Healthy child care

Prevention is better than cure.
—Desiderius Erasmus

PREVENTION

- ***Primary prevention*** the goal is *to* avoid the development of a disease in the healthy population
- ***Secondary prevention*** activities aimed at early disease detection, which increases opportunities for interventions to prevent progression of the disease
- ***Tertiary prevention*** reduces the negative impact of an already exsisting disease by restoring function and reducing complications

Recommendations for Preventive Pediatric Health Care(AAP)

- **Measurements**
- Height and Weight(newborn- 18 years)
- Head circumference(newborn- 24 months)
- Blood pressure(3 years- 18 years)
- **Sensory screening**
- Vision(by history newborn-24 months, 3-18 years-objective method)
- Hearing(objective method- newborn, 2months-3 years- history, 4-18 years- objective method)
- **Developmental/Behavioral Assessment**- newborn-18 years old
- **Complete physical examination**
- **Metabolic screening**(accordng to state law)
- **Immunization**- according to the schedule
- **Nutrtion Counseling**(newborn-18 years)
- **Dental Referral**- 12 moths- 3 years
- **Sleep positioning Counseling**(newborn - 6 months)

SIDS-Sudden Infant Death Syndrome

- From the 1994 the AAP „Back to Sleep”
- Other recommendations to reduce the risk of SIDS are:

-avoide drugs and alcohol and smoking during pregnancy and in the presence the child

-breastfeed

-avoide overdressing and overheating

-place the baby on a firm mattress, avoid cushions, pillows or stuffed toys.

Screening

- Screening is a process of identifying healthy people who may be at increased risk of a disease or condition. They can then be offered information, further tests and appropriate treatment to reduce their risk and/or any complications arising from the disease or condition.

(e.g.www.screening.nhs.uk).

Blood spot screening

Newborn blood spot screening(>72hrs)

Belgium	+CAH(congenital adrenal hyperplasia), biotynidase deficiency, CF
England	phenylketonuria (PKU), congenital hypothyroidism (CHT), sickle cell disease (SCD), cystic fibrosis (CF) and medium-chain acyl-CoA dehydrogenase deficiency (MCADD)
Europe	PKU, CHT
Germany	+CAH, galactosemia
Northern Ireland	PKU, CHT, CF, homocystinuria and tyrosinaemia
Wales	PKU, CF, CHT, Duchenne Muscular Dystrophy

Phenyloketonuria

- Autosomal recessive 1 per 10000 births

Inability to utilize phenylalanine, which accumulates in the blood and body tissues.

- Infants with PKU appear normal at birth. Many have blue eyes and fairer hair and skin than other family members.
- 50% of infants may present early symptoms, such as:
  - Vomiting,
  - Irritability,
  - An eczema-like rash,
  - A mousy odor of the urine.
  - Increased muscle tone,
  - More active muscle tendon reflexes
  - Seizures
  - Mental retardation

- Treatment: low phenyloalanin diet

- Maintaining phenylalanine blood levels in the recommended range maximizes the ability for normal development.

Congenital hypothyroidism

- Congenital hypothyroidism is inadequate thyroid hormone production in newborn infants.
- 1 per 4000 births.

Symptoms:

- Decreased activity
- Large anterior fontanelle
- Poor feeding and weight gain
- Small stature or poor growth
- Jaundice
- Decreased stooling or constipation
- Hypotonia
- Hoarse cry, macroglossia,
- Umbilical hernia
- Mottled, cool, and dry skin

- **Early diagnosis and treatment of congenital hypothyroidism prevents severe mental retardation and other neurologic complications**

Newborn screening

Advantages of newborn screening:

- Detects a serious, treatable disorder before symptoms are present
- Leads to treatment that can prevent serious problems including mental retardation and or death
- Detects carriers of certain genetic disorders

Risks of newborn screening:

- Fail to identify some children who have the condition
- Cause parental anxiety after false-positive tests
- Detects disorders for which treatment is not effective

Screening for hearing impairment

- One to two babies in every 1,000 are born with a hearing loss in one or both ears
- Automated Otoacoustic Emission (AOAE) screening test.
- Automated Auditory Brainstem Response (AABR) screening test.
- False infromation from AOAE:
- unsettled baby at the time of screening.
- background noise when the screening test is carried out.
- fluid or a temporary blockage in the ear after the birth.

The effect of hearing impairment

- Delay in development of communication skills
- Communication difficulties lead to social isolation
- Language deficit causes learning problems

- The earlier hearing loss occurs in a child's life, the more serious the effects on the child development

Reaction to sounds checklist

- **Shortly after birth - a baby**:Is startled by a sudden loud noise such as a hand clap or a door slamming. Blinks or opens eyes widely to such sounds or stops sucking or starts to cry.
- **1 month - a baby**:Starts to notice sudden prolonged sounds like the noise of a vacuum cleaner and may turn towards the noise. Pauses and listens to the noises when they begin.
- **4 months - a baby**:Quietens or smiles to the sounds of familiar voice even when unable to see speaker and turns eyes or head towards voice. Shows excitement at sounds (e.g. voices, footsteps etc).
- **7 months - a baby**:Turns immediately to familiar voice across the room or to very quiet noises made on each side (if not too occupied with other things).
- **9 months - a baby**:Listens attentively to familiar everyday sounds and searches for very quiet sounds made out of sight.
- **12 months - a baby**: Shows some response to own name. May also respond to expressions like 'no' and 'bye bye' even when any accompanying gesture cannot be seen.

Making sounds checklist

- **4 months – a baby**: Makes soft sounds when awake. Gurgles and coos.
- **6 months – a baby**: Makes laughter-like sounds. Starts to make sing-song vowel sounds (eg: a-a, muh, goo, der, aroo, adah).
- **9 months – a baby**: Makes ounds to communicate in friendliness or annoyance. Babbles (eg: 'dada da', 'ma ma ma', 'ba ba ba'). Shows pleasure in babbling loudly and tunefully. Starts to imitate other sounds like coughing or smacking lips.
- **12 months – a baby**: Babbles loudly, often in a conversational-type rhythm. May start to use one or two recognisable words.
- **15 months – a baby**: Makes lots of speech-like sounds. Uses 2-6 recognisable words meaningfully (eg: 'teddy' when seeing or wanting the teddy bear).
- **18 months – a baby**: Makes speech-like sounds with conversational-type rhythm when playing. Uses 6-20 recognisable words. Tries to join in nursery rhymes and songs.
- **24 months – a child**: uses 50 or more recognisable words appropriately. Puts 2 or more words together to make simple sentences (for example: more milk). Joins in nursery rhymes and songs. Talks to self during play (may be incomprehensible to others).
- **30 months – a child**:Uses 200 or more recognisable words. Uses pronouns (eg: I, me, you). Uses sentences but many will lack adult structure. Talks intelligibly to self during play. Asks questions. Says a few nursery rhymes.

hearing.screening.nhs.uk

Developmental dysplasia of the hip

- Examination of the hips- should be performed within 72 hours after birth (Barlow and Ortolani tests).

- ❑Dislocation
- ❑Subluxation
- ❑Instability-the femoral head comes in and out of the acetabulum
- ❑Acetabular dysplasia

Developmental dysplasia of the hip

Risk factors
Suggestive clinical examination
Oligohydraminos
A breech presentation at or after 36 completed weeks of pregnancy, irrespective of mode of delivery
A first degree family history of hip problems in early life

Symptoms of developmental hip dysplasia:

- ✓limited hip abduction,
- ✓apparent shortening of the thigh(the Galeazzi sign),
- ✓ asymmetry of the gluteal or thigh folds

Treatment of developemental hip dysplasia

OR SURGERY…

AAP- *Hemorrhagic disease of newborns*

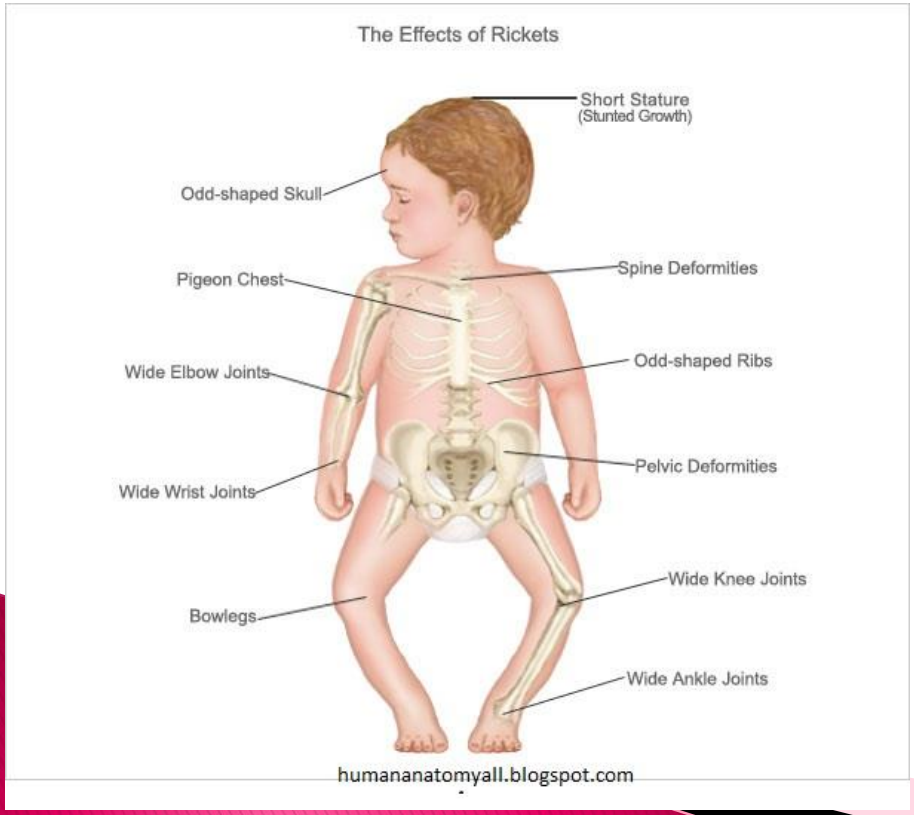
- Vitamin K_1 should be given to all newborns as a single, intramuscular dose of 0.5 to 1 mg.

AAP-Anemia prevention

- Breastfed infants should be supplemented with **1 mg/kg per day of oral iron from 4 months** of age until iron-rich foods (such as iron-fortified cereals) are introduced.
- Formula-fed infants will receive adequate iron from formula and complementary foods. Whole milk should not be used before 12 months.
- All **preterm infants** should have at least **2 mg/kg** of iron per day until 12 months of age, which is the amount of iron in iron-fortified formulas. Preterm infants fed human milk should receive an iron supplement of 2 mg/kg per day **by 1 month** of age; this should be continued until the infant is weaned to iron-fortified formula or begins eating foods that supply the required 2 mg/kg of iron.
- Screening for anemia ~12 month

AAP- Rickets prevention

- 2008 AAP recommends 400 IU vit.D per day <1year.
- 600IU > 1 year



Cryptorchidism

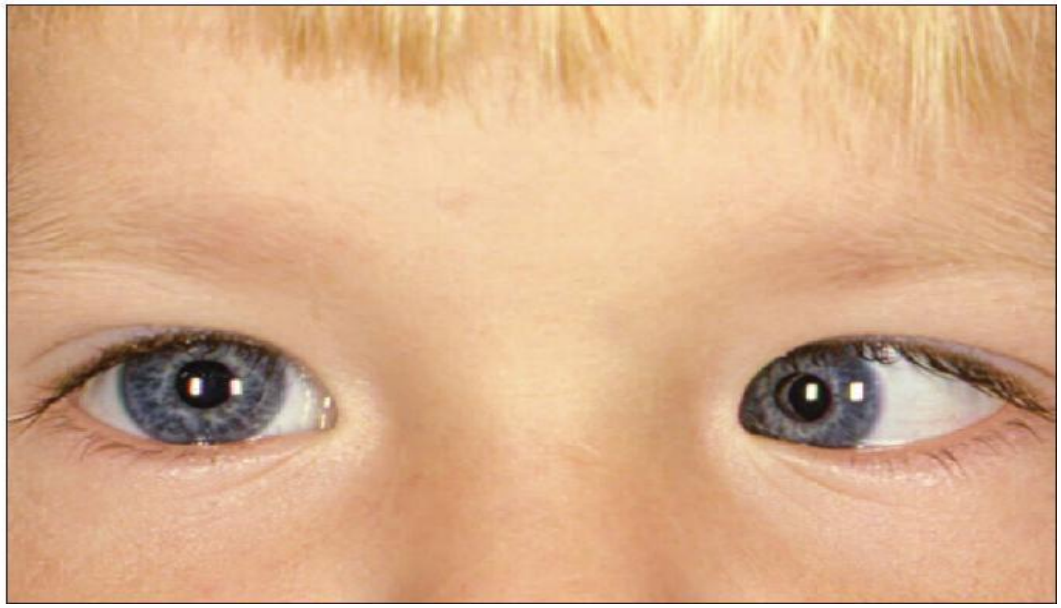
- Congenital undescended

testis

- Surgical correction at 6 months (spontaneous descent of the testis rarely occurs after 4 months of age)
- Consequences include infertility, testicular malignancy, associated hernia, torsion of the cryptorchid testis.
- Male newborn with bilateral nonpalpable testes could be a virilized female with congenital adrenal hyperplasia

Screening for ophthalmic problems (newborn, 6-8 weeks, pre-school, school-aged)

- **Strabismus**- Test of corneal light reflex
  - Cover test(an object 30-50cm at the eye level covering the healthy eye causes movement of the eye with refractive error to fixate on the object)
- **Cataract**- ophthalmoscopy
- **Rethinopathy** in preterm neonates- ophthalmoscopy
- **Vision acuity** (picture charts 2-3 years old,Snellen charts>4-5years old)
- **Visual impairment**(6 weeks- able to fixate and follow a target)
- **Leukokoria** (white pupillary reflex) suggests cataracts, retinoblastoma , retinopathy of prematurity,- immediate ophthalmologic consultation.



Corneal reflex

Leucocoria

COVER TEST

Screening for hypertension

- Blood pressure measurements should be part of the routine physical examination of all children **3 yr or older**
- The inflatable bladder should cover at least ⅔ of the upper arm length and 80–100% of its circumference. A cuff that is too short or narrow artificially increases blood pressure readings.
- Hypertension – the blood pressure consistently above the **95th** percentile for age (requires further evaluation).
- Standard nomograms (according to age,sex, height) are necessary for interpretation of blood pressure values

A 6 year old boy whose height is on the 50th pc has a BP 120/80. Is it a normal BP for his age,sex and height?

www.nhlbi.nih.gov/ guidelines/hypertension

Blood Pressure Levels for Boys by Age and Height Percentile

Age (Year)	BP Percentile ↓	Systolic BP (mmHg) ← Percentile of Height →							Diastolic BP (mmHg) ← Percentile of Height →						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	80	81	83	85	87	88	89	34	35	36	37	38	39	39
	90th	94	95	97	99	100	102	103	49	50	51	52	53	53	54
	95th	98	99	101	103	104	106	106	54	54	55	56	57	58	58
	99th	105	106	108	110	112	113	114	61	62	63	64	65	66	66
2	50th	84	85	87	88	90	92	92	39	40	41	42	43	44	44
	90th	97	99	100	102	104	105	106	54	55	56	57	58	58	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
	99th	109	110	111	113	115	117	117	66	67	68	69	70	71	71
3	50th	86	87	89	91	93	94	95	44	44	45	46	47	48	48
	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	110	112	113	63	63	64	65	66	67	67
	99th	111	112	114	116	118	119	120	71	71	72	73	74	75	75
4	50th	88	89	91	93	95	96	97	47	48	49	50	51	51	52
	90th	102	103	105	107	109	110	111	62	63	64	65	66	66	67
	95th	106	107	109	111	112	114	115	66	67	68	69	70	71	71
	99th	113	114	116	118	120	121	122	74	75	76	77	78	78	79
5	50th	90	91	93	95	96	98	98	50	51	52	53	54	55	55
	90th	104	105	106	108	110	111	112	65	66	67	68	69	69	70
	95th	108	109	110	112	114	115	116	69	70	71	72	73	74	74
	99th	115	116	118	120	121	123	123	77	78	79	80	81	81	82
6	50th	91	92	94	96	98	99	100	53	53	54	55	56	57	57
	90th	105	106	108	110	111	113	113	68	68	69	70	71	72	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
	99th	116	117	119	121	123	124	125	80	80	81	82	83	84	84
7	50th	92	94	95	97	99	100	101	55	55	56	57	58	59	59
	90th	106	107	109	111	113	114	115	70	70	71	72	73	74	74
	95th	110	111	113	115	117	118	119	74	74	75	76	77	78	78
	99th	117	118	120	122	124	125	126	82	82	83	84	85	86	86
8	50th	94	95	97	99	100	102	102	56	57	58	59	60	60	61
	90th	107	109	110	112	114	115	116	71	72	72	73	74	75	76
	95th	111	112	114	116	118	119	120	75	76	77	78	79	79	80
	99th	119	120	122	123	125	127	127	83	84	85	86	87	87	88
9	50th	95	96	98	100	102	103	104	57	58	59	60	61	61	62
	90th	109	110	112	114	115	117	118	72	73	74	75	76	76	77
	95th	113	114	116	118	119	121	121	76	77	78	79	80	81	81
	99th	120	121	123	125	127	128	129	84	85	86	87	88	88	89
10	50th	97	98	100	102	103	105	106	58	59	60	61	61	62	63
	90th	111	112	114	115	117	119	119	73	73	74	75	76	77	78
	95th	115	116	117	119	121	122	123	77	78	79	80	81	81	82
	99th	122	123	125	127	128	130	130	85	86	86	88	88	89	90

Conditions associated with hypertension
RENAL Hemolytic- Uremic Syndrome, Pyelonephritis, Multicystic kidney, Acute postinfectious glomerulonephritis, Vesicouretral reflux nephropathy, Renal tumors
DRUGS AND POISONING Cocaine,Oral contraceptives, Amphetamine, Corticosteroids and adrenocorticotropic hormone, Vit D intoxication
CENTRAL AND AUTONOMIC NERVOUS SYSTEM Intracranial mass/ hemorrhage, Increased intracranial preassure, Encephalitis
VASCULAR Coarctaion of thoracic or abdominal aorta, Renal artery lesions
ENDOCRINE Hyperthyroidism, Hyperparathyroidism, Congenital Adrenal Hyperplasia, Cushing Syndrome, Pheochromacytoma

Case

- A ten year old boy was admitted to the hospital because of hypertension. He also complains of nausea and vomitting which occur only in the morning, headaches and clumsiness. What do you suspect?

The doctor of the future will give no medicine, but will educate his patients in the care of the human frame, in diet, and in the cause and prevention of disease. Thomas A. Edison(1847-1931)

Health is not simply the absence of sickness. Hannah Green