of life, may lose the ability to do so

If baby is not given solids around 6 months of age when develops ability to chew, may result in later feeding problems

Differences in infant weight gain related to:
- Body constitution
- Physical birth defects (examples: heart, cleft palate)
- Health
- Physical activity
- Calories taken in
- Emotional stress
    - Increased cortisol retards growth

Good eating behaviors developed thru:
- Good health
- Neurologically intact
- Comfortable and developmentally appropriate feeding position
- No distractions at meals
- Feeding schedule
- Diet appropriate for developmental level
- Responses of caregivers during feeding

If there are problems in any of these, child can develop feeding refusal:
- Turn head away from bottle
- Push spoon/bottle away
- Tighten lips to keep mouth closed
- Gag
- Vomit
- Refuse to swallow
- Spit out
- Tantrums

Likes/dislikes of food develop in first 12 months of age

Failure to Thrive

Weight < 5th percentile and decreased rate of weight gain from birth to now
- Need to look at how child plots on growth curve (weight, height, and head circumference)
- What is the pattern on the growth curve?
    - Falling off the growth curve
    - Consistently below the growth curve
    - Has there been any catch up growth
    - Was there a particular time when the growth problem began?
    - Any inconsistencies?

Functionally not thriving
- Gross motor skills
- Fine motor skills

- Cognitive/language skills
- Social skills
- Affective skills

In order to thrive physically and functionally, a child must have met:

- Physical needs
  - Food
  - Clothing
  - Bathing
  - Warmth
- Non-physical needs
  - Learning
  - Nurturing and interaction

Fewer than 1/3 of FTT children have purely organic causes

- What tests have been done to evaluate a possible organic cause?
- Chronic illness?
- Brain tumor?
- Structural defect that affects feeding?
- Brain damage?

Some FTT children are purely cases of malnutrition due to inadequate food

- Malnutrition = underweight for your height
- What feeding history does the family give? (Example: are they watering down formula to make it last longer?)
- How has child been eating while in the hospital?
- How long has child been hospitalized, and is the child already showing catch up growth?
  - Very significant if merely changing the child's environment results in an improved growth pattern

Some have attachment disorder and problems with interactions with caregivers

Some have food refusal habits

Assessment:

- Physical health
  - Prone to infections?
- Development evaluation
  - Most FTT children are delayed
- Interactions
- Feeding
- Caregivers
  - Financial stresses?
  - Cognitive ability?

Observations of FTT infants:

- Cachectic (wasting, malnutrition)
- Arms up, elbows bent, fists clenched
- Scissoring of legs
- Listless
- Hypertonic, rigid

- Sad or depressed affect
- Withdrawn
- Irritable
- Apathetic
- Wary/watchful/afraid
- Difficult
- Hyperactive
- Angry
- Little eye contact
- Little vocalization
- Dislikes cuddling
- May self-stimulate (example: rocking self, head-banging, rumination)
- May have good appetite
- Ambivalent toward parent
- Suppresses emotions

Siblings often also have emotional, behavioral, and academic problems

Observations of mothers of FTT infants:

- Depression
- Anger
- Impaired coping ability
- Withdrawal
- Does not stimulate baby
- Low self-esteem
- Feels inadequate as a mother
- Needs to be mothered herself
- Suicidal
- Addictions
- Anxiety
- Isolation
- Mental disorders
- Emotional disorders
- Abusive
- Does not talk positively to child
- Does not respond to baby's distress
- Ignores the child
- Less mutual interaction with child
- Some have intrusive stimulation
- Insecure attachment to child
- Passive with child
- Unpredictable responses to child
- Domestic violence
- Poverty

Interventions:

- Immediately begin working on being supportive of mother/caregiver
    - Establish rapport
    - Get her to trust that you are there to help both the infant AND the mother
    - Mother needs to feel you are "on her side"
    - Mother needs to know you do not blame her for baby's condition

- Help mother see that you want to have a good understanding of everything that is going on at home with the baby so you know how to best help both of them

Observe mother/caregiver's interactions with baby:
- Does she interact with baby readily, or do you have to coax her to interact?
- Is she mechanical with the child?
- Does she nurture and stimulate the child appropriately?
- What is mother's affect when interacting with child?

If mother is not doing this on her own, model appropriate interactions with the child:
- What does mother do when you interact with the child?
- If you model a different level of interaction with the child, does she learn from this and try to emulate your behavior with the child?

How does she respond when you say positive things about the child?

How much time does mother actually spend interacting with child, and how much time is child left alone (in baby carrier, in bed)?

Have to evaluate both the quantity and the quality of the mother's interactions with the child and the child's interactions with the mother (mutuality)

Does mother seem to enjoy interacting with the child?

How does child respond to mother's interactions?

Is there a problem with child's ability to respond to mother's interactions?

How does child respond to your interactions?

Does child establish eye contact, or merely look around room aimlessly, or stare straight ahead?

Does child smile in response to interaction, or does child smile all the time (with no affect attached to it), or does child never smile regardless of interaction?

Does child try to verbalize, coo, etc.?

Does child care if anyone interacts with him/ her?

Does child notice if people enter and leave the hospital room?
- Anxious noticing
- Passive noticing
- No noticing whatsoever

How has mother been feeding the child?
- Mixing formula correctly?
- Feeding child things other than formula?
- How often does she feed the child?
- What techniques does mother use when feeding the child?
    - Prop the bottle?

- Interact with child while baby is drinking the bottle?

Does mother express any concerns about the child's feeding patterns?

Is child difficult to feed? Spit up a lot?

Does mother have medical/mental/emotional problems that may interfere with her ability to care for the child?

Is mother getting her needs met sufficiently so that she can meet the needs of the baby?

Does anyone else help with the care of the baby?
Does anyone else feed the baby?

Who does mother describe as being her support system?
- Who is available (quantity of support)
- But how does she feel about those people?
- What is quality of the support?

Is mother isolated and solely responsible for the care of the child?

Are there ways you can help mother increase her support system and its level of helpfulness to her?

What is family's financial situation?

Anything resulting in inability to feed child enough food?

Other than financial, are there family stressors?
- Marital problems
- Domestic violence
- Problems with another child
- Problems with another family member

How does mother describe her coping strategies for dealing with those problems?

Are there resources that can help reduce the level of stress in the home?

Does mother understand the physical and emotional needs of an infant this age?

Does mother respond to staff's efforts to get a different type of interaction going between the mother and infant?

Does mother respond when praised for her changes in interaction level?

Are there problems with bonding?
- How did mother respond to news that she was pregnant?
- What was her labor and delivery experience like with this infant?
- Was there any depression after this baby's birth?
- Was she disappointed about anything related to the baby?

Any evidence of abuse or overt neglect?

Need to refer to CPS? (If not purely organic FTT, always do this.)

Requires very close follow-up to monitor progress/deterioration in situation

Rumination

Rare feeding disorder
Child regurgitates food that has already been swallowed, re-chews, re-swallows
Self-induced and purposeful
Relaxation and pleasure obtained from this activity
Onset usually 3-12 months of age
25% mortality rate
One type is associated with mother-infant relationship problems
Other type is self-stimulation in children who have other disabilities (such as intellectual disability or severe developmental delays) – they have poorer prognosis
Children who do it are often socially isolated because they smell of vomit all the time

In one medical study in 2015, developmentally delayed children who ruminated had gastrojejunostomy placed, and all oral feedings ceased. They also introduced unpleasant tasting substances (such as cayenne pepper sauce) through the gastrostomy tube every four hours. This got the children to stop ruminating. (See Severio et al., *Pediatrics*, June 29, 2015)

Pica

Persistent eating of non-food substances
Usual onset ages 1-3 years; it tends to taper off as they get older and is rare in adults
In intellectually disabled, usual age of onset is 10-20
Has to be at least 1 month duration to diagnose it, and can not be associated with any other disorder
May be associated with a nutritional deficiency (such as iron-deficiency anemia), pregnancy (for example, some cultures say pregnant women should eat particular substances, such as a type of clay), mental illness, intellectual disability
Often also diagnosed with malnutrition at the same time
It can cause a variety of medical complications, such as constipation, teeth damage, stomach bleeding, bowel perforation, infectious diseases, kidney damage, etc.
Treatment usually focuses on behavior modification

Types:

- Geophagia – eats clay, dirt, sand
- Pagophagia – eats ice (causes iron deficiency)
- Lithophagia – eats gravel, stones
- Coprophagia – eats feces
- Amylophagia – eats starch
- Trichophagia – eats hair, causes intestinal obstructions
- Can also eat other things:
    - Paper
    - Cloth
    - Paint (danger of lead poisoning)
    - Plaster
    - Insects
    - Metal
    - Needles

- Matches

Assessment:
- Is it cultural?
- Is it nutritional?
- Is it due to social stresses?
- Is it related to problematic relationship with parents?
- Is it related to child abuse/neglect?

Relationship seen between pica in childhood and bulimia in adolescence

Psychosocial dwarfism

Also referred to as:
- Maternal deprivation
- Emotional deprivation
- Non-organic Failure to Thrive

Growth failure without malnutrition

50% are due to endocrine problem (such as hypopituitarism)

Strange eating/drinking behaviors:
- Polyphagia – steals/hoards food
- Gorging
- Eating garbage
- Vomiting
- Eat pet food
- Polydipsia – drinking from toilet

Accident prone
Depression
Behavior problems
Sleep problems
And many more types of problems!

Some had FTT in infancy

Most had normal birth weight

Many have problematic interactions with parents

Preventing Allergies in Newborns
(American Academy of Allergy, Asthma, and Immunology)

To reduce/delay food allergies:
- Newborns more susceptible to food sensitization than older infants
- Delay exposure to potentially allergenic foods
- Breast feeding at least 4-6 months

- Protein hydrolysate formulas (Nutramigen, Alimentum) are less sensitizing than milk or soy based formulas
- No solid foods until 6 months of age
- Between ages 6-12 months introduce vegetables, rice, meat, fruit
    - Introduce each new food alone so you can identify and eliminate any food that causes a reaction
- After 1 year of age, milk, wheat, corn, citrus, and soy can be added (one new food every 2-4 weeks)
- At 2 years of age, add eggs, peanuts, fish
    - Some doctors say you can introduce eggs between 8-9 months of age, but it is best to introduce only egg yolks initially. Egg whites are more of a problem because of 4 proteins they contain.
    - If there is any history in the family of egg allergies, be slower to introduce eggs to a new child

Preventing Inhalant Allergies

- Prevent early exposure to mites
    - Plastic covers on pillows and mattresses
    - Washing bedding in hot water every 7-10 days
    - Avoid high indoor humidity
    - Remove carpets, upholstered furniture, objects that collect dust from baby's bedroom
- Many allergists have recommended that babies not be exposed to indoor pets during early years of life to prevent dander allergy
    - New (summer 2002) 7 year longitudinal study came up with different findings
    - Studied children exposed to pets in the home in first year of life compared to children with no pets
    - Those who had pets had fewer allergies of all kinds later
    - Thought to be because pets expose them to harmless bacteria and boost their immune system
    - Highest benefit was children who had 2 or more kinds of pets

Preventing Asthma

- Infants exposed to fewer dust mites are less likely to develop allergic asthma
- Maternal smoking during pregnancy associated with increased wheezing during infancy
- Exposure to second-hand smoke (pre-natal and post-natal) increases asthma/chronic respiratory illnesses in childhood, increases number/intensity of episodes and symptoms
- Respiratory infection is a common trigger of asthma, may even initiate it
    - Reduce respiratory infections in infancy
        - Breast feeding
        - Avoidance of day care for very young infants

Exposure to Parents' Smoking

Second-hand smoke – exhaled by smoker, then inhaled by child. It is considered by many to be even more dangerous than smoking because smokers have filters on their cigarettes; there are no filters on secondhand smoke

Third-hand smoke – what stays in the carpet, pillows, draperies, furniture, clothing, hair, etc. Small children who crawl or play on the floor and who often put their hands in their mouths are considered particularly vulnerable to third-hand smoke.

Side-stream smoke – produced by the burning cigarette, then inhaled by child

According to Centers for Disease Control, there is no safe time to expose children to passive smoke – effects seen in children of all ages. Exposure to secondhand and third-hand smoke has been associated with cognitive deficits in children, including poor reading scores.

In 2008 it was estimated that 82% of parents who smoke reported smoking around their children. Measurement of nicotine levels in the household air and in the children's hair samples showed high exposure to secondhand smoke. Nicotine was detected in hair samples of 78% of children living with a smoker and in 59% of children who did not live with a smoker. (See Science Daily, March 6, 2008)

Also in 2008 a study showed that secondhand smoke causes chronic inflammation and vascular injury in children, increasing their risk of heart disease. Other studies have shown that infants of mothers who smoked during pregnancy are more excitable and jittery due to neurotoxic effects of the tobacco exposure during brain development. The irritability could also be related to the baby experiencing withdrawal after birth.

Mothers who are breast-feeding and who smoke are urged not to smoke within 90 minutes of breast-feeding their child. The babies may have nausea, vomiting, abdominal cramping, and diarrhea from the nicotine and other chemicals in the breast milk. Nonetheless, the benefits of breast-feeding are such that they are still encouraged to breast feed instead of bottle feeding.

Research findings regarding children's exposure to cigarette smoke:

- Results in 150,000 – 300,000 lower respiratory tract infections in children < 18 mo. Old each year, resulting in 7,500 – 15,000 hospitalizations
- May change expression of a gene involved in production of pulmonary surfactant (necessary for normal lung function)
- Children have reduced lung function and more frequent cough, excess phlegm, and wheezing
- Results in build-up of fluid in middle ear, often leading to surgery for tube placement
- Associated with higher frequency of Sudden Infant Death Syndrome (SIDS)

Smoking During Pregnancy

(Mothers who smoke or mothers who are exposed to 2nd hand smoke because live with a smoker)

Baby gets less nutrition and oxygen thruout pregnancy

More likely to have a miscarriage or stillbirth

Can cause placenta previa (placenta covers the cervix) or placental abruption (placenta separates from wall of uterus, cuts off all oxygen)

- Placenta not getting enough oxygen so spreads thinner over more of uterus, trying to reach more surface area to get more oxygen and nutrients

More likely to have premature birth/premature rupture of membranes (PROM), because body feels baby can't be fed properly

May be associated with learning problems in children later because of impact on infant's brain

Sudden Infant Death Syndrome (SIDS)

SIDS is the sudden, unexpected death of an infant under one year of age that remains unexplained after a thorough investigation. In 2007 it was estimated that 77 of every 100,000 babies born alive in the US die of SIDS. To reduce the risk, babies under 12 months of age should sleep on their backs, not on their stomachs. Parents should use a tight-fitting, firm mattress in the crib. Waterbeds, sofas, soft mattresses, pillows, and soft surfaces should not be used for sleeping infants. All pillows, quilts, comforters, stuffed toys, and other soft products should be removed from the crib. If a blanket is used, the infant should be placed at the foot of the crib, with a thin blanket tucked around the crib mattress, reaching only as far as the infant's chest. The infant's head should remain uncovered during sleep. (National SIDS and Infant Death Program Support Center, January 2007)

Snoring in Children

Children who have breathing difficulties during sleep can experience reductions in growth hormone levels, which naturally peak during periods of deep sleep. Thus, children who snore may be smaller than children who do not snore. Children who snore or breathe through their mouths while sleeping often have enlarged tonsils or adenoids. Studies have shown that having surgical removal of their enlarged tonsils or adenoids can result in them having increased rates of growth (both height and weight) after the surgery because their sleep improves.