Infant Nutrition Ch. 8

Key Points

Infant mortality influenced by: nutrition, environmental & social factors

Those born at > 34 weeks hit same milestones

Dev skills dictate readiness for next feeding step

Protein converted to E if kcals are low

Vit D, Fe- & fluoride limiting mironuts

Wt, Lt, head circumf monitored

FTT, colic, Fe- def, caries

Infant mortality

Congenital malformations, LBW/premature, SIDS, maternal complications

Goal: 37-42 weeks & 5.5-8.5 lbs

Lowering infant mortality rates???

Infant Development

Newborns:

Hear and move in response to familiar voice

Organ systems continue to develop outside utero

Digestive tract

CNS = spastic -> inconsistent hunger cues

Strong reflexes:

Rooting- turns head toward the cheek that is touched

Suckle- tongue moves forward and backward

Reflexes

**From Table 8.2 Major reflexes found in newborns**

SOURCE: From KAIL/CAVANAUGH. Human Development, 2nd ed.

 Motor skill development

= ability to control voluntary muscle movements

Muscle control/coordination develops:

top down

central to peripheral

Influences

ability to feed self

amount of energy expended

“Critical periods” revisited

Digestive System Development

Swallowing amniotic fluid stimulates intestinal maturation and growth

Peristalsis is slow to mature:

gastroesophageal reflux (GER)

diarrhea

constipation

Baby and caregiver trying to identify and appropriately respond to cues

Nutritional Needs

Energy

Protein

Fat

Other nutrients

Energy

Calories: (average)

108 kcal/kg/day from 0 to 6 months

(80 to 120 kcal)

98 kcal/kg/day from 6 to 12 months

Factors that influence calorie needs?

7:

How much is that?

Newborn weighing 7.5 lbs?

How much BM?

6.5-month-old weighing 17 lbs?

Protein

Protein needs

1.52 gm pro/kg/day from 0 to 6 months

1.2 gm pro/kg/day from 6 to 12 months

How much is that?

Newborn weighing 7.5 lbs?

How much BM?

6.5-month-old weighing 17 lbs?

Fat

Breast milk contains about ~50% calories from fat

Cholesterol needed for brain development

Do not restrict fat or chol

DHA, ALA and LA for hormones, steroids, and neuroactive compounds

Breast milk contains SCFA & MCFA; formula has more LCFA

Other Nutrients

Fluoride—0.1 - 0.5 mg/d depending on age

Vitamin D—400 IU/day (difficult w/ BF)

Sodium—120 mg/day 0-6 mos

370 mg/d 7-12 mos

Gotten in BM and HMS

Do not salt baby’s food

Fe- depends

Full–term to well nourished mom?

Exclusively BF? AAP: 1 mg/kg Fe- @ 4 mos, preterm: 2-4 mg/kg until 12 mos

Fe- fortified cereals @ 4-6 mos

Physical Growth Assessment

Newborns triple birth weight by 1 yr

Grow 50% in length by 1 yr

Growth reflects:

nutritional adequacy

health status

Age and..

Wt

Lt

HC

Wt for Lt

Interpretation of Growth Data

Measures over time identify

change in growth rate

need for intervention

Warning signs:

Lack of Wt or Lt gain

Plateau in Wt, Lt or HC for > 1 month

Drop in Wt without regain in a few weeks

Feeding in Early Infancy Breast Milk and Formula

AAP & AND recommend exclusive breast feeding for 1st 6 months & continue to 1 yr

ASAP after birth

Adequacy of milk volume indirectly measured

No Cow’s Milk during Infancy

Iron-deficiency anemia linked to early introduction of cow’s milk

Anemia is linked to:

 GI blood loss

Displacement of iron-rich foods

Development of Infant Feeding Skills

Born with reflexes & food regulatory mechanism

Prefer sweet taste

Lead chips

At 4-6 months

reflexes fade

begins to purposely signal wants & needs

Tongue begins to move side to side

Developmental Signs Table 8.8

Cues

Cues infants may give for feeding readiness include:

Watching the food being opened in anticipation of eating

Tight fists or reaching for spoon

Irritation if feeding too slow or stops

Indications of fullness:

play with food/utensils

slowing/stops eating

turning away

spitting out food

Introduction of Solid Foods

At 4-6 months

Reclined w/ head & feet supported

Slightly warm

Chin down

Offer small portions of **pureed** food on a spoon once or twice each day

Choking

First Foods

4-6 months—iron-fortified baby cereal, no lumps

Rice cereal is most hypoallergenic

6 months— start w/ pureed fruits and vegetables

Only one new food every 3-5 days

Commercial baby foods are sanitary and convenient

Homemade must be appropriate texture

6-8 months lumpy foods that stay together

8-10 months soft mashed foods

9-12 months soft table foods

Unsafe Food Choices

Foods that choke infants

Honey

Common Nutritional Concerns

Failure to thrive (FTT)

Colic

Diarrhea/constipation

Dental caries

Food allergies

Failure to thrive (FTT)

Inadequate wt or lt gain

Implies an energy deficit is suspected

Result in delayed development

Organic - diagnosed medical illness

Tx: if d/t lack of adequate nutrition

May be complex (environmental, social, cultural) and involve a team approach including the registered dietitian

Colic

The sudden onset of excessive irritability, fussiness or crying

Unknown etiology

Disappear at 4th or 5th month

Tx: rocking, swaddling, bathing

Diarrhea and Constipation

Infants typically have 2-6 stools/d

Etiology:

Food intolerance

Iron-fortified formula

Bacteria or virus

Change in fluid consumption

Caries and Ear Infections

Etiology?

Tx: change feeding techniques

Limit use of bedtime bottle

Examine and clean emerging teeth

Food Allergies and Intolerances

About 6-8% of children < 4 yrs have allergies

Etiology: Absorption of intact proteins

Symptoms: wheezing or skin rashes

Tx:

formula with hydrolyzed proteins

Food avoidance…or not?

Vegetarian

Can support normal growth

Greater restriction -> greater risk of deficiencies

B12, vit D, Ca, Fe, Zn, omega-3 FA, DHA