

Chronic Disease in children .A holistic and functional view

Dr K Babu MD Paed

Food Sheath

Vital Air Sheath

Mind Sheath

Intellect Sheath

Bliss Sheath

Soul/Atma

Anandamaya kosh

Vigyanamaya kosh

Manomaya kosh

Pranamaya kosh

Annamaya kosh

Eight fold steps of Yoga also leads to Soul

Annamaya Kosha

Pranamaya Kosha

Monomaya kosha

Vigyanmaya kosha

Anandamaya Kosha

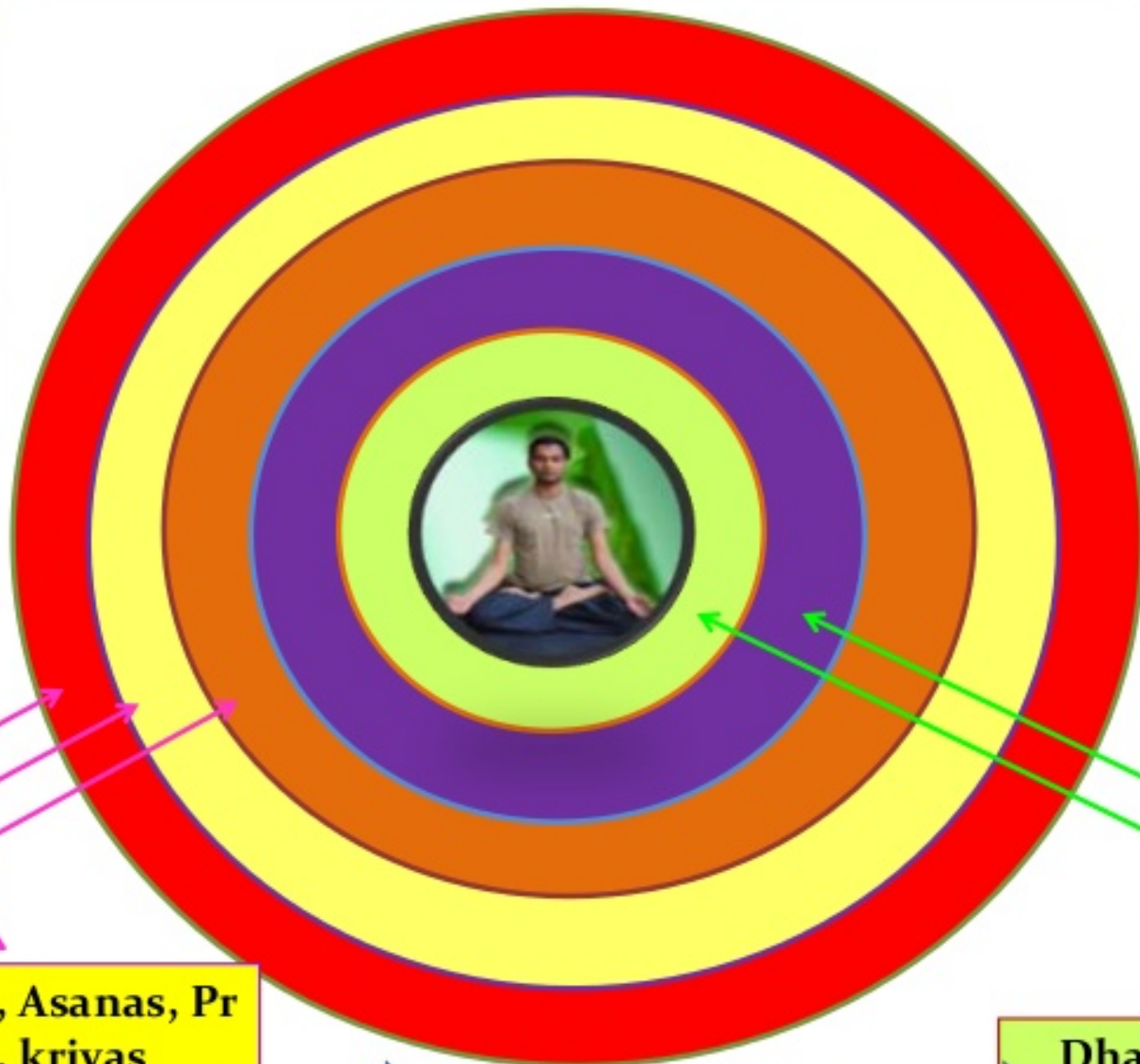
Physical Body

Pranic Body

Mental Body

Intellectual Body

Blissful Body



Outer world

Inner World

Yama, Niyama, Asanas, Pranayamas, kriyas, Breathing Exercise, and Yogic diet

Pratyahara

Dharan, Dhyana and Samadhi

PANCH KOSHA

ANNAMAYA KOSHA

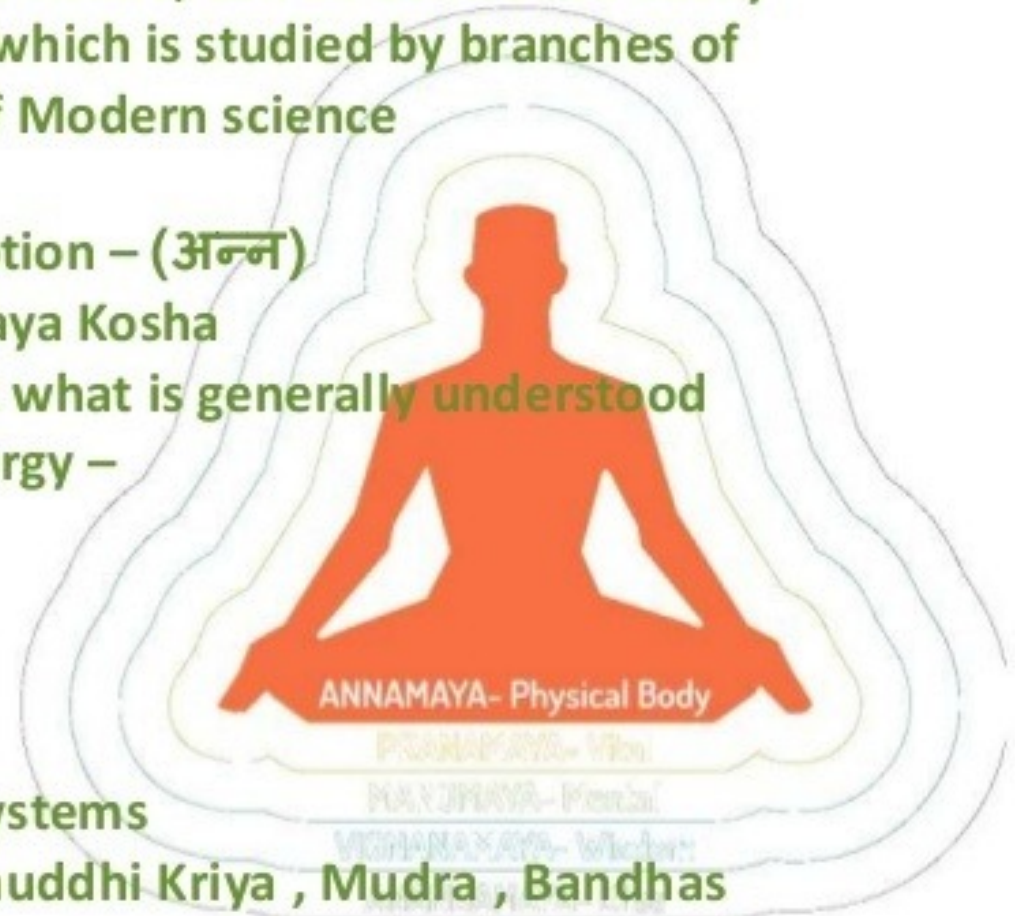
THE FOOD SEATH

- ❖ **First layer** – seen easily, is visible, can be controlled easily
- ❖ This is the physical body which is studied by branches of Anatomy & Physiology of Modern science
- ❖ Can be nourished
- ❖ Based on 'food' consumption – (अन्न)
- ❖ Hence the Name Annamaya Kosha
- ❖ Here "food" basically not what is generally understood
- ❖ Includes all source of energy –
Air + Water + Food

CONSISTS OF -

- ❖ Physical Body
- ❖ All the Physiological Systems

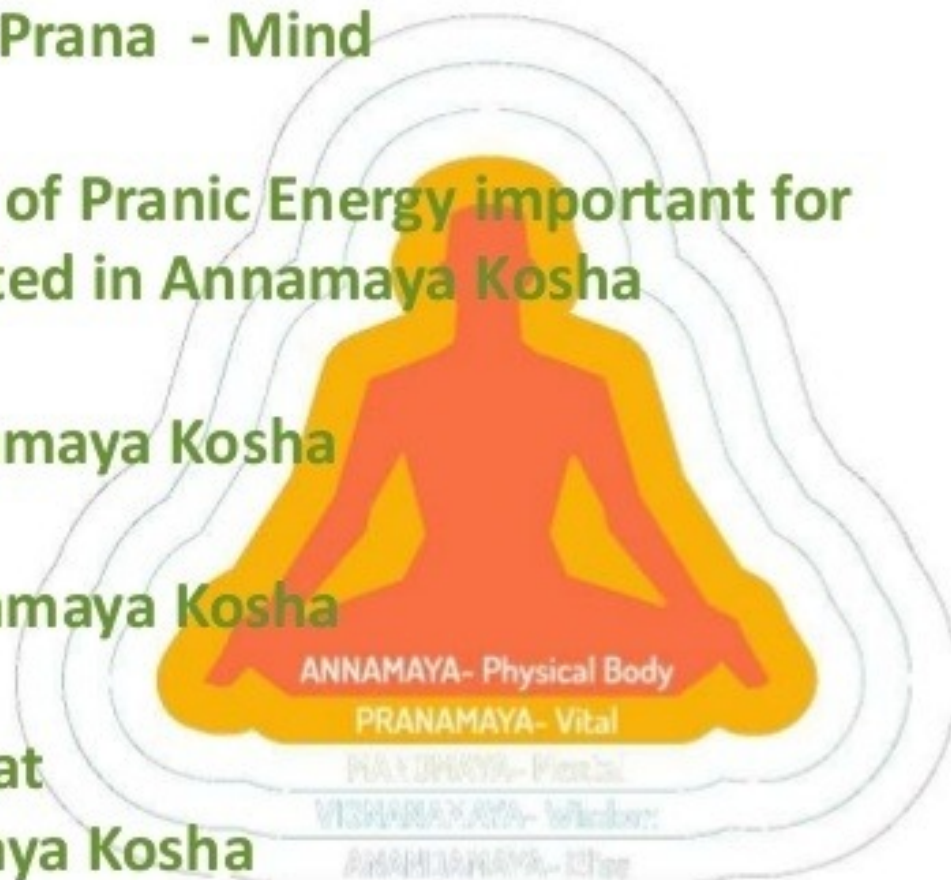
Yogic Practices - Asan ,Shuddhi Kriya , Mudra , Bandhas



PANCH KOSHA PRANAMAYA KOSHA

THE PRANIC SHEATH/ VITAL SEATH

- ❖ 2 parts gross- Breath / Subtle – Mind
Breath - Prana - Mind
- ❖ Free unobstructed flow of Pranic Energy important for good health as manifested in Annamaya Kosha
- ❖ This Layer controls Annamaya Kosha
- ❖ Any distortions in Pranamaya Kosha gets manifested as psychosomatic disease at physical level – Annamaya Kosha



PANCH KOSHA

MANOMAYA KOSHA

THE MENTAL SHEATH

❖ Third Level – Mental Level

❖ Refers to the Mind

❖ Mind does not have any biological structure.

❖ Mind does not have any physical dimension

❖ Yet Mind is most important part

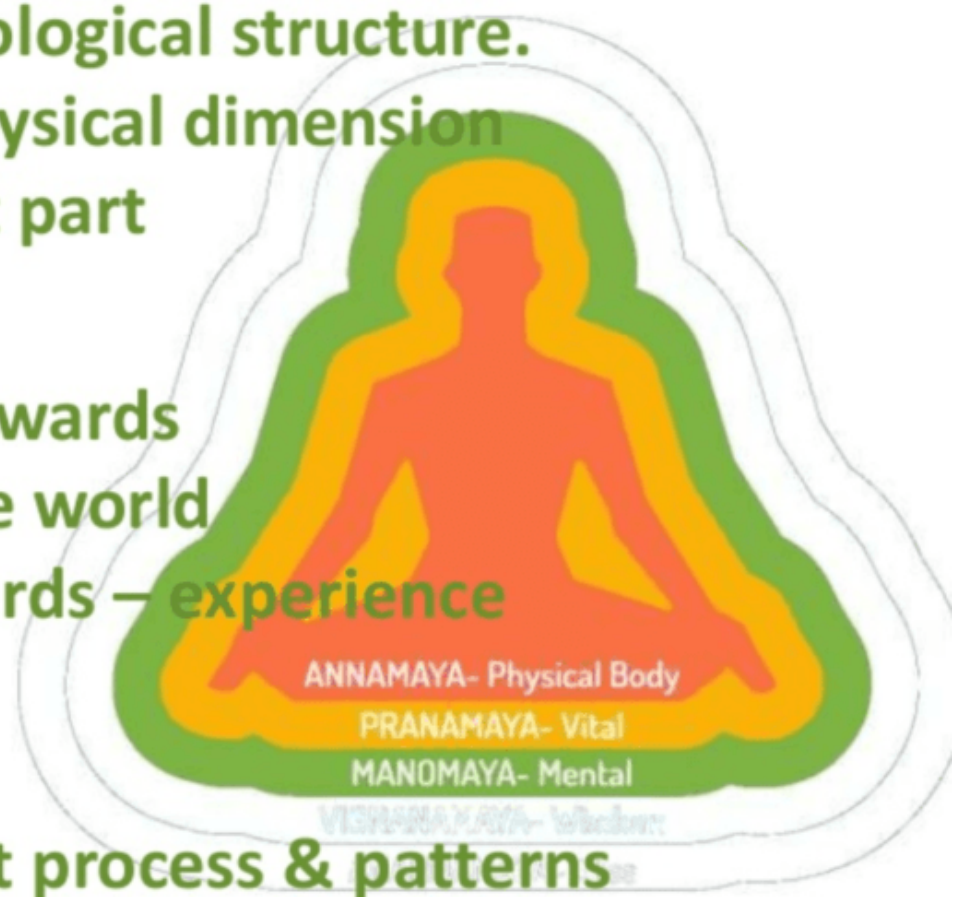
मन सर्व सजीव

❖ It has capacity to move outwards and understand the outside world

❖ Also capacity to move inwards – experience & understand Inner Self

❖ Dual function

❖ Seat of emotions & thought process & patterns



PANCH KOSHA

ANANDMAYA KOSHA

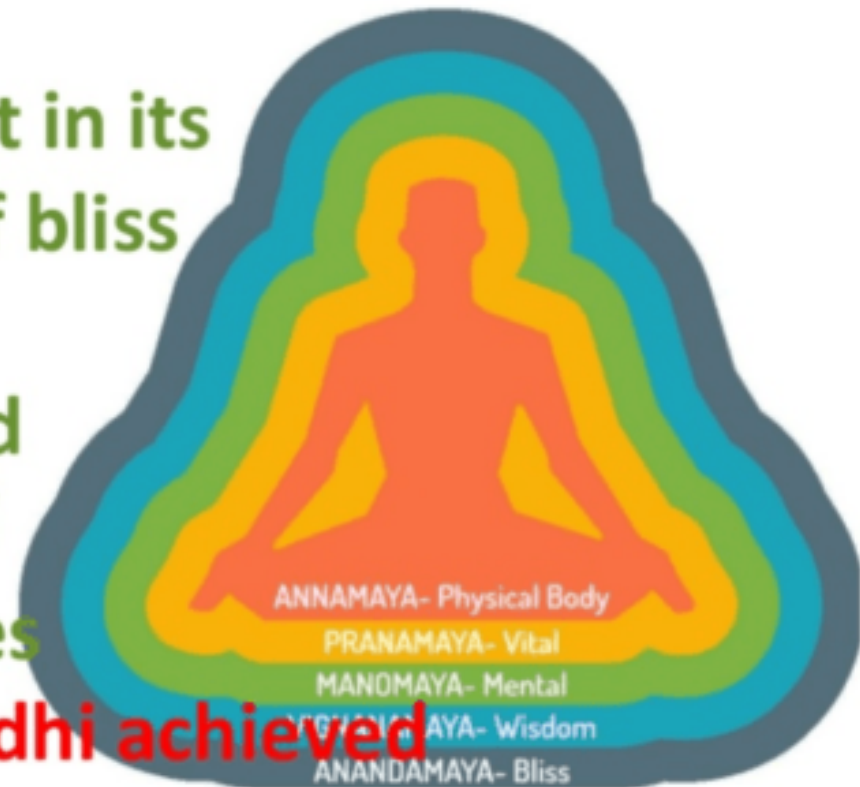
SHEATH OF BLISS

❖ 5TH & Final Level of Existance

❖ Most subtle of all

❖ The Chitta, believed to rest in its Intrinsic & Natural state of bliss

❖ Chitta in this level believed to be free from all Vrittis / Fluctuations / Disturbances

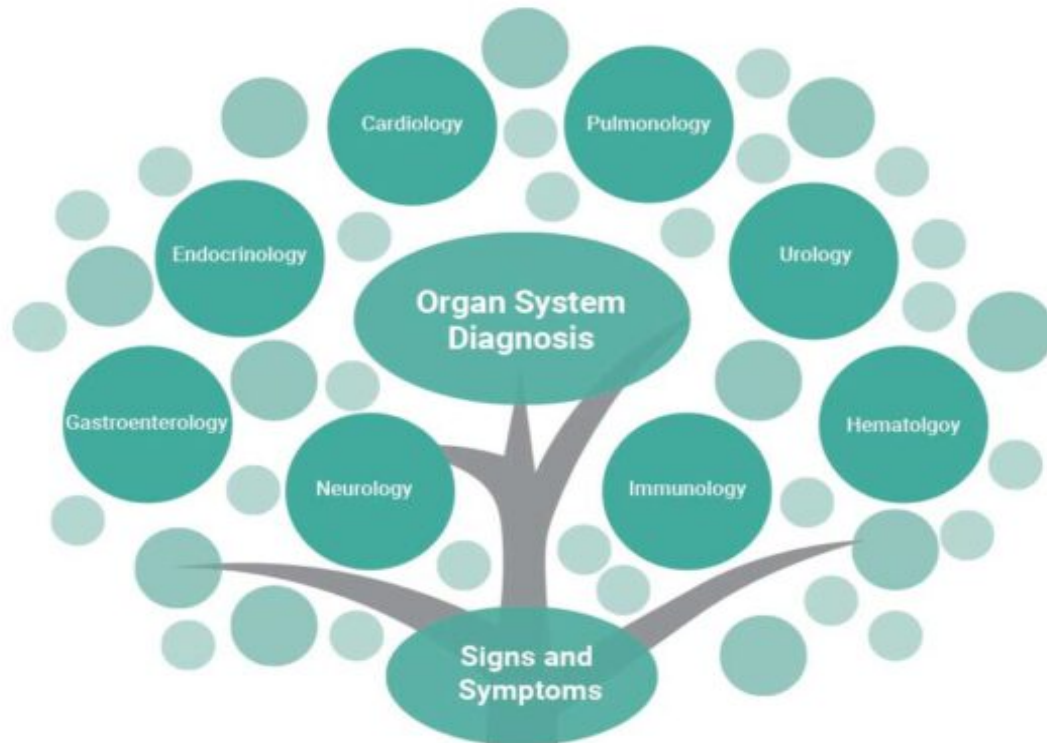


Here state of Nirbeeja Samadhi achieved

Sanskrit	English	Body	Benefit	Benefit	View	Function
Annamaya	Body	Physical	Health	Swasth	Charma	Work VPK
Pranmaya	Energy	Subtle	Talent, skill	Kala	Karma	Energise SRT
Manomaya	Mind	Subtle	Sensitive	Samvedans heel	Marma	Emotion SRT
Gyanmaya	Intelligence	Subtle	Conscience	Vivek	Vivek	Wisdom SRT
Anandmay	Imprints	Causal	Gratitude	Kritagya	Bhav	Destiny

Vāta Doṣa

Subtype	Element & Meaning	Seat	Site(s) of Movement	Direction	Physiological Functions
Prāṇa	Ether Lead breath	Head, heart	Head, throat, chest, sense organs	Downward, inward	<i>Governs inhalation, respiration, flow of intelligence, sensory perception, motor response. Maintains cells' life function, heart function; swallowing, sneezing, expectoration. Vital force.</i>
Udāna	Air Upward breath	Diaphragm, throat	Nose, throat, navel	Upward	<i>Speech, exhalation, vomiting, retrieves memory. Energy, strength Kundalini rising, enlightenment.</i>
Vyāna	Water Pervading breath	Heart, whole body	Entire body with great speed	Circular, circulation	<i>Circulation, walking, gait Tremors, twitching Heat distribution, sweating Open/closing eyes</i>
Samāna	Fire Equalizing breath	Small intestine	Abdominal viscera Liver, pancreas, spleen	Linear	<i>Digestion, absorption, peristalsis, secretion of enzymes. Governs movement in GI tract.</i>
Apāna	Earth Downward breath	Colon	Hips, thighs, colon, abdomen, reproductive organs	Downward, outward	<i>Elimination of: Reproductive fluids, fetus, menstrual blood, urine feces, Nourishes vāta. Governs movement of food in colon, absorbs water & minerals.</i>



The Fundamental Organizing Systems and Core Clinical Imbalances

Assimilation
 Digestion, Absorption, Microbiota/GI, Respiration

Defense and Repair
 Immune system, inflammatory Processes, Infection and Microbiota

Energy
 Energy regulation, Mitochondrial function

Bioretransformation and Elimination
 Toxicity, Detoxification

Communication
 Endocrine, Neurotransmitters, Immune Messengers, Cognition

Transport
 Cardiovascular, Lymphatic systems

Structural Integrity
 From the subcellular membranes to the musculoskeletal system

Antecedents, Triggers, and Mediators

Mental, Emotional, Spiritual Influences

Genetic Predisposition

Experiences, Attitudes, Beliefs

Sleep/Relaxation

Exercise/Movement

Nutrition/Hydration

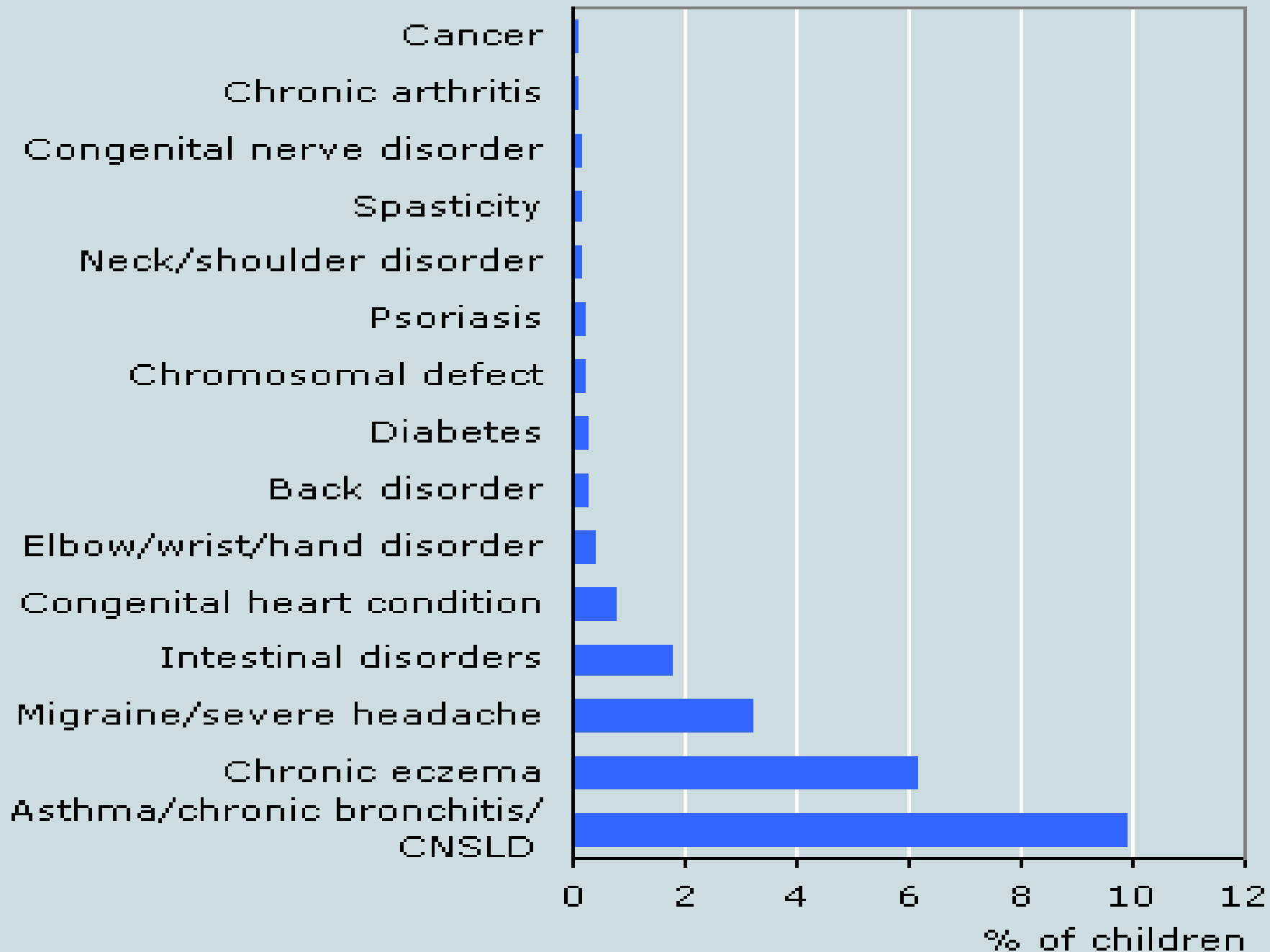
Stress/Resilience

Relationships/Networks

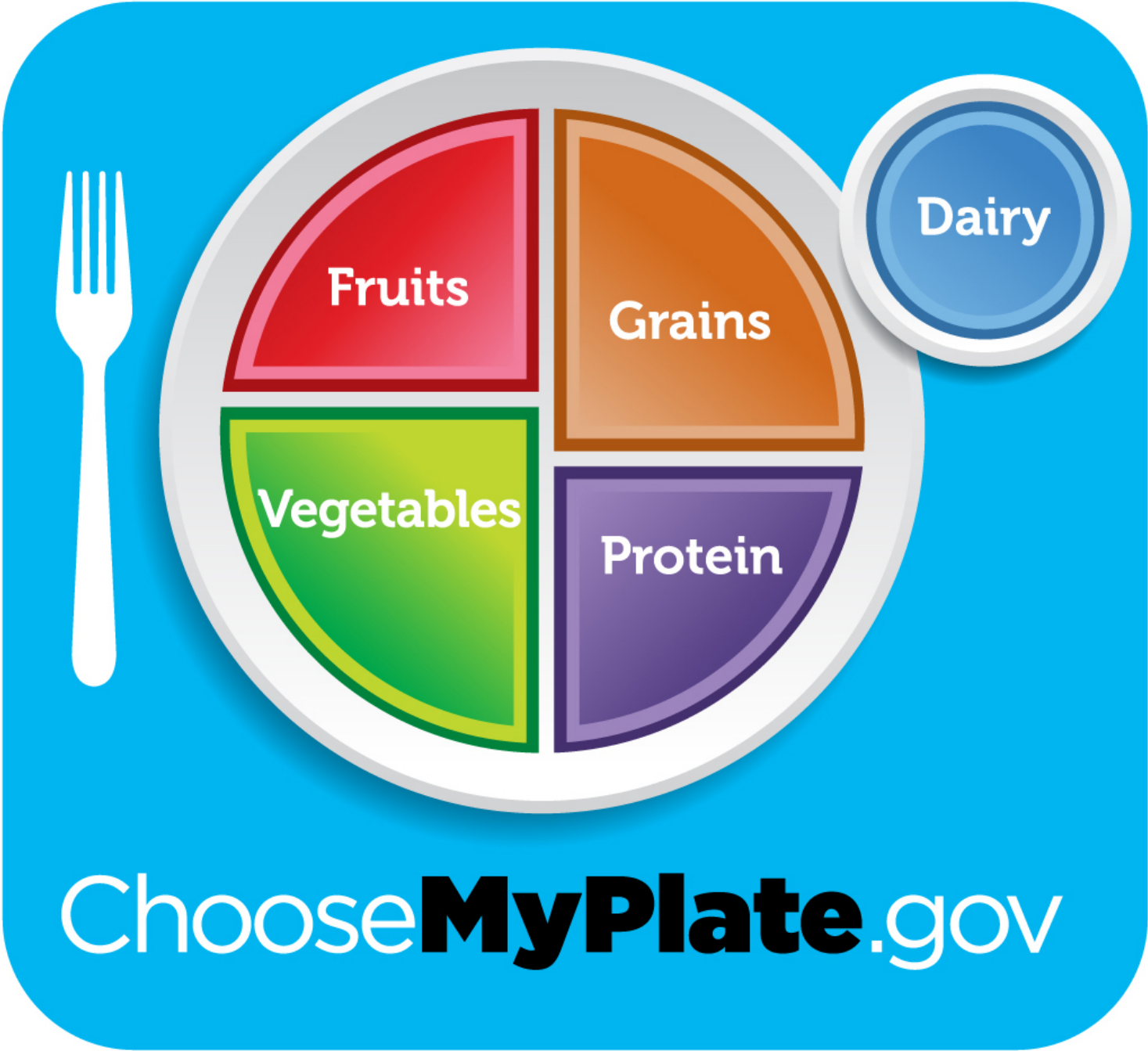
Trauma

Micro-organisms

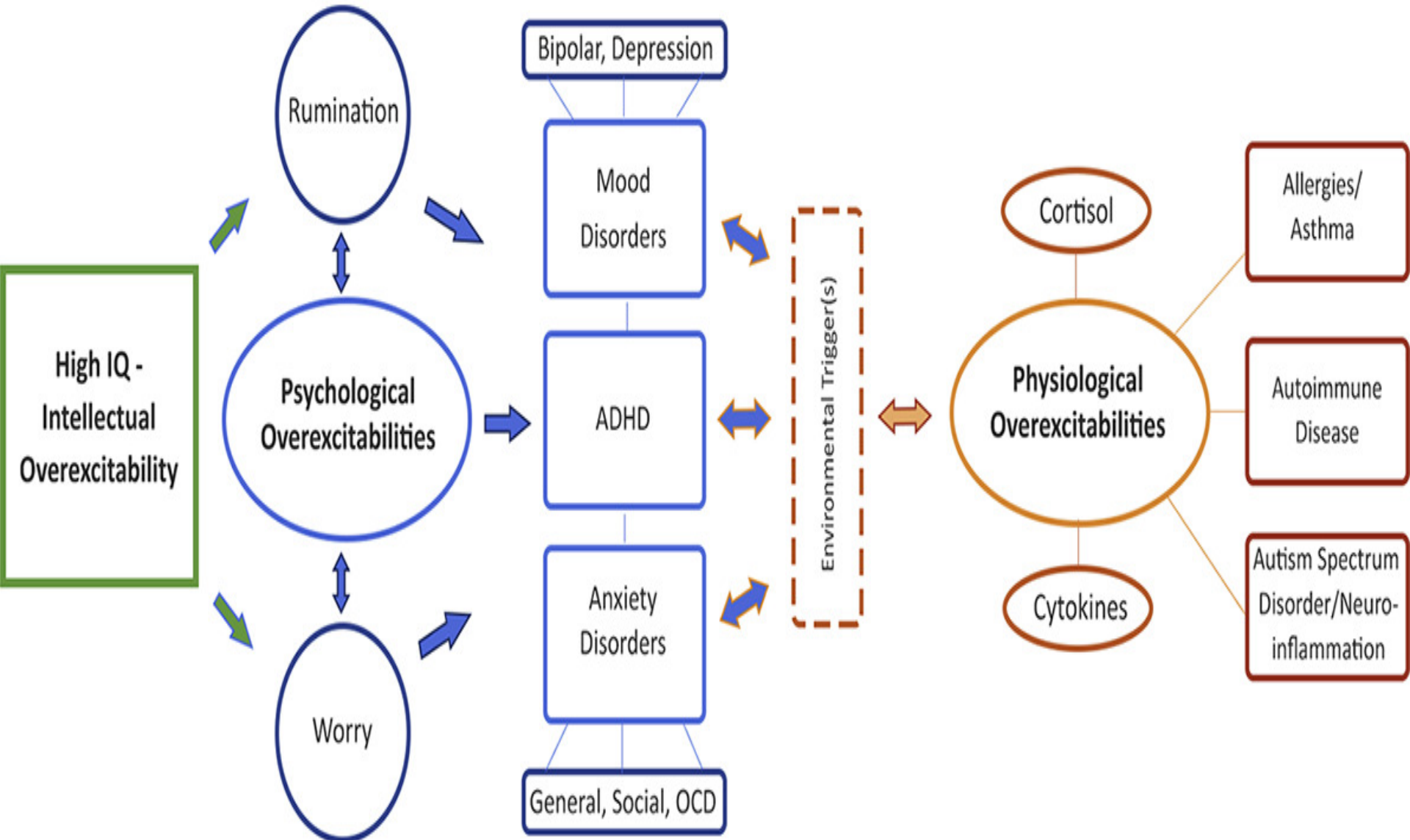
Environmental Pollutants



Source: CBS



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Surveillance, synaptic remodelling



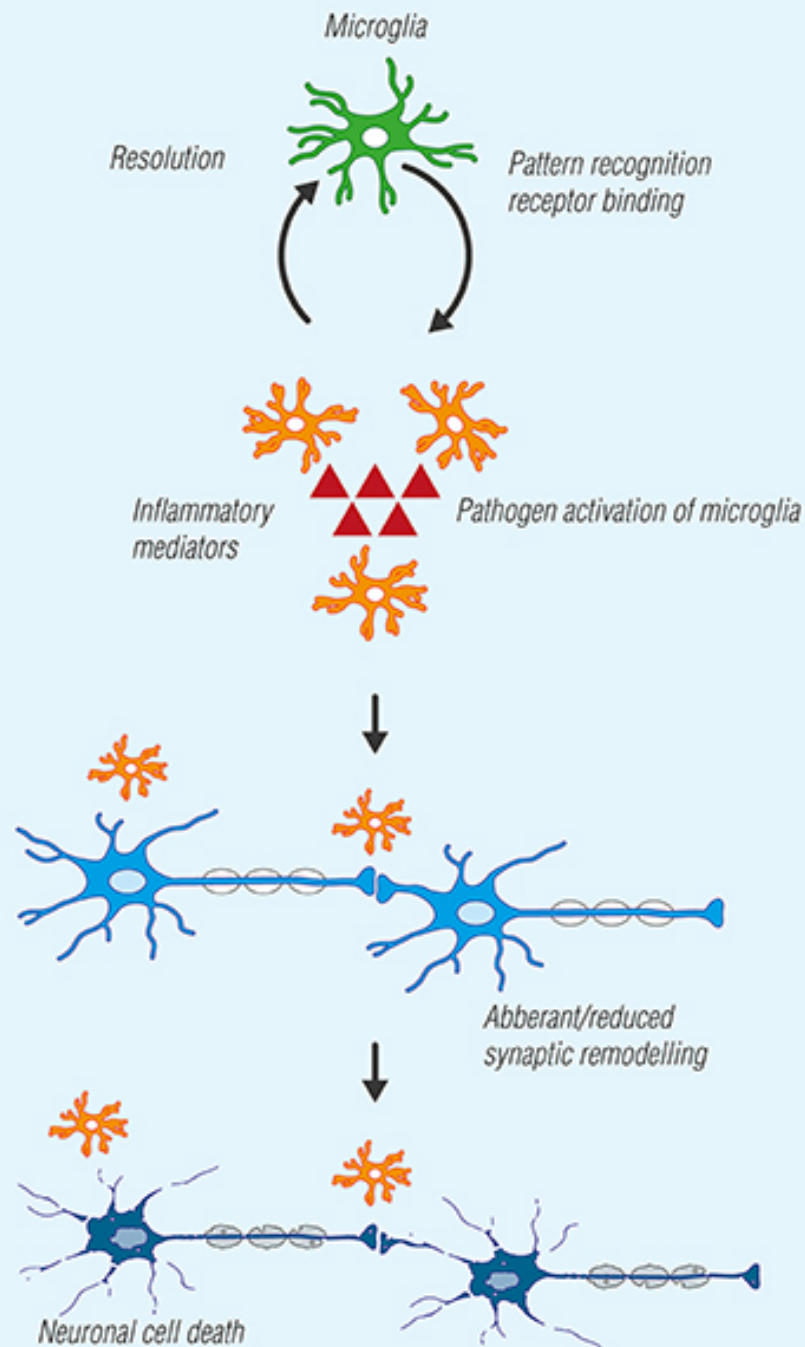
Innate immune response



Non-resolving inflammation



Neurodegeneration



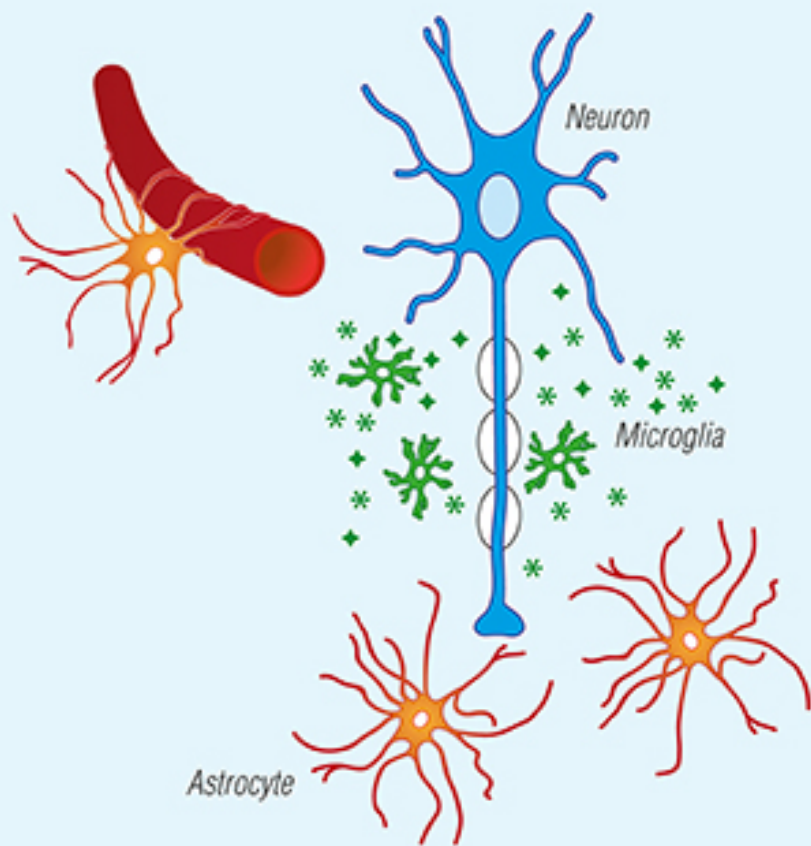
Initiation
Aging, trauma, stress

Amplification
Systemic inflammation, obesity, diabetes

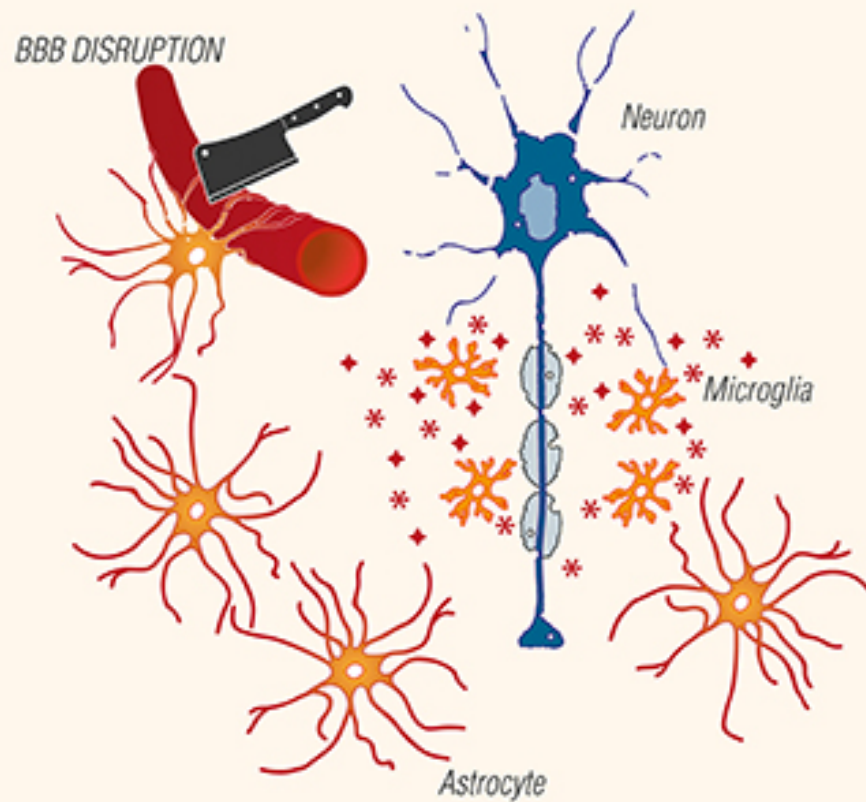
Consequences
Neuronal cell damage, non-resolving inflammation

NEURON FATE

PHYSIOLOGICAL



PATHOLOGICAL



Neurological disorders



- Nerve and muscle
- Multiple sclerosis
- Parkinson's disease
- Stroke
- Epilepsy
- Headache and facial pain
- Neurological infections
- Head injury and tumour
- Spinal conditions
- Congenital disorders
- Dementia

Nerve and muscle



- Neuropathy
- Myaesthesia gravis
- Muscular dystrophy
- Myopathy

Neuropathy

□ **Mononeuropathy**

- damage by trauma eg pressure
 - Diabetics – nerves sensitive to pressure
- damage to blood supply (vasa nervorum)
 - Vasculitic diseases

□ **Polyneuropathy**

- Multiple peripheral nerves
- Distal, symmetrical pattern
- Lower limbs before upper limbs
- Causes -
 - Inflammatory
 - Metabolic
 - toxic

Guillain-Barre syndrome

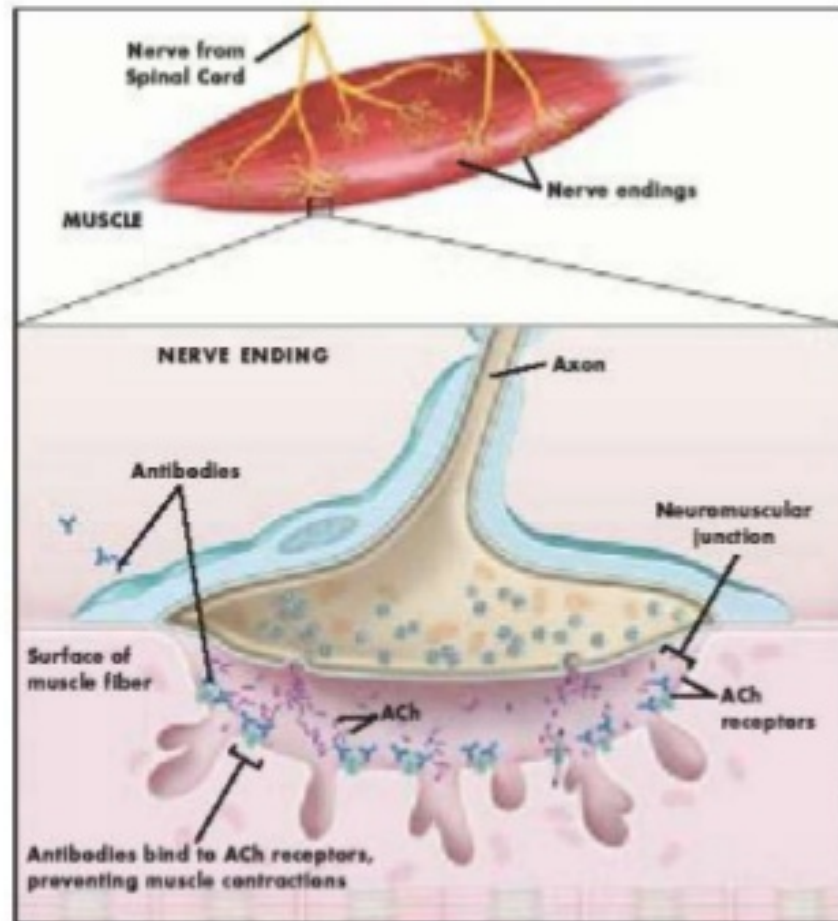


- Acute peripheral neuropathy affecting motor more than sensory nerves
- Usually follows infection
- Clinical features
 - ▣ Symptoms over days/weeks
 - ▣ Bilateral flaccid weakness
 - ▣ Loss of tendon reflexes
 - ▣ May affect muscles of respiration
 - ▣ Burning pains and numbness

Myaesthesia gravis

- Autoimmune disorder
- Most patients have antibodies to acetylcholine receptors at neuromuscular junction
- Rare (annual incidence 0.4 in 100000)
- Clinical features
 - ▣ Fatiguable ptosis
 - ▣ Diplopia with limitation of eye movements
 - ▣ Facial weakness
 - ▣ Dysphagia
 - ▣ Dysarthria
 - ▣ Neck and limb muscle weakness (fatiguable)
 - ▣ Can involve respiratory muscles

Myaesthesia gravis



Myopathy



- Weakness of trunk and proximal limb muscles
- May be weakness of neck flexion and/or extension and muscles of facial expression
- Gait waddling

Inflammatory myopathies

- **Polymyositis**

- ▣ May occur in association with autoimmune connective tissue disorders

- **Dermatomyositis**

- ▣ Rash affects face and knuckles
- ▣ In minority of cases may have associated malignancy

- **Inclusion body myositis**

- ▣ Selective involvement of finger flexors and quadriceps

Dermatomyositis



Spinal root disease (radiculopathy)

- **Cervical radiculopathy**
 - Prolapse of intervertebral disc may compress cervical nerve as exits
 - Neck pain, muscle weakness, loss of tendon reflex, sensory impairment
 - Drugs, physiotherapy, may need surgery
- **Prolapsed lumbar intervertebral disc**
 - **S1 root**
 - Low back pain and tenderness
 - Pain down leg from buttock to ankle (sciatica)
 - Wasting and weakness of gastrocnemius and soleus)
 - S1 sensory loss
 - Depressed ankle reflex
 - **L5 root**
 - Sciatic pain
 - Foot drop (weakness extensor hallucis longus)
 - L5 dermatomal sensory impairment

Spinal cord disease

- **Inherited**
 - Hereditary spastic paraplegia
- **Congenital**
 - Arnold-Chiari (develop syringomyelia)
- **Trauma**
 - Disc protrusions, vertebral fracture
- **Infection**
 - Epidural abscess
- **Inflammation**
 - Post-viral transverse myelitis
- **Neoplasm**
 - Vertebral metastases, cord tumour
- **Vascular**
 - Spinal cord infarct, epidural haematoma
- **Metabolic**
 - Subacute combined degeneration of the cord
- **Degenerative**
 - Cord – motor neurone disease
 - Spine – spondylosis with cord compression

Epilepsy



- 1% of population suffer from epilepsy (recurring tendency to have seizures)
- **Definition**
 - ▣ ' paroxysmal disorder in which cerebral cortical neuronal discharges result in intermittent, stereotyped attacks of altered consciousness, motor or sensory function, behaviour or emotion'
- **Classification**
 - ▣ Partial (simple or complex)
 - ▣ Generalised (absence, myoclonic, tonic-clonic, tonic, atonic)

Headache and facial pain

- **Headache**
 - Primary (uncertain cause)
 - Migraine
 - Cluster headache
 - Tension-type headache
 - Secondary (known cause)
 - Raised intracranial pressure
 - Idiopathic intracranial hypertension
 - Meningeal irritation
 - Giant cell arteritis
 - Metabolic disturbances
- **Facial pain**
 - Trigeminal neuralgia
 - Post-herpetic neuralgia

Migraine

- Unilateral headache
- Associated with nausea, vomiting, visual disturbance
- Typical onset teens and twenties
- Aura may be phase of vasoconstriction
- Then vasodilatation of extracerebral vessels may cause headache
- Treatment
 - ▣ simple analgesia initially
 - ▣ triptan (5HT₁ R agonist)
 - ▣ Prophylactic agents
 - Propranolol
 - pizotifen

Neurological infections

□ Bacterial

- Meningitis
 - Neisseria meningitidis, Haemophilus influenza, Streptococcus pneumoniae
- Brain abscess
 - May complicate otitis media
 - Raised intracranial pressure, focal signs, seizures
- Parameningeal infections
 - Pus in epidural space
- Tuberculosis
- Syphilis
- Lyme disease
- Leprosy

Head injury

- **Damage at impact**
 - ▣ Contusion and laceration
 - ▣ Diffuse axonal injury
- **Secondary complications**
 - ▣ Haematoma
 - ▣ Cerebral oedema
 - ▣ Cerebral ischaemia
 - ▣ Coning
 - ▣ Infection
 - ▣ Post-traumatic epilepsy

Brain tumour

□ Intracranial neoplasms:

□ Benign

- Usually extra-axial (eg. Meninges, cranial nerves)
- Compress brain

□ Malignant

- Usually intra-axial (ie. brain parenchyma)
- Primary (>50% adult intracranial neoplasms)
 - gliomas
- Secondary (15-20% adult intracranial neoplasms)
 - metastases

Congenital disorders



- Cerebral palsy
- Spinal dysraphism
- Infantile hydrocephalus
- Cerebral structural disorders
- Intrauterine infection

Cerebral palsy

- **Pre- or peri-natal insult**

- ▣ Fetal hypoxia or infection
- ▣ Prematurity
- ▣ Traumatic delivery (intracranial haemorrhage)

- **Clinical features:**

- ▣ Spastic diplegia
 - May have shortening and deformity of legs
- ▣ Spastic hemiplegia
 - Associated with hemisensory deficits, learning difficulties and epilepsy
- ▣ Athetoid cerebral palsy
 - Movement disorder develops in early childhood. Usually normal cognitive function

Spinal dysraphism (spina bifida)

- ❑ Failure of closure of neural tube during development
- ❑ Defect of overlying skin
- ❑ Abnormal development of bony structures
- ❑ Particularly affects lumbosacral region
- ❑ Myelomeningocele
 - ▣ Parts of spinal cord in meningeal sac
 - ▣ Paraplegia and incontinence
- ❑ Spina bifida occulta
 - ▣ Mildest form
 - ▣ Failure of fusion of vertebral arches

Congenital disorders (continued)

□ **Infantile hydrocephalus**

- ▣ Enlargement of head
- ▣ Delayed development, learning difficulties, seizures, spastic paraparesis
- ▣ Neurosurgery – eg. ventricular shunt

□ **Cerebral structural disorders**

- ▣ May be incidental findings or may delay development

□ **Intrauterine infection**

- ▣ Rubella
 - Cataracts, hearing loss, learning difficulties, congenital heart disease
- ▣ Neurosyphilis
 - Adult disease plus deafness, keratitis, deformed teeth

Neurogenetics



- Huntington's disease
- Wilson's disease
- Friedreich's ataxia
- Hereditary spastic paraplegia
- Leber's hereditary optic atrophy
- Hereditary spinal muscular atrophies
- Hereditary motor and sensory neuropathy (HMSN)
- Muscular dystrophies

Muscular dystrophy

- **Dystrophinopathies (mutations of X-linked gene for muscle protein dystrophin)**
 - **Duchenne muscular dystrophy**
 - Boys develop proximal weakness in early childhood
 - Difficulty rising from squatting position (use hands to 'climb' up legs – Gowers' sign)
 - Pseudohypertrophy of calf muscles (muscle replaced by fatty tissue)
 - Progressive disability
 - **Becker muscular dystrophy**
 - Presents in adolescence or adult life
 - Can have normal lifespan but progressive disability
 - **Limb-girdle dystrophies**

Neurorehabilitation



- Aim 'to restore patients to maximum capability and independence within limits set by their disability and their needs'

- **Multidisciplinary teams**
 - Physiotherapy
 - Occupational therapy
 - Speech therapy
 - Neuropsychology
 - Social work

Immunity

Boundaries, Immune Dysfunction, & Disease

Immune Response

Boundary	Excess	Deficiency
Internal (self)	Autoimmunity Cardiovascular Neurodegeneration	Cancer
External (non-self)	Allergy, Atopy, Hypersensitivity	Infection

Causes of Autoimmunity

Genetic Factors

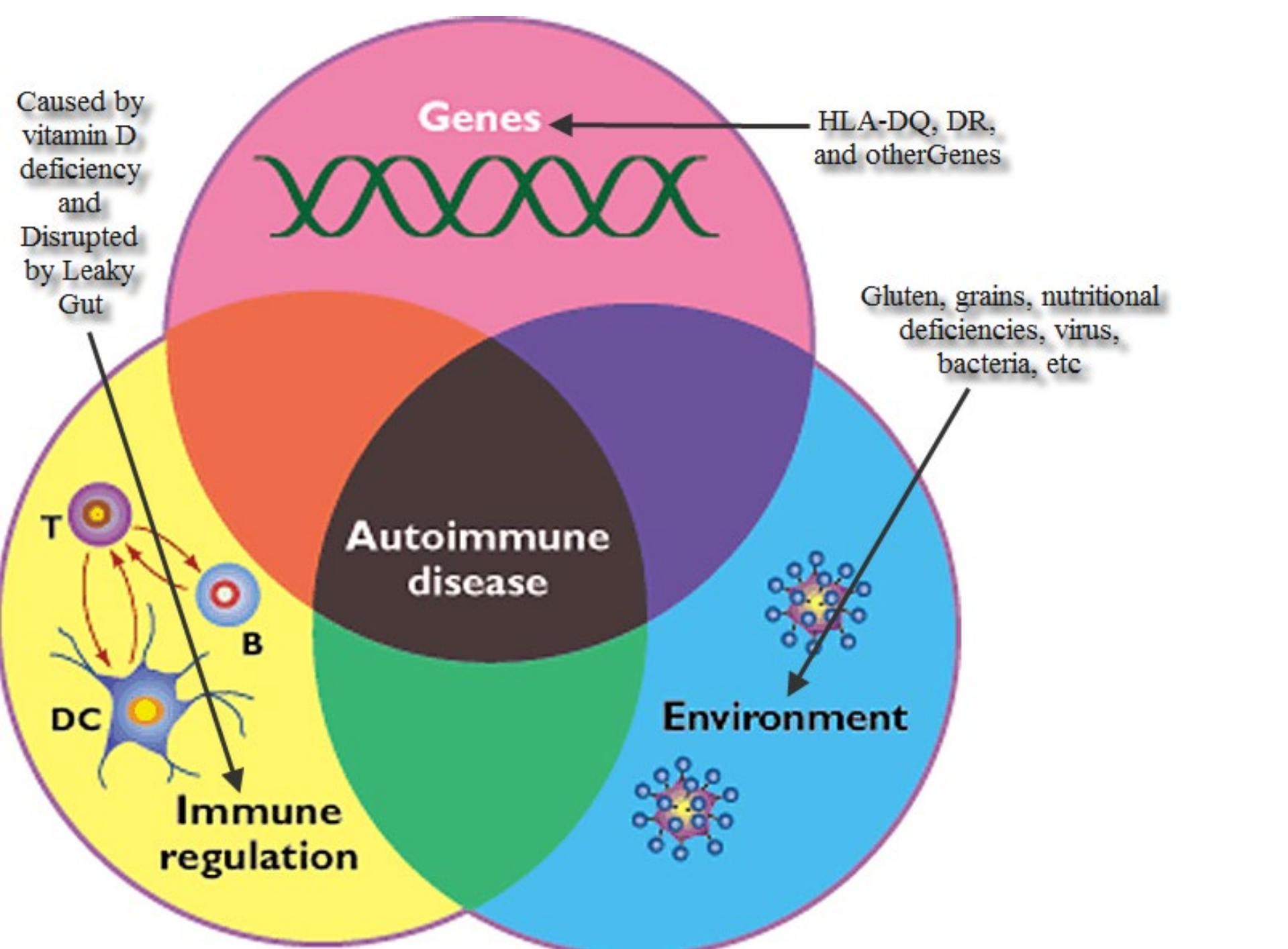
- HLA-DR
- HLA-DQ2 & DQ8
- CTLA-4

Environmental Factors

- Iodine
- Selenium
- Drugs
- Infections
- Stress
- Pollution/Toxins
- Gluten
- Overly sterile environment

Endogenous Factors

- High leptin levels
- Vitamin Deficiencies
- Gut micro-floral balance
- Leaky gut
- Pregnancy
- Menopause
- Rapid Growth
- Puberty
- Aging
- Female Sex
- Emotional Vulnerability



AUTOIMMUNE DISEASE

An **autoimmune disease** develops when your immune system, which defends your body against disease, decides your healthy cells are foreign. As a result, your immune system attacks healthy cells.

SEVERAL FACTORS THAT INFLUENCE AUTOIMMUNE DISORDERS



Genetic Predisposition

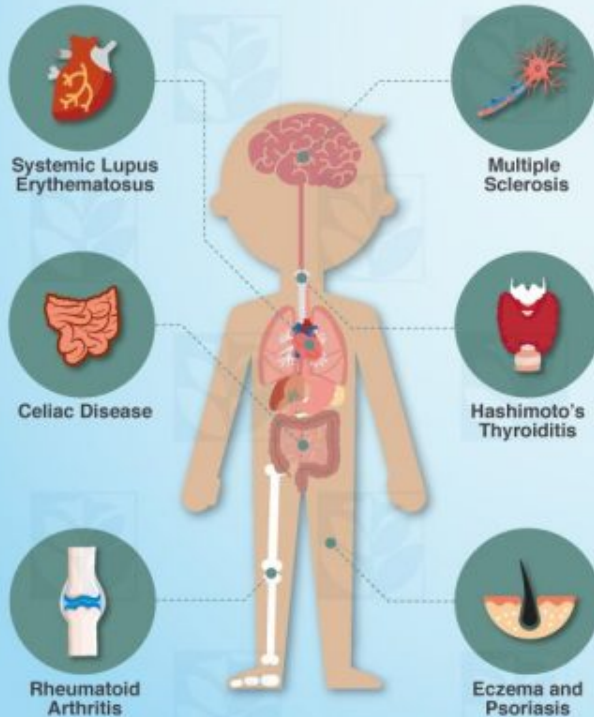


Environmental Factors

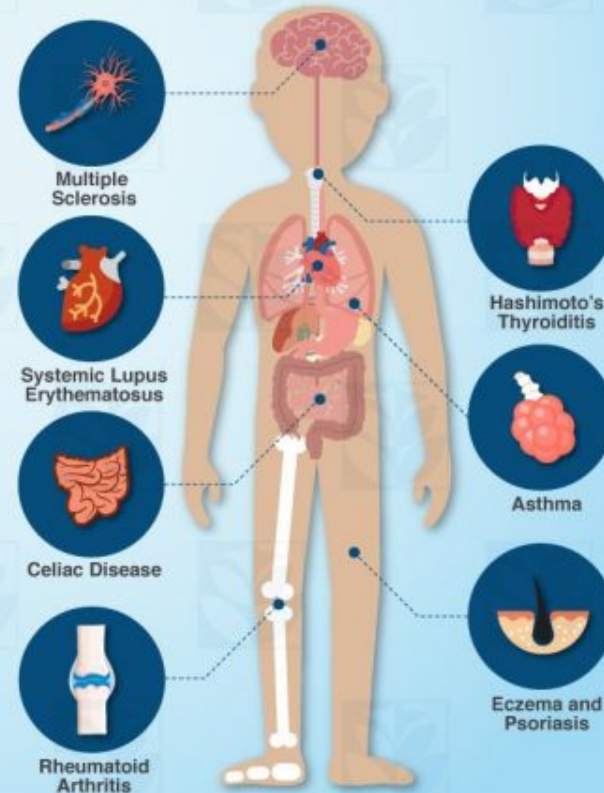


Hormone Influence

AUTOIMMUNE DISEASES IN CHILDREN

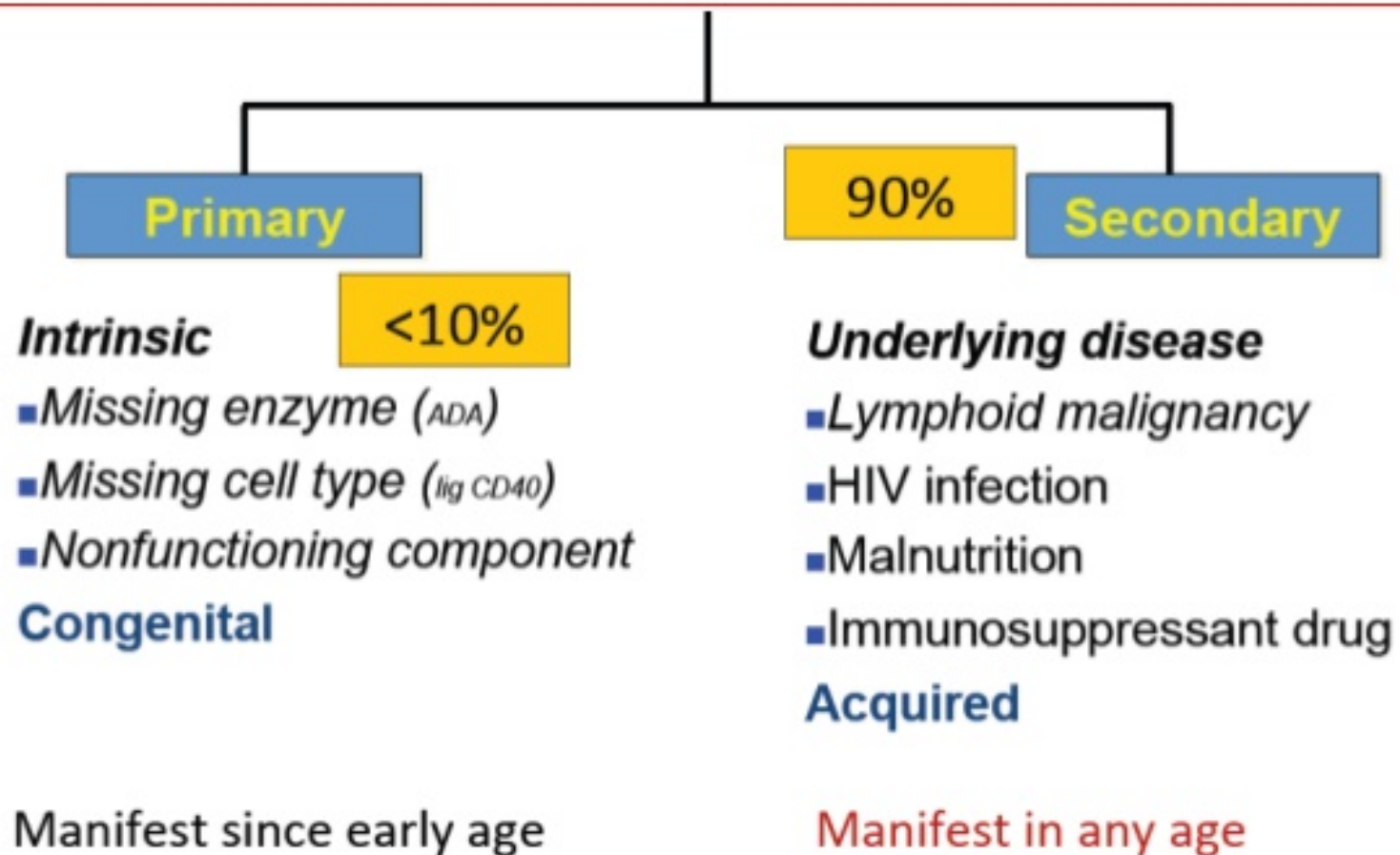


AUTOIMMUNE DISEASES IN ADULT





Immune Deficiency



10 early warning signs for PID (Jeffrey Model Project)

1. Eight or more new ear infection within 1 year
2. Two or more serious sinus infections within 1 year
3. Two or more months on antibiotics with little effect
4. Two or more pneumonias within 1 year
5. Failure of an infant to gain weight or grow normally
6. Recurrent, deep skin or organ abscesses
7. Persistent thrush in mouth or elsewhere on skin, after age 1
8. Need for IV antibiotics to clear infections.
9. Two or more deep-seated infections
10. A family history of PID



Clinical Features of secondary immune deficiency

- Syndromes
- Failure to Thrive
- Bacterial infection
- Viral Infection
- Opportunistic infection
- Chronic diarrhea
- Blood abnormality
- Skin lesions

Allergies

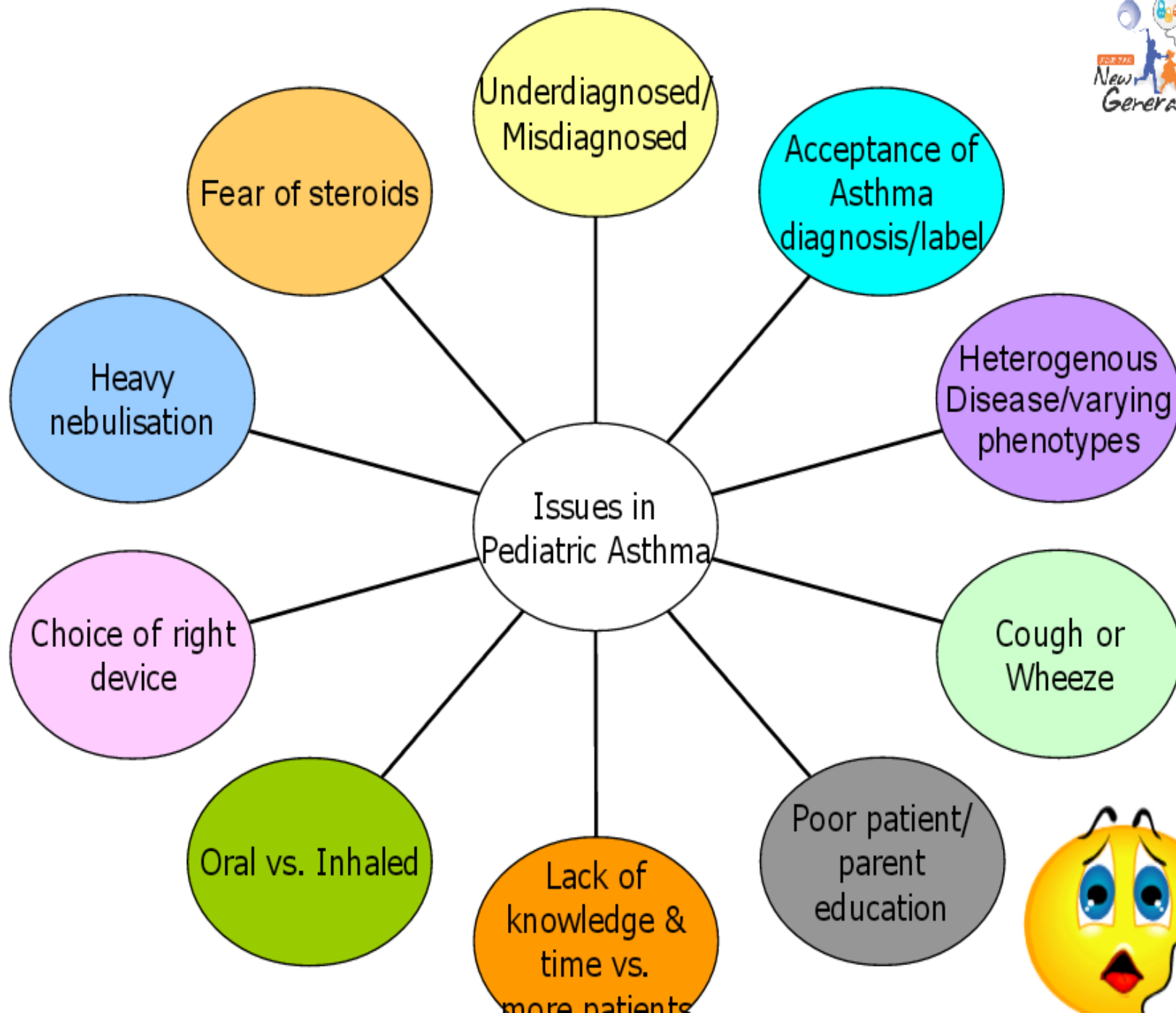


What is Anaphylaxis?

Anaphylaxis is a serious, life-threatening allergic reaction. The most common anaphylactic reactions are to food, insect stings, medications, and latex.

Anaphylaxis requires immediate medical treatment, including an injection of epinephrine along with a trip to an emergency room. If not treated properly, anaphylaxis can be fatal.





History taking (Ask)

- Has the child had an attack or recurrent episode of wheezing (high-pitched whistling sounds when breathing out)?
- Does the child have a troublesome cough which is particularly worse at night or on waking?
- Is the child awakened by coughing or difficult breathing?
- Does the child cough or wheeze after physical activity (like games and exercise) or excessive crying?
- Does the child experience breathing problems during a particular season?

The Early Wheezer (< 3Years)

WALRI (wheeze associated lower respiratory tract infections) or Viral Associated wheeze

- Febrile episodes
- Personal atopy absent
- Family history of asthma / atopy absent
- Variable response to bronchodilators

Early onset asthma

- Afebrile episodes
- Personal atopy present
- Family history of asthma / atopy present
- Predictable good response to bronchodilators

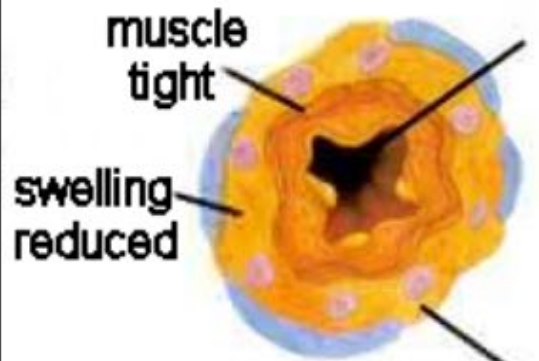


Narrowing of Airways by inflammation and muscle contraction

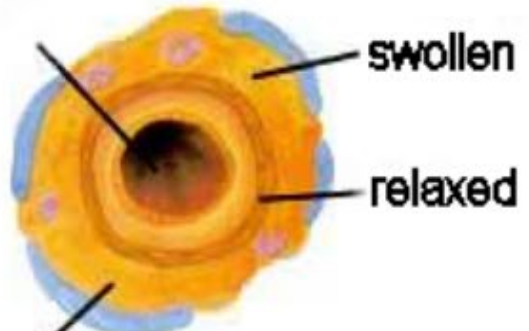


Inhaled Steroids

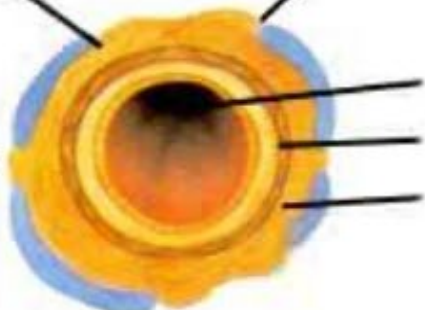
Bronchodilator



Airway partly opened

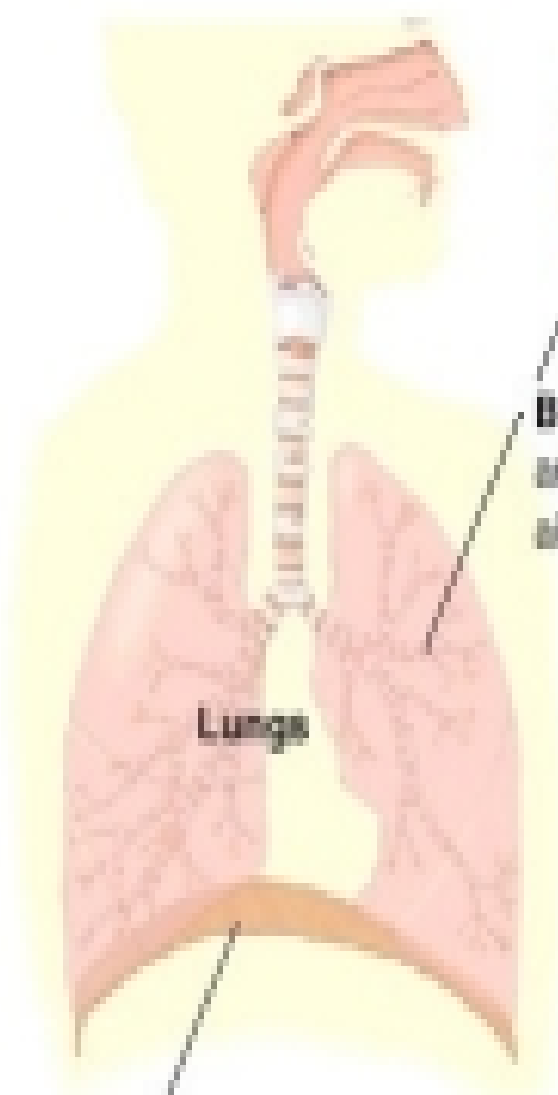


Combined Therapy



**Airway Open
Muscle Relaxed
Swelling Reduced**

Lung

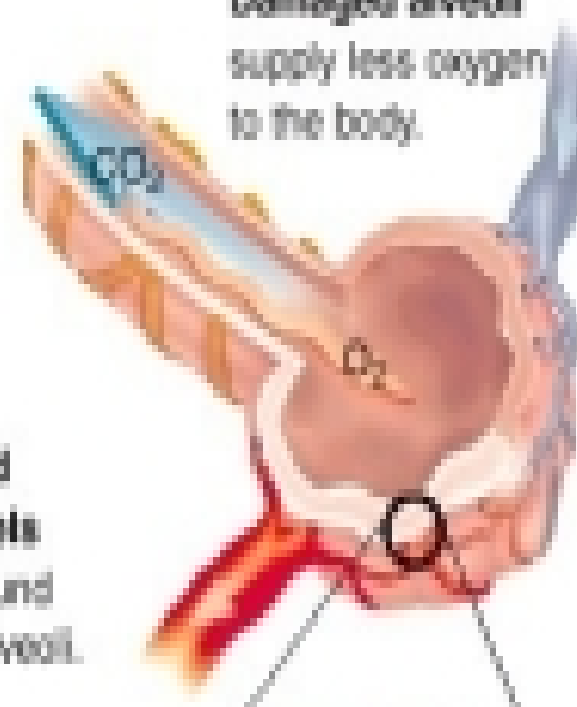
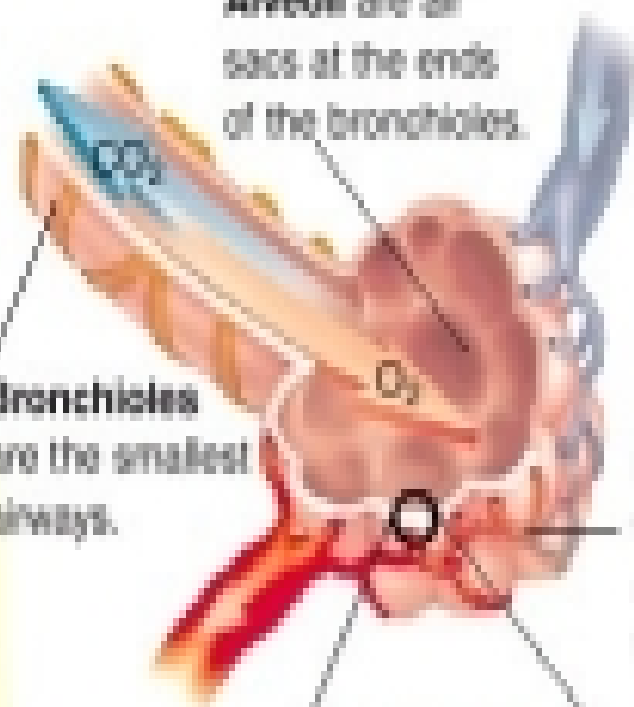


Alveoli are air sacs at the ends of the bronchioles.

Bronchioles are the smallest airways.

Blood vessels surround the alveoli.

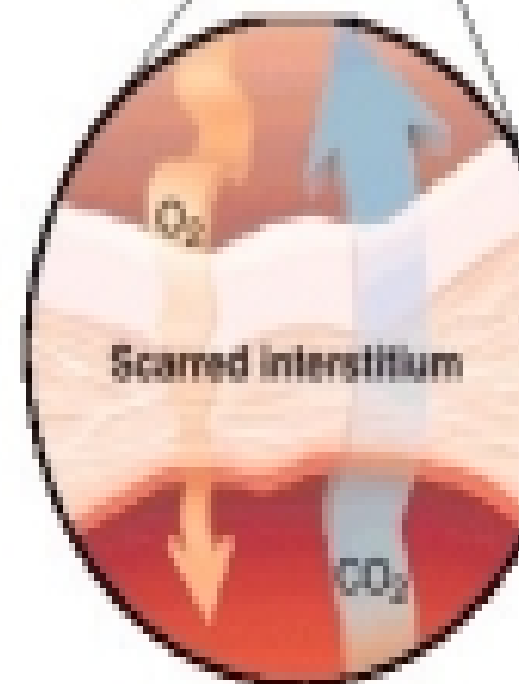
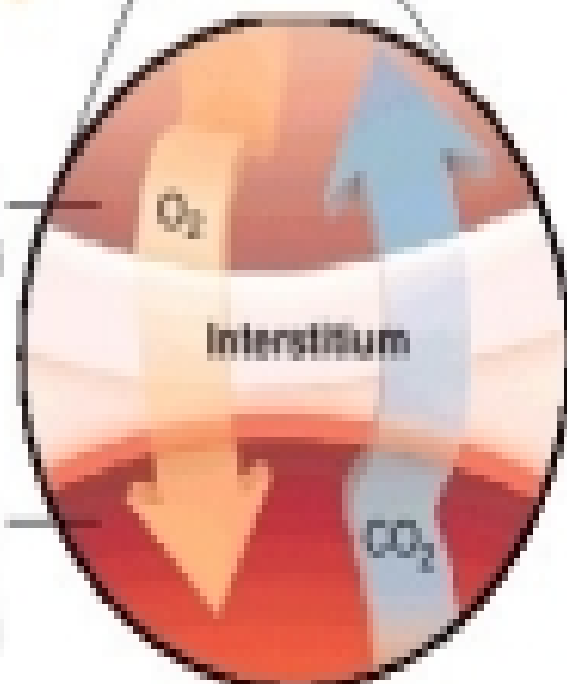
Damaged alveoli supply less oxygen to the body.



Inside alveoli

Interstitial

Inside blood vessel

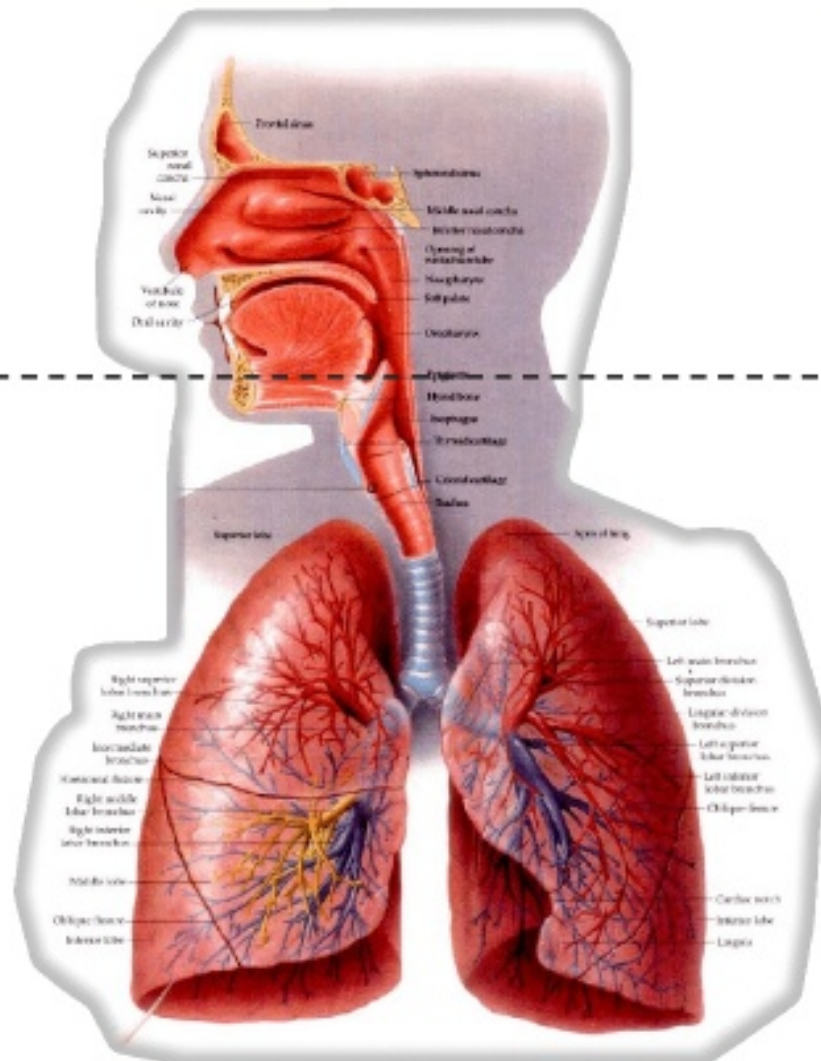


The diaphragm is a muscle below the lungs. It flattens to draw air in as you inhale, then rises as you exhale.

Anatomy

URT

LRT



■ Bronchiolitis

- Respiratory syncytial virus – 50%
- Occurs during the 1st 2 yrs of life (peak – 6 month of age)
- “ball valve” type of obstruction → hypoxemia
V/Q mismatch → respiratory failure
- Critical phase – first 48 – 72 hrs
- Fever. Cough, wheezing, dyspnea
- CXR – increase AP diameter w/ hyperinflation
- MX: oxygen, ribavirin (virazole)

Bronchiolitis in children

- Commonest cause of wheezing in children between 6 months to 3 years
- Resembles asthma
- Diagnosis essentially clinical
- Common viruses causing bronchiolitis in children:
 - Respiratory syncytial virus (RSV)



■ Bronchiolitis Obliterans

- Progressive airways obstruction
- Inflammation & granulations tissue formation of small airways
- Associated with adenovirus infection
- Common complications of lung transplant
- May be delayed by corticosteroids

Non-Infectious Disorders of the Respiratory Tract

■ Congenital

- Nasal hypoplasia
- High arch palate
- Choanal atresia
- Laryngomalacia
- Tracheomalacia
- Congenital Central Hypoventilation Syndrome

■ Acquired

- Allergic rhinitis
- Epistaxis
- FB obstruction/ aspiration
- Nasal polyps
- Nasal septal deviation / perforation

[Congenital]

- Laryngomalacia

- Most common congenital laryngeal abnormality
- Flabbiness of epiglottis & supraglottic aperture
- Floppy arytenoid cartilages
- Short aryepiglottic folds
- Noisy, crowing respiratory sounds during inspiration – “Halak”
- Diagnosed by direct laryngoscopy
- Resolves spontaneously

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Sanchez/Masters
?Laryngomalacia

Obstructive Sleep Apnea (OSA)

- Upper airway obstruction 2nd to adenotonsillar hypertrophy
- Triad: Snoring, nocturnal breathing difficulty, respiratory pauses
- Polycythemia, respiratory acidosis & metabolic alkalosis, RVH
- PSG (polysonograph)- diagnostic “gold standard”

[Acquired]

- Epistaxis


- Kiesselbach's plexus – most common location for bleeding
- Stop spontaneously in most cases
- Local application of oxymetazoline or neosynephrine (0.25 – 1 %)

[Acquired]

- Nasal polyps
 - Benign pedunculated tumors formed from edematous, chronically inflamed nasal mucosa
 - Glistening, gray, grape like masses squeezed bet the nasal turbinates & septum
 - Cystic fibrosis – most common childhood cause of nasal polyposis
 - Mx: intranasal steroids, surgical removal

[Aspiration Pneumonia]

- Predisposing condition
 - Congenital
 - Esophageal atresia
 - Cleft lip/palate
 - Duodenal obstruction
 - GER
 - Acquired
 - Debilitated infants
 - Cerebral palsy


- 
- A large black left bracket and a large yellow right bracket are positioned at the top of the slide. A horizontal bar with a light green-to-white gradient spans the width of the slide below the brackets.
- Materials commonly aspirated:
 - Milk, cereals, food
 - Vomitus
 - Baby powder
 - Hydrocarbon (Kerosene)
 - Lipoid materials
 - Medicated oils
 - Cod liver oils

[Congenital Lung Anomalies]

- Lung agenesis
 - Bilateral – incompatible with life
- Lung hypoplasia
 - Associated w/ persistent fetal hypertension & ipsilateral diaphragmatic hernia

[Tuberculosis in Children]

- Etiology: mycobacterium tuberculosis
- Droplet's inhalation → lungs
- Incubation period: 2 - 10 weeks

- 
- A large black left bracket and a large yellow right bracket are positioned at the top of the slide. A horizontal bar with a light green-to-yellow gradient spans the width of the slide, partially overlapping the brackets.
- Positive PPD
 - > 10 mm induration
 - Children < 5 yr old
 - BCG immunized children
 - > 5 mm induration
 - Children > 5 yr old
 - Non-BCG vaccinated children

[TB Infection vs. Disease]

- TB infection
 - (+) tuberculin skin test
 - No sign & symptoms
 - (-) CXR
- TB disease
 - (+) tuberculin skin test
 - (+) signs & symptoms
 - (+) CXR

Heart

Teratogen

□ Infection

▣ Rubella PDA, peripheral PS

□ Drug

▣ Dilantin PS, AS

▣ Lithium Ebstein anomaly

▣ Alcohol VSD, ASD

▣ Retinoic acid Interrupted aortic arch, TGA, TOF

□ Maternal disease

▣ Diabetes TGA, VSD, cardiomyopathy

▣ SLE Complete AV block

Chromosome Abnormalities

- Down Syndrome (40%) AVSD, VSD
- Trisomy 13 (80%) VSD, PDA
- Trisomy 18 (100%) VSD, PDA
- Turner's Syndrome (35%) Coarctation of aorta
- Marfan's Syndrome Aortic aneurysm, MVP

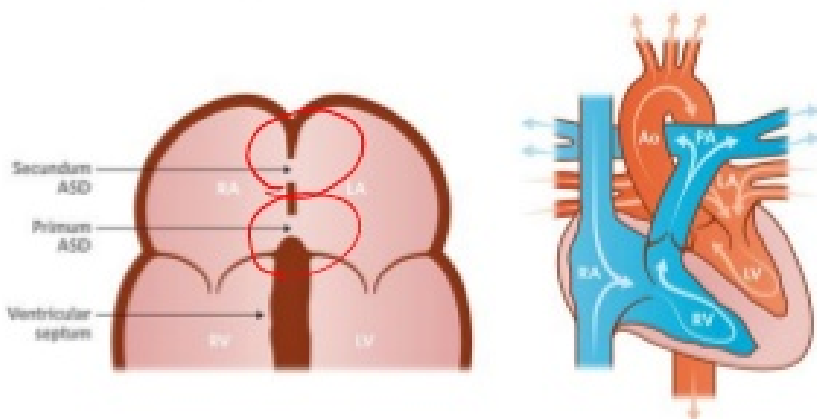
Frequencies of CHD



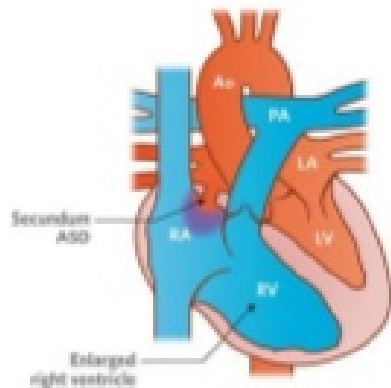
□ VSD	42 %
□ ASD	10 %
□ Pulmonary stenosis	8 %
□ PDA	7 %
□ TOF	5 %
□ AVSD	5 %

Type of ASD

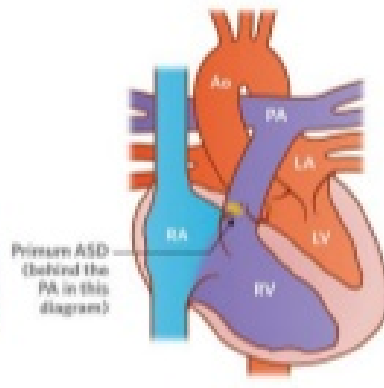
Atrial septal defect (ASD)



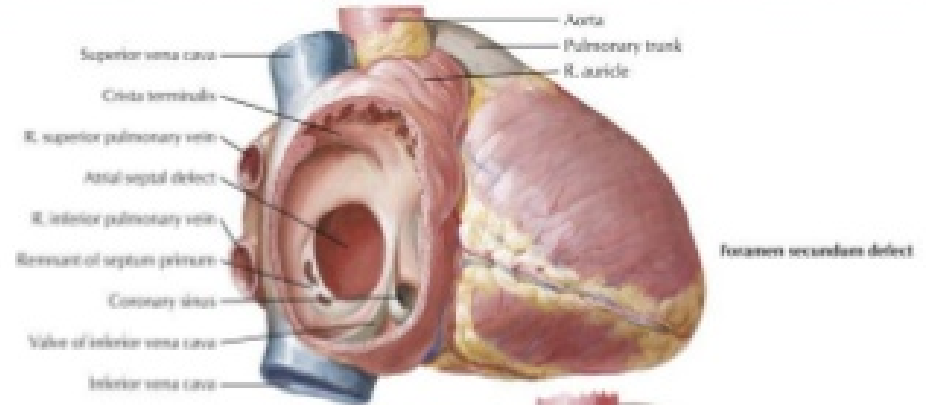
Normal heart and circulation



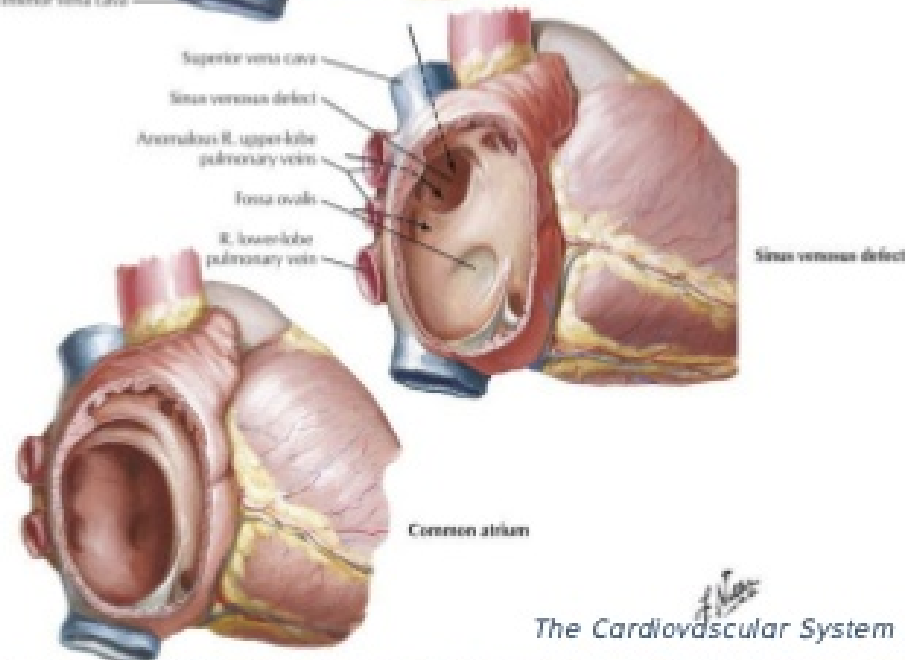
Secundum atrial septal defect



Primum atrial septal defect



Foramen secundum defect



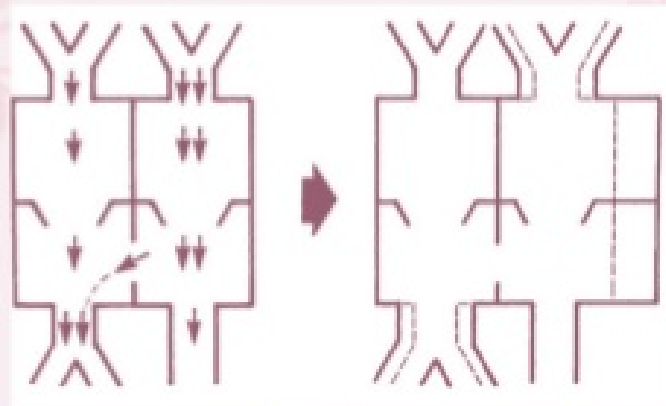
Sinus venosus defect

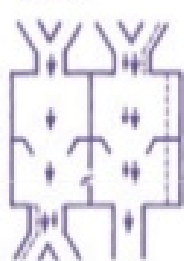
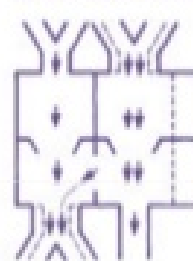
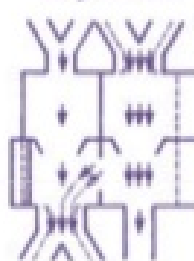
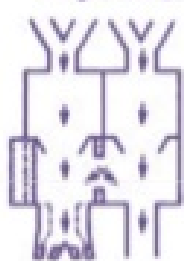
Common atrium

Chest X-ray



Pathophysiology



	Small	Moderate (PVR ↑)	Large (PVR ↑)	Large (PVR ↑)
				
Cardiomegaly on X-rays	No or Minimal	Moderate	Marked	No
RVP (%LVP)	25-30%	30-50%	60-80%	100%
ECG	Normal	LVH LAH(±)	LVH RVH LAH	Pure RVH

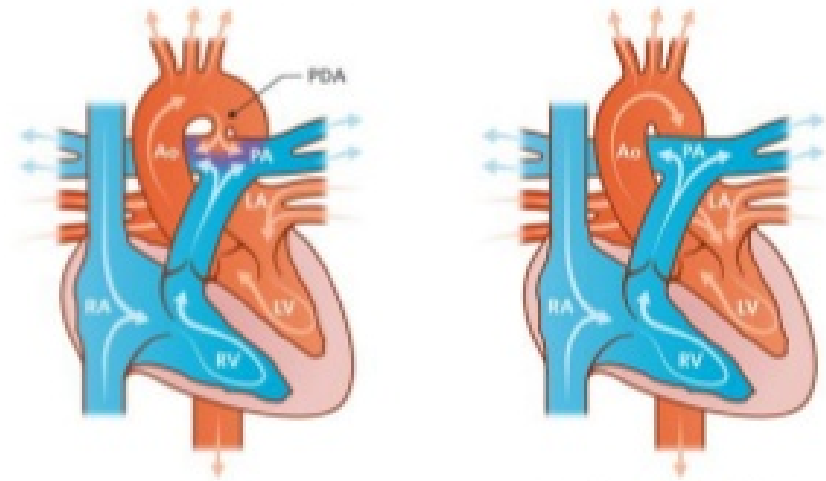
Chest X-ray



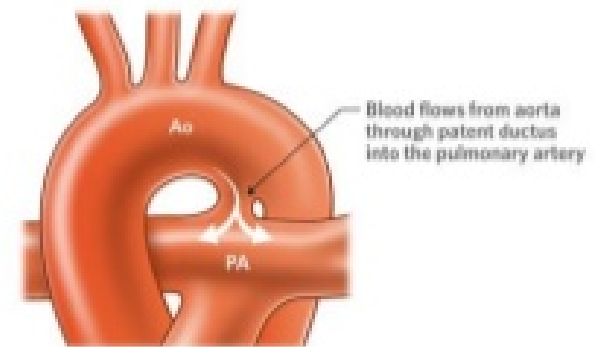
Patent ductus arteriosus (PDA)

- 9 – 12 % of Total congenital heart disease
- 2 fold of prevalence in female than male
- 80 % of Low birth weight (1,200 gm)

Patent ductus arteriosus (PDA)



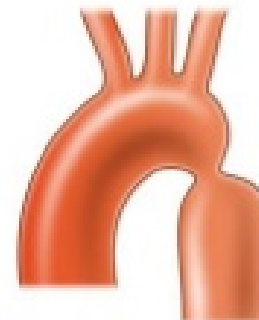
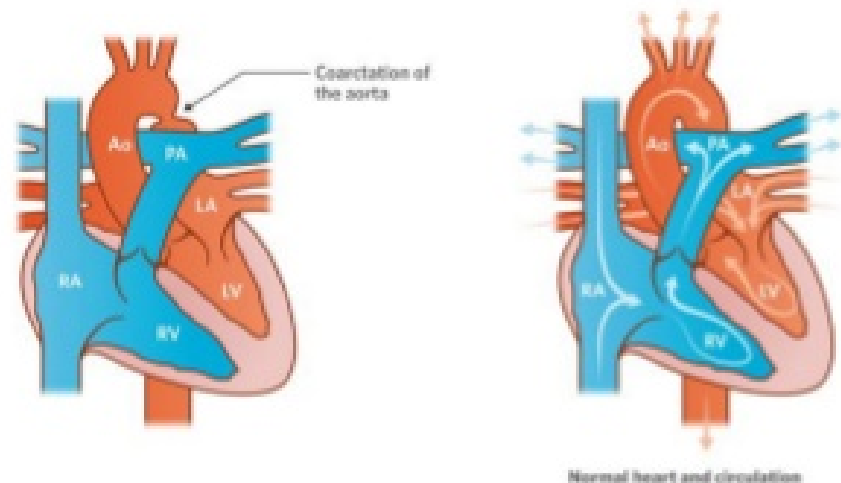
Normal heart and circulation



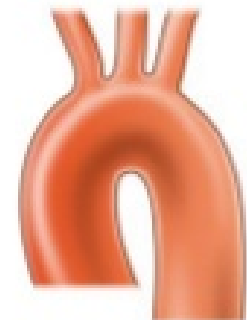
Coarctation of aorta (CoA)

- 6 – 8 % of Total congenital heart disease
- 2-fold of prevalence in male than female
- 35 % associated with Turner syndrome
- Type of Coarctation of aorta
 - Simple CoA → +/- PDA
 - Complex CoA → Associated with other congenital heart disease

Coarctation of the aorta



Coarctation of the aorta



Normal aorta

Kawasaki Disease (KD)

- Now the #1 cause of acquired heart disease
- A systemic vasculitis (etiology-unknown)
- Tests – CBC, CMP, CRP, ESR, EKG, ECHO
- Rx – IVIG at 2g/kg and high-dose ASA
- Prognosis – **Coronary artery dilatation in 15-25% w/o IVIG and 4% w/ IVIG** (if given within 10 days of fever onset). Risk of coronary thrombosis.

Kawasaki – Clinical criteria

- **Fever for at least 5 days AND 4 of the following 5 criteria:**
 - **Eyes** - conjunctival injection (ie- no exudate)
 - **Lips & mouth** - erythema, cracked lips, strawberry tongue
 - **Hands & feet** - edema and/or erythema
 - **Skin** - polymorphous exanthem (ie- any rash)
 - **Unilateral, cervical lymphadenopathy**

Rheumatic Fever

- A post-infectious connective tissue disease
- Follows GAS pharyngitis by 3 weeks (vs. nephritogenic strains of GAS)
- Injury by GAS antibodies cross-reacting with tissue
- Dx – JONES criteria (major and minor)
- Tests – Throat Cx, ASO titer, CRP, ESR, EKG, +/- ECHO
- Rx – PCN x10 days and high-dose ASA or steroids
- 2^o Prophylaxis – daily po PCN or monthly IM PCN

Rheumatic Fever – organs affected

1. **Heart muscle & valves – myocarditis & endocarditis** (pericarditis rare w/o the others)
2. **Joints – polyarthritits**
3. Brain – Sydenham's Chorea (“milkmaid's grip” or better yet, “motor impersistance”)
4. Skin – erythema marginatum (serpiginous border) due to vasculitis
5. Subcutaneous nodules – non-tender, mobile and on extensor surfaces

Kidney

CAUSES

- < 5 year old
 1. **CONGENITAL ANOMALIES**- Renal hypoplasia, dysplasia, congenital nephrotic syndrome, prune belly syndrome, PCKD, RVT, cortical necrosis
 2. **OBSTRUCTIVE UROPATHY**- PUV, PUJ obstruction
 3. HUS
- > 5 year old
 1. Acquired- **GLOMERULONEPHRITIS**
 2. Inherited- Juvenile nephronophthisis, Alport syndrome
- All age groups
 1. **METABOLIC DISORDERS**- cystinosis, hyperoxaluria
 2. Inherited- Polycystic kidney disease

PATHOGENESIS

- HYPERFILTRATION INJURY
- PROTEINURIA
- HYPERTENSION
- HYPERPHOSPHATEMIA

COMPLICATIONS

- **GROWTH RETARDATION**
 - a. Malnutrition, anemia
 - b. Metabolic acidosis
 - c. Bone disease
 - d. Resistance to growth hormone
 - e. Reduced levels of sex hormones
- **ANEMIA**
 - a. Lack of erythropoietin
 - b. Uremia
 - c. Iron and folate deficiency
 - d. Hyperparathyroidism causing myelofibrosis

COMPLICATIONS

- MINERAL & BONE DISORDER (CKD-MBD)
 - a. Decreased production of 1,25 DHD3
 - b. Reduced excretion of Phosphorus
 - c. Stimulation of PTH
 - d. Adynamic lesions
 - e. Metabolic acidosis
- METABOLIC ACIDOSIS
- HYPERKALEMIA
- NEUROLOGICAL ABNORMALITIES-
Encephalopathy, hypotonia, truncal ataxia,
peripheral neuropathy

COMPLICATIONS

- HYPERTENSION
- HYPERLIPIDEMIA
- INFECTIONS
- BLEEDING TENDENCY
- GLUCOSE INTOLERANCE
- PERICARDITIS, LEFT VENTRICULAR DYSFUNCTION

TREATMENT



Treatment of chronic kidney disease should include the following:

- Specific therapy based on diagnosis
- Evaluation and management of reversible causes of renal dysfunction
- Prevention and treatment of complications of decreased kidney function (eg, anemia, bone disease, cardiovascular manifestations, hypertension, growth failure)
- Evaluation and management of comorbid conditions
- Slowing the loss of kidney function
- Preparation for kidney failure therapy
- Replacement of kidney function with dialysis and transplantation if signs and symptoms of uremia are present
- Management of complications

Digestive system



What would be some signs/ symptoms of GI disorders in infants/ children?

- Vomiting/ regurgitation
- Irritability/ fussiness
- Abdominal pain/ distension
- FTT
- Weight loss
- Stool changes
- Abdominal pain

A decorative graphic on the left side of the slide. It features a lightbulb with a yellow glow and several yellow rays emanating from it. The lightbulb is connected to a thin, wavy line that extends downwards. At the bottom of this line is a purple, rounded shape, possibly representing a base or a shadow. The overall style is soft and illustrative.

Disorders of the GI System

- Structural defects
- Disorders of motility
- Intestinal parasitic disorders
- Inflammatory disorders
- Disorders of malabsorption
- Hepatic disorders
- Injuries to the GI system



Structural Defects

- Cleft Lip and Cleft Palate
- Esophageal atresia and tracheoesophageal fistula
- Pyloric Stenosis
- Insusception
- Abdominal Wall Defects
- Anorectal malformations
- Umbilical hernia

FIGURE 30-2 A, Unilateral cleft lip. B, Bilateral cleft lip. Courtesy of Dr. Elizabeth Peterson, Spokane, WA.



A

FIGURE 30-3 A, Repaired unilateral cleft lip (see Figure 30-2A). B, Repaired bilateral cleft lip (see Figure 30-2B). *Courtesy of Dr. Elizabeth Peterson, Spokane, WA.*



A

Cleft Palate

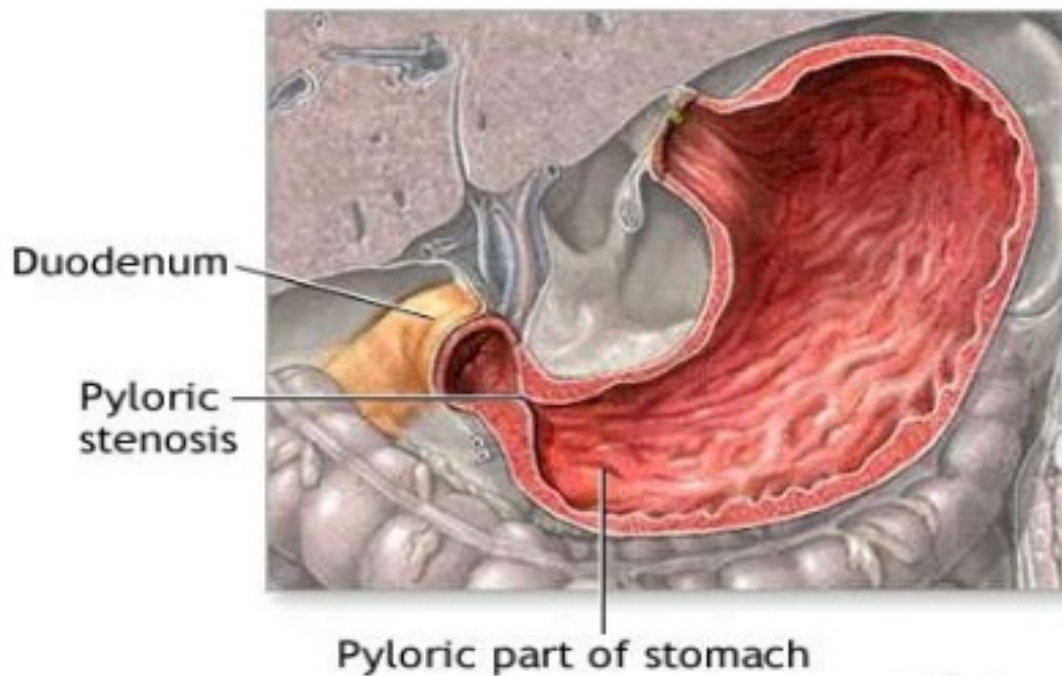




Pyloric Stenosis

- AKA Hypertrophic Pyloric Stenosis
- Etiology unknown, but often affects first-born males
- Affects males 2-5 X more than females, especially white males
- Present at birth
- Diagnosis by ultrasound
- Stenosis occurs b/t stomach and duodenum

Pyloric Stenosis

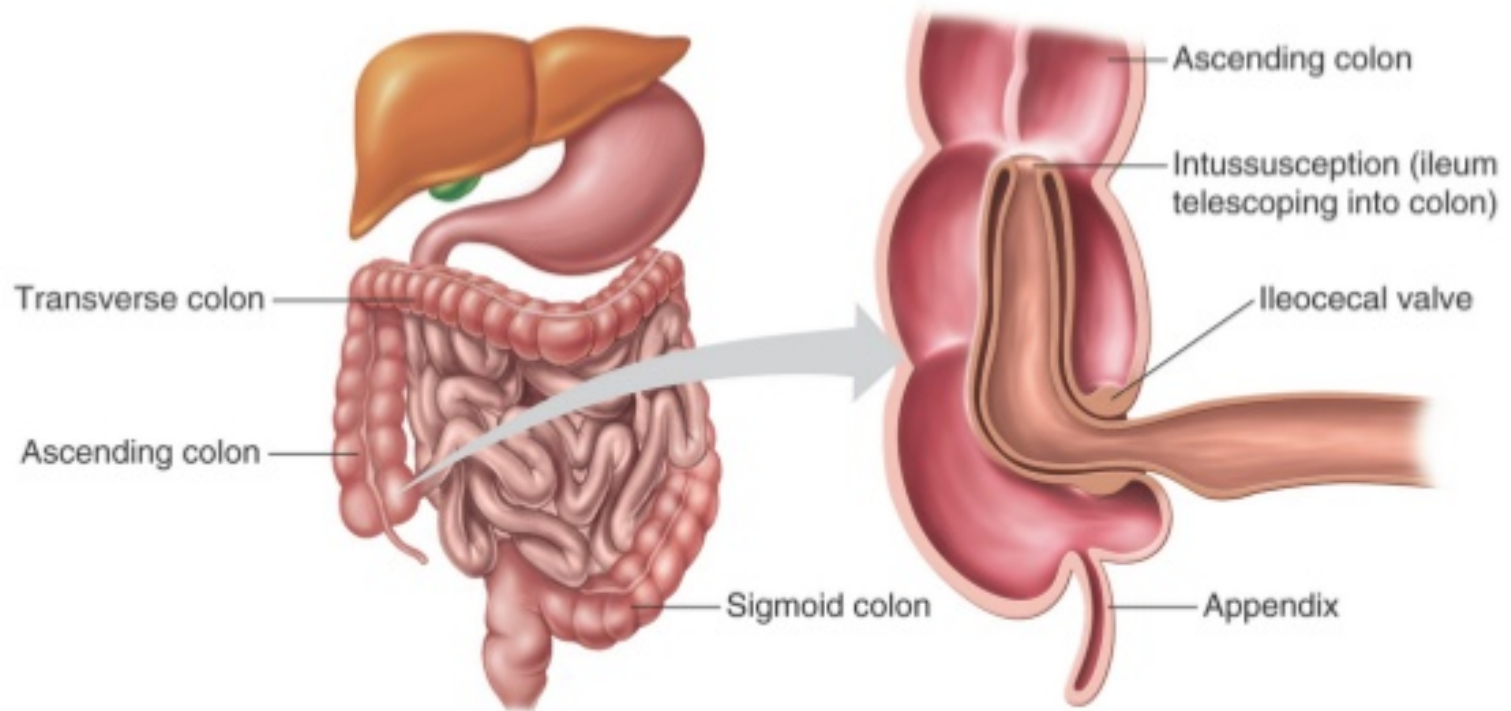




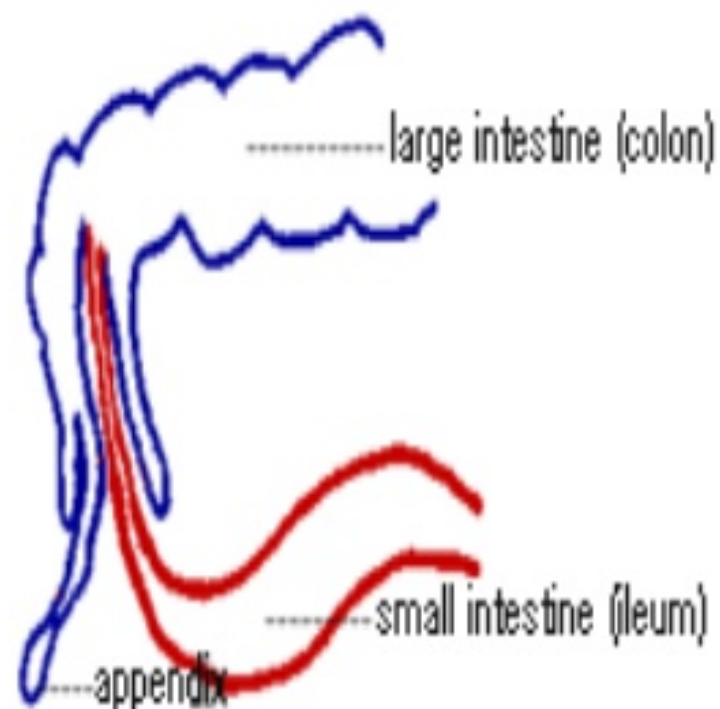
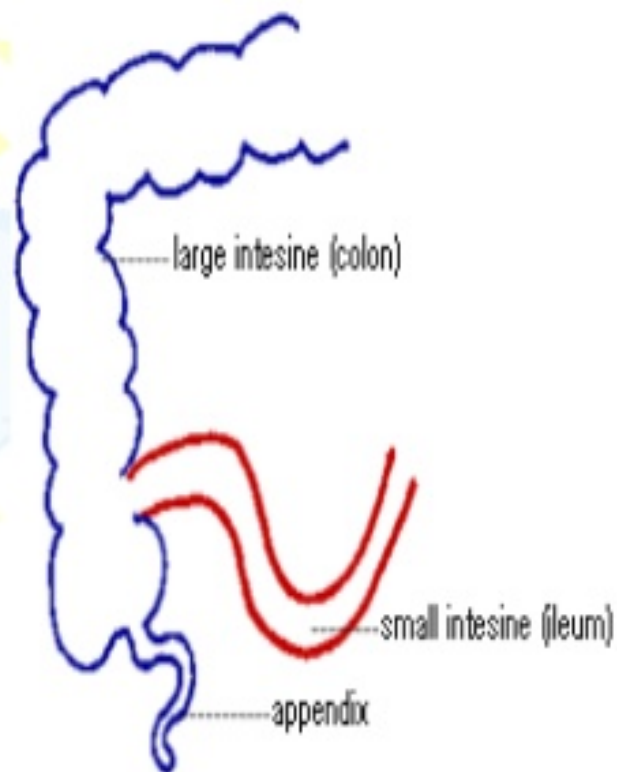
Intussusception

- Invagination (telescoping) of one portion of intestine into another
 - (like a sock).
- Multifactorial causes
- Commonly occurs in children b/t 3 months-6 years
- 3x more likely in boys than girls
- Common in children w/ CF, Celiac Disease and gastroenteritis

Intussusception



Intussusception



Imperforate Anus



Imperforate anus





Umbilical Hernia

- Hernia= protrusion or projection of an organ or a part of an organ through the muscle wall of the cavity that normally contains it.
- Results from imperfect closure of the umbilical muscle ring
- Often associated with diastasis recti (lateral separation of the abdominal muscles)
- Etiology unknown
- Around week 11 gestation and obliterated umbilical vessels occupy the space in the umbilical ring



Gastroesophageal Reflux

- GER is the regurgitation of stomach contents into the esophagus d/t an incompetent lower esophageal sphincter.
- Three mechanisms allow reflux to occur
 - Lower esophageal relaxations
 - Incompetent LES
 - Anatomic disruption of esophagogastric junction (aka hiatal hernia)



Constipation

- Constipation is a common complaint and accounts for 25% of GI referrals
- Affects 3% of preschool-age children and 1-2% of school-age children
 - (For Infants) Defined by criteria of
 - Pebble-like hard stools for a majority of BM's X 2 weeks
 - Firm stools more than twice/week x 2 weeks



Hirschsprung's Disease

- Congenital aganglionic megacolon
- Absence of ganglion cells in the colon results in mechanical obstruction due to inadequate motility
- Most common area affected is rectosigmoid colon

Hirschsprung's Disease

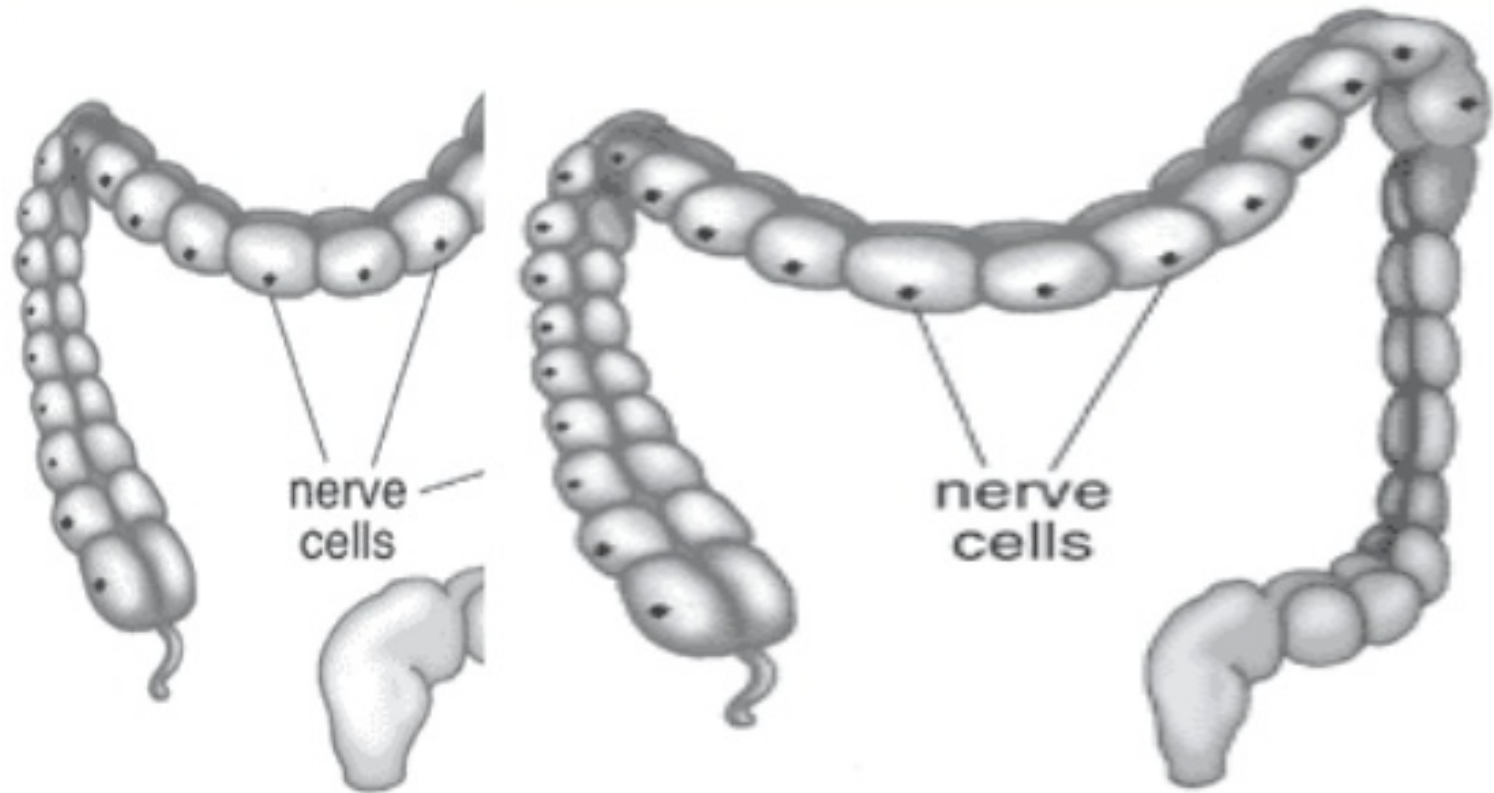
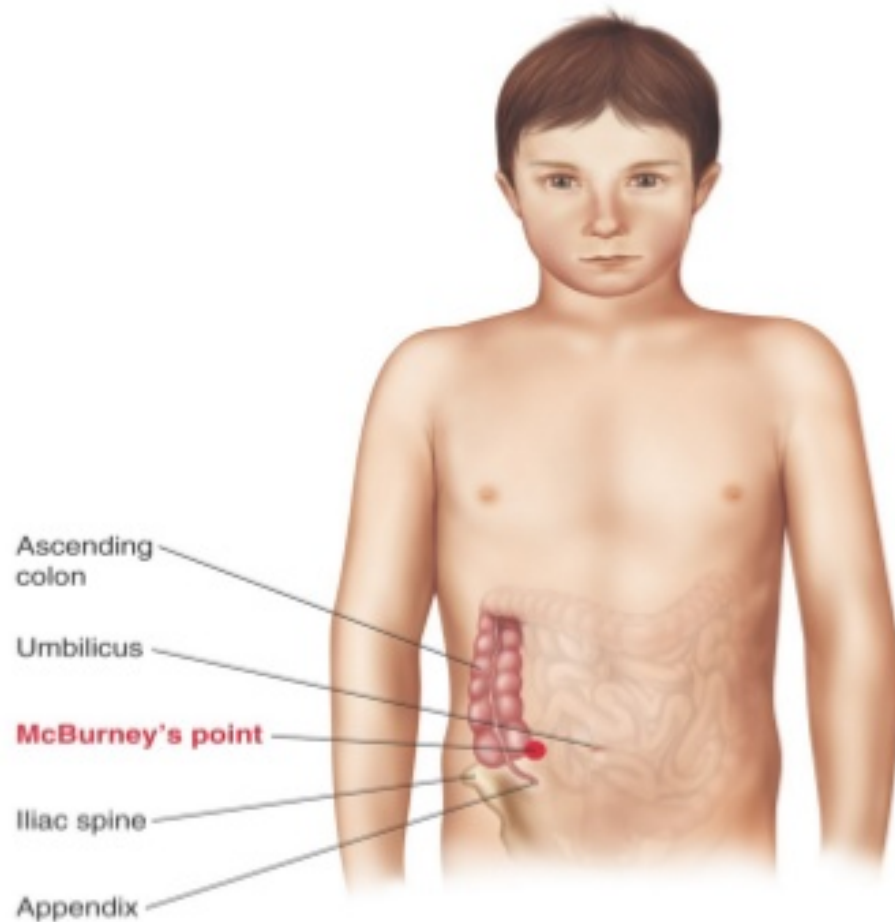


FIGURE 30–14 McBurney's point is the common location of pain in children and adolescents with appendicitis.



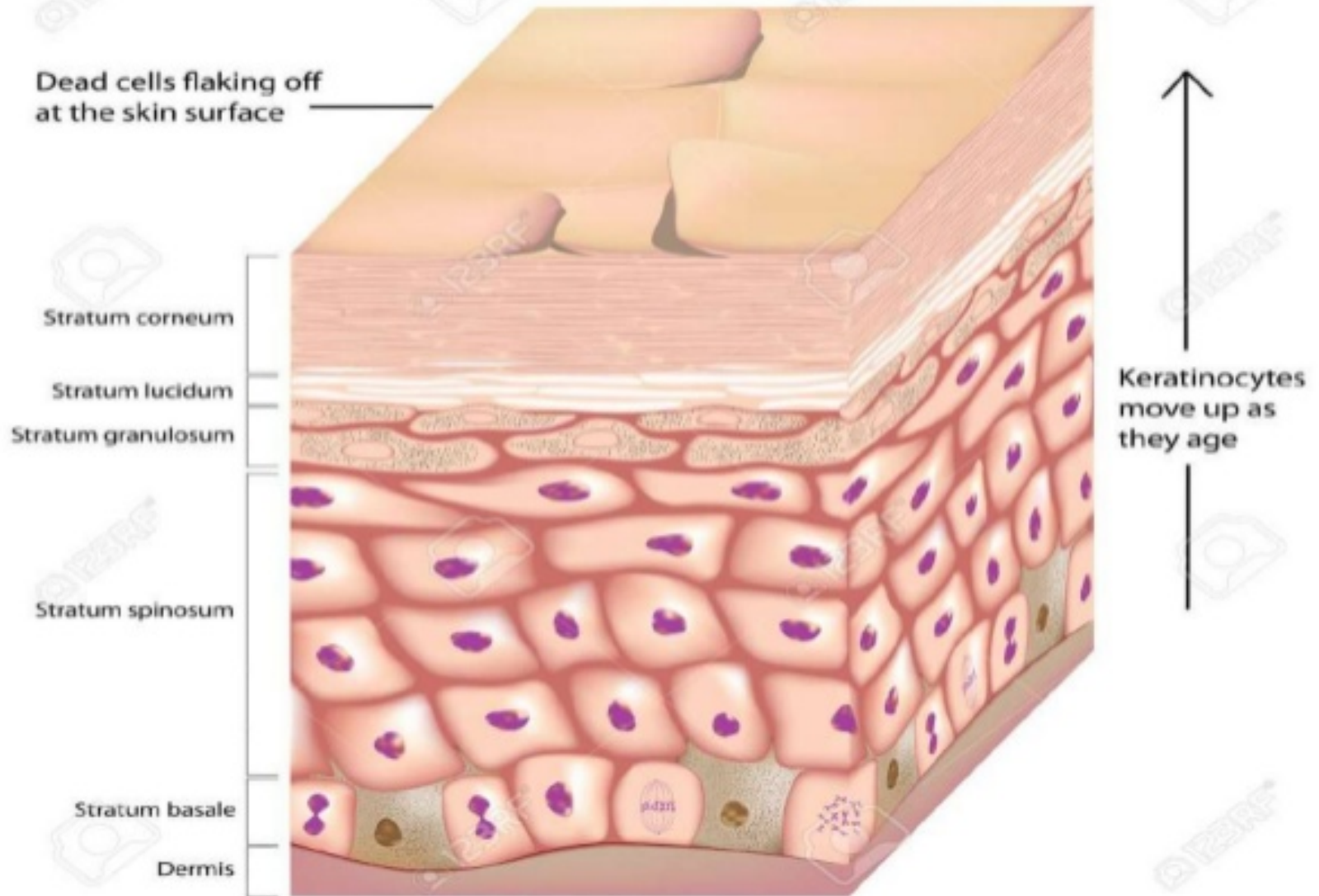
Celiac

- Wheat allergy

FIGURE 30-15 The child with celiac disease commonly demonstrates failure to grow and wasting of extremities. The abdomen can appear large due to intestinal distension and malnutrition. From Zitelli, B.J., & Davis, H. W. (Eds.). (1997). *Atlas of pediatric physical diagnosis*. St. Louis: Mosby. Used with permission from Elsevier.



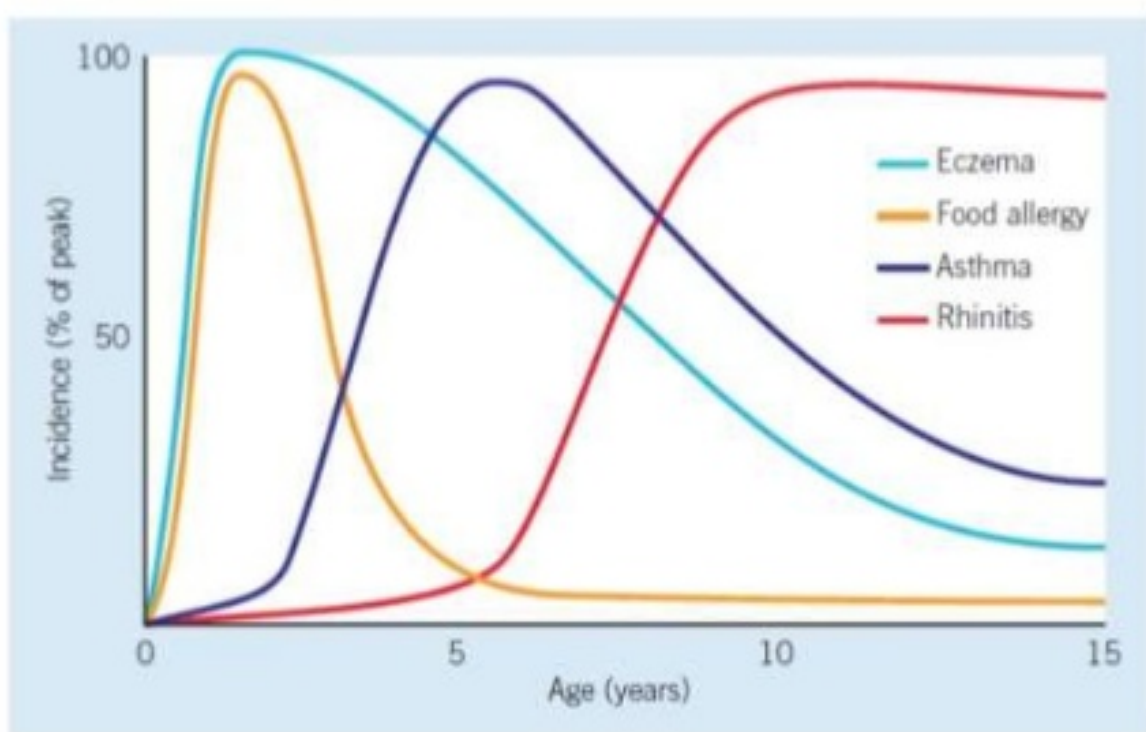
Anatomy of the Epidermis



Atopic Dermatitis



THE ATOPIC MARCH



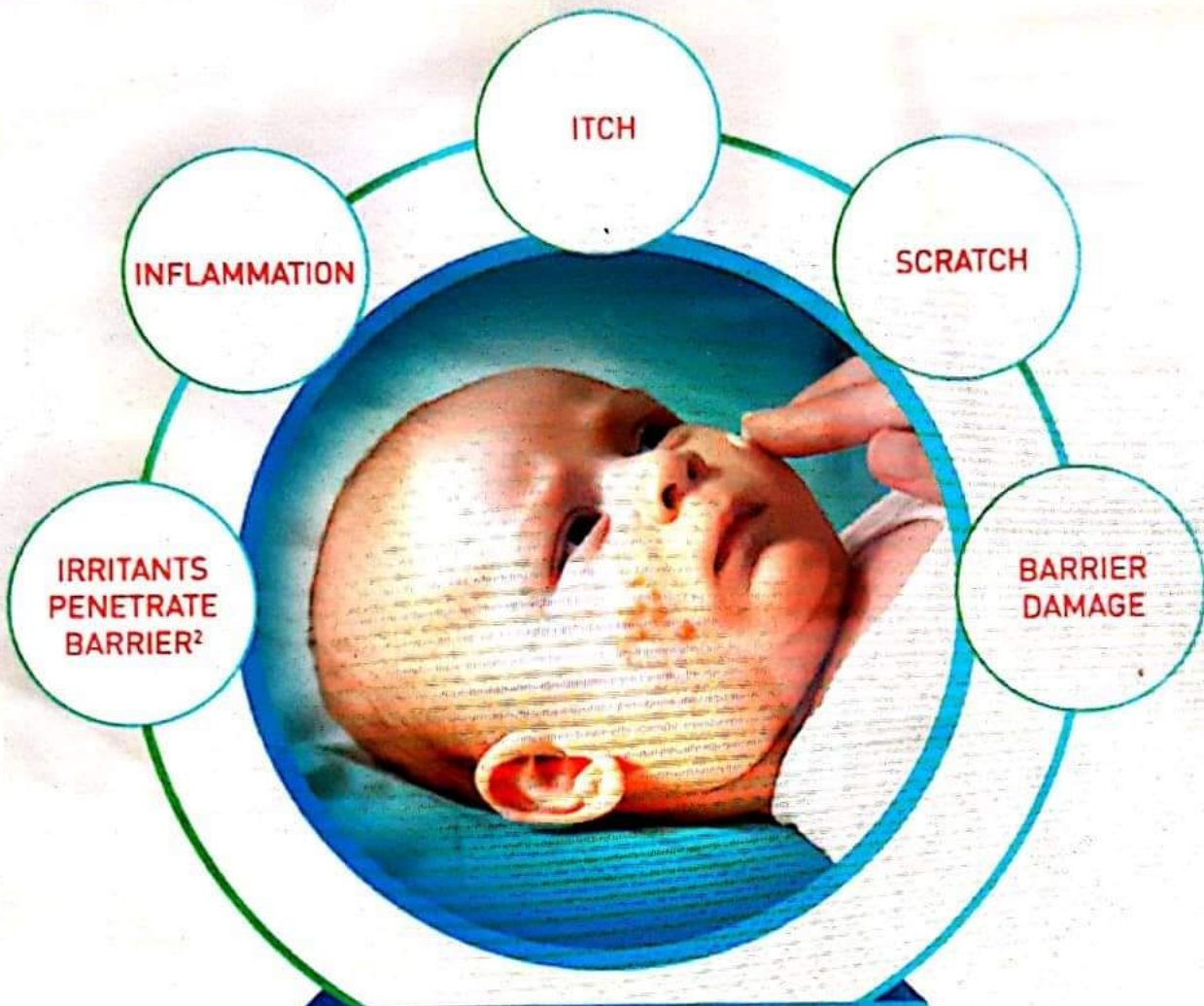
Typical AD for Infants and Toddlers



Erythematous, ill-defined plaques on the lateral lower with overlying scale



Erythematous, ill-defined plaques on the cheeks with overlying scale and



**The itch-scratch cycle
in Atopic Dermatitis¹**

• 4) Urticaria :



Urticaria refers to a group of disorders caused by the release of chemicals such as histamine from the mast cells in the skin. This causes small blood vessels to leak, which results in tissue swelling.

Approximate age group :

- This disorder affects both adults and children.

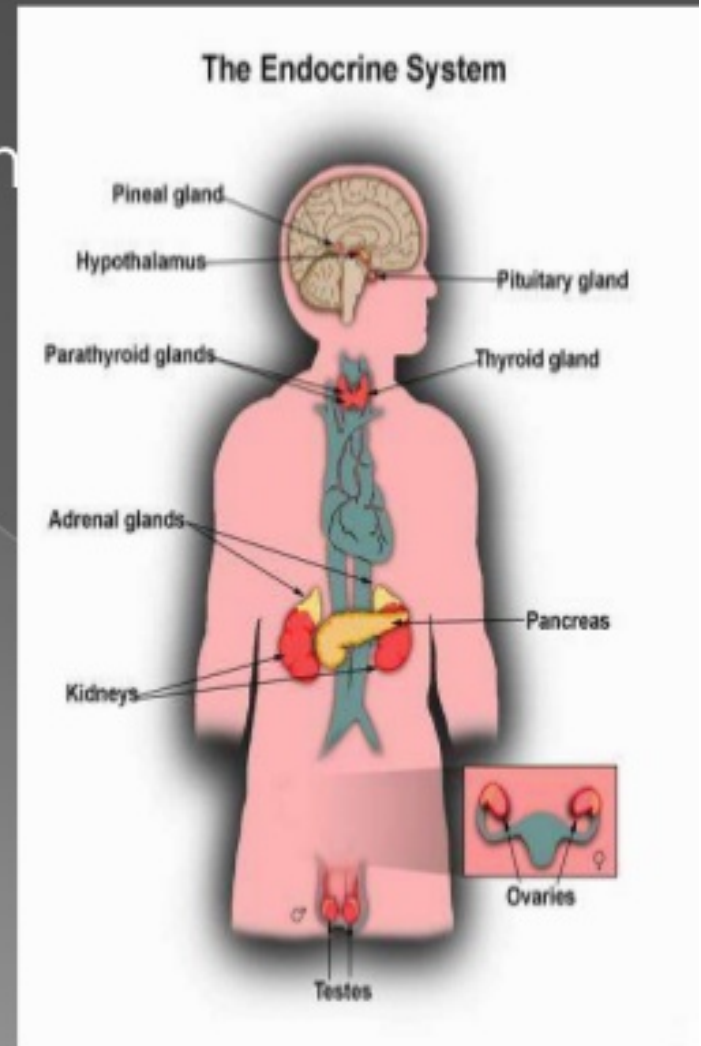
SJS/TEN



Endocrine

Contents-

- Short stature
- Acromegaly and gigantism
- Diabetes insipidus
- Juvenile Diabetes mellitus
- Hypothyroidism
- Goiter
- Hypo parathyroidism
- Hyperparathyroidism
- Delayed puberty
- Cushing syndrome



Short
stature



Acromegaly and gigantism

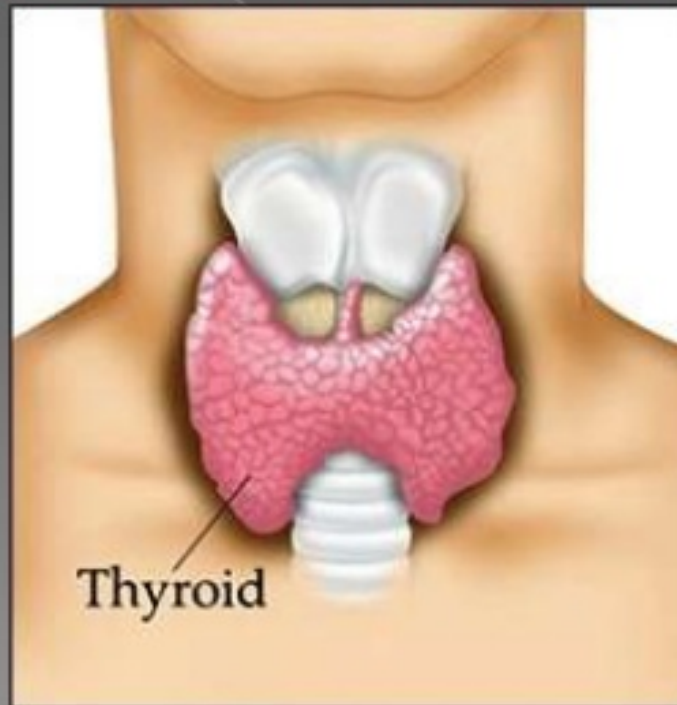


Juvenile Diabetes



DISORDERS OF THYROID GLANDS

HYPOTHYROIDISM



Incidence

- World wide prevalence of hypothyroidism is nearly 1-4000 new borns.



Delayed Puberty

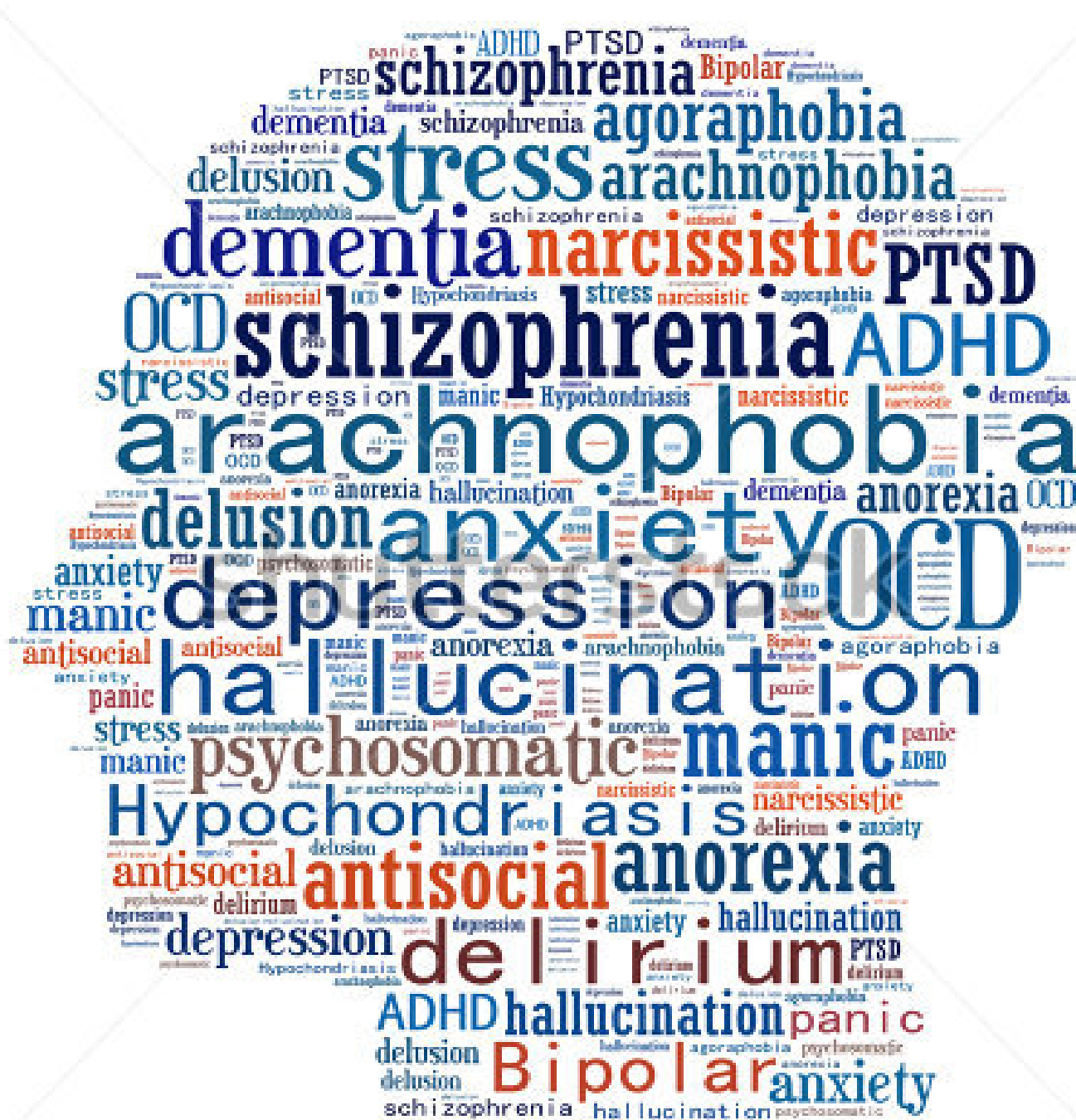


Endocrine disruptors

- dioxides
- phytoestrogens
- phytates
- flame retardants
- phenols
- polychlorinated and fluorinated biphenyls(PCBs)
- pesticides,
- polyaromatic hydrocarbons,
- metals,

White poisons

- White poisons- Maida, refined salt, refined sugar, Bakery, potato, junk food, milk, milk products, tea, coffee, carbonated drinks, white rice, wheat, refined oils, Dalda, Maggi, egg, non veg, juice, sweet corn, chewing gum, processed food like sauces pickles, jam,
- chlorine water, metals like aluminium, , smoking, pollution, recreational drugs, alcohol,
- toothpaste, mouthwash, tension, phenyl, plastic, , pesticides, with parabens, solvents, household products and material,
- beauty products like soap shampoo talcum powder lip stick, phytoestrogens , Pharmaceutical products



Biological influences:

- genetic predispositions
- genetic mutations
- natural selection of adaptive physiology and behaviors
- genes responding to the environment

Psychological influences:

- learned fears and other learned expectations
- emotional responses
- cognitive processing and perceptual interpretations

Behavior or mental process

Social-cultural influences:

- presence of others
- cultural, societal, and family expectations
- peer and other group influences
- compelling models (such as the media)

Types of Child and Adolescent Mental Health Problems

- Disorders of Social Interaction
 - Autism
 - Aspergers Syndrome
- Internalizing Disorders
 - Anxiety Disorders
 - Depression
 - Trauma Responses
- Externalizing Disorders
 - Attention Deficit Hyperactivity Disorder
 - Conduct Disorder

- **Appetite Disorders**

- Eating Disorder
- Substance Abuse
- Self-Harming Behavior

- **Mental Retardation**

- Learning Disability

- **Early onset major mental illness**

- Schizophrenia
- Bipolar Disorder

Key learning points

- Childhood obesity has risen dramatically over the last 30 years
- Obese children are at increased risk of psychological illness, including medically unexplained symptoms (MUS)
- Both paediatric and psychiatric interventions are needed to optimise management of obesity to prevent chronic conditions which can continue into adulthood
- Psychiatric interventions include both systemic and individual working.
- There ought to be a sound weight loss program implemented alongside psychiatric interventions(s).
- Greater overlap between paediatric and psychiatry training programmes in the areas of obesity and MUS will likely be a helpful contributing factor to the future care of these children and families.

July
18
2010

TIME

WHY YOUR DNA ISN'T YOUR DESTINY

The new science of epigenetics reveals how the choices you make can change your genes —and those of your kids

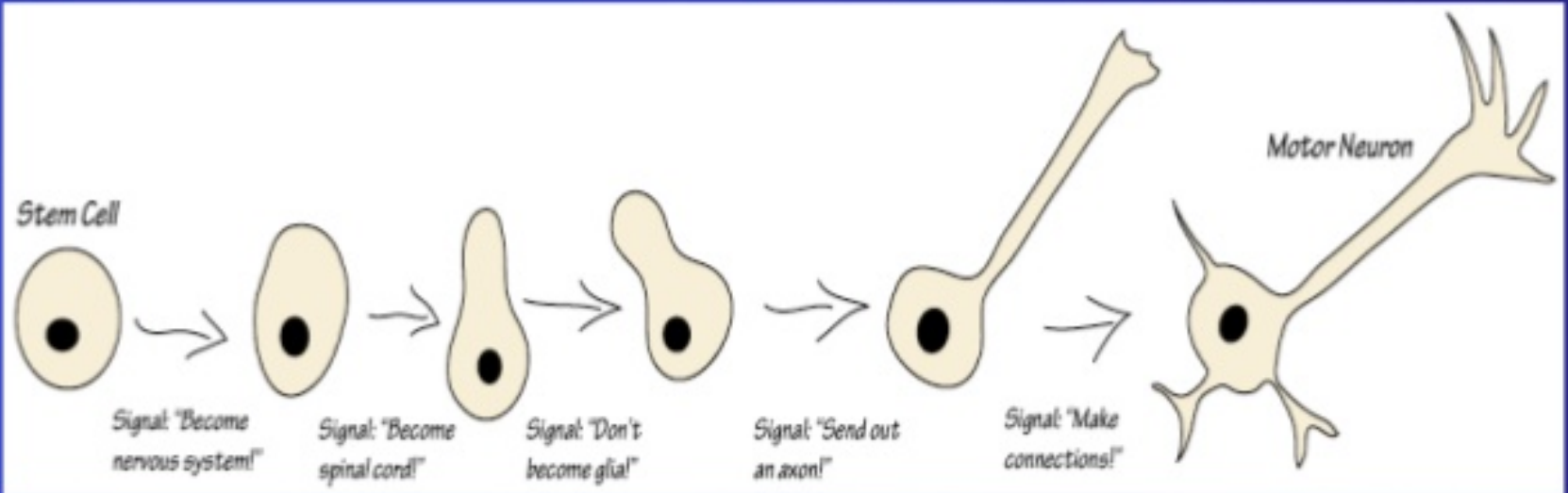
BY JOHN CLOUD

What does this mean?

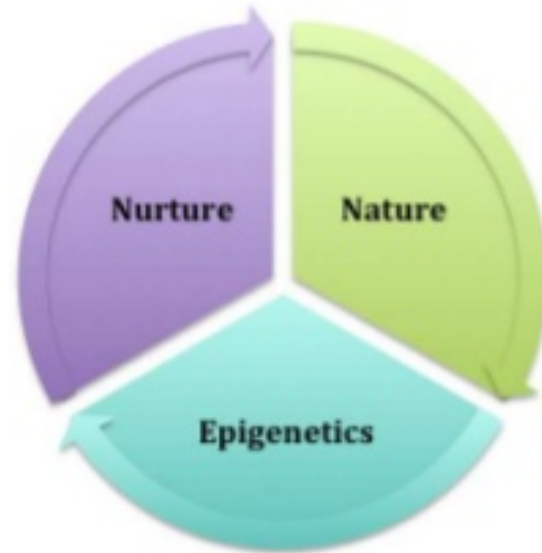
- It means that a parent's experiences, in the form of epigenetic tags, can be passed down to future generations.
- An example is if you smoked your whole life then you're offspring (children) will have a higher chance of smoking



MICRO



MICRO



Epigenetic Inheritance

MICRO

A microscopic view of cells, likely showing various organelles and structures, rendered in a blue color scheme.

Epigenetics and the Environment:
*How Lifestyle Can Influence
Epigenetic Change from One
Generation to the Next*

MICRO

Epigenetics and Cancer

MICRO

Neuropsychiatric Disorders

- Epigenetic errors also play a role in the causation of complex adult psychiatric, autistic, and neurodegenerative disorders. Several reports have associated schizophrenia and mood disorders with DNA rearrangements that include the DNMT genes.

Clinically Proven Map of Consciousness

View on God	View on Life	Level Name	Level #	Emotions	Process
Self	Is	Enlightenment	<u>700-1000</u>	Ineffable	Pure Consciousness
All-Being	Perfect	Peace	<u>600</u>	Bliss	Illumination
<i>Spontaneous Healing</i>					
One	Complete	Joy	<u>540</u>	Serenity	Transfiguration
Loving	Benign	Love	<u>500</u>	Reverence	Revelation
Wise	Meaningful	Reason	<u>400</u>	Understanding	Abstraction
Merciful	Harmonious	Acceptance	<u>350</u>	Forgiveness	Transcendence
Inspiring	Hopeful	Willingness	<u>310</u>	Optimism	Intention
Enabling	Satisfactory	Neutrality	<u>250</u>	Trust	Release
Permitting	Feasible	Courage	<u>200</u>	Affirmation	Empowerment

P
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R

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R
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N
G

Levels at or above 200 have Truth, Integrity and support life.

CREATIVE

Levels below 200 are False, lack Integrity, do not support life.

DESTRUCTIVE

Indifferent	Demanding	Pride	<u>175</u>	Scorn	Inflation
Vengeful	Antagonistic	Anger	<u>150</u>	Hate	Aggression
Denying	Disappointing	Desire	<u>125</u>	Craving	Enslavement
Punitive	Frightening	Fear	<u>100</u>	Anxiety	Withdrawal
Disdainful	Tragic	Grief	<u>75</u>	Regret	Despondence

F
O
R
C

W
E
A
K

W E R ↑	Loving	Selfish	Love	<u>300</u>	Reverence	Revelation	K O N G ↑
	Wise	Meaningful	Reason	<u>400</u>	Understanding	Abstraction	
	Merciful	Harmonious	Acceptance	<u>350</u>	Forgiveness	Transcendence	
	Inspiring	Hopeful	Willingness	<u>310</u>	Optimism	Intention	
	Enabling	Satisfactory	Neutrality	<u>250</u>	Trust	Release	
Permitting	Feasible	Courage	<u>200</u>	Affirmation	Empowerment		

Levels at or above 200 have Truth, Integrity and support life.

CREATIVE

Levels below 200 are False, lack Integrity, do not support life.

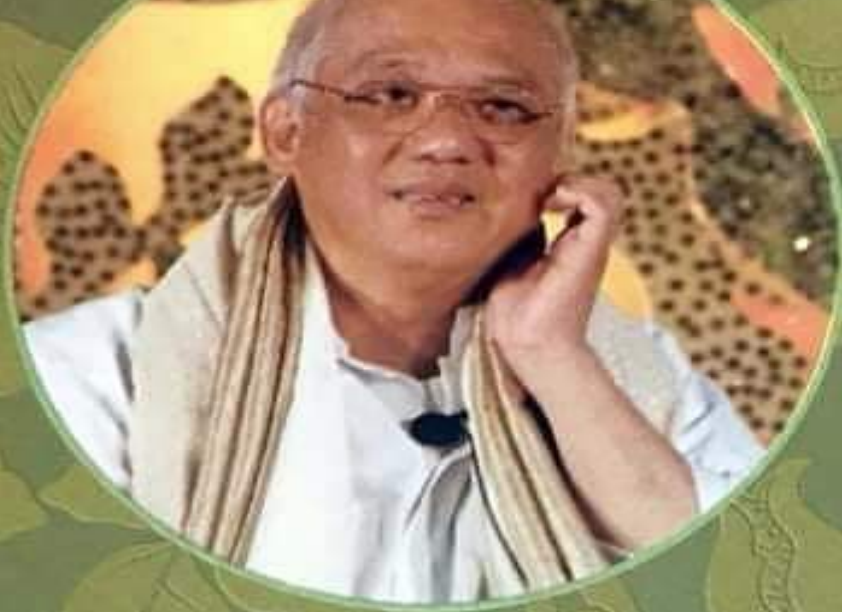
DESTRUCTIVE

F O R C E ↓	Indifferent	Demanding	Pride	<u>175</u>	Scorn	Inflation	W E A K ↓
	Vengeful	Antagonistic	Anger	<u>150</u>	Hate	Aggression	
	Denying	Disappointing	Desire	<u>125</u>	Craving	Enslavement	
	Punitive	Frightening	Fear	<u>100</u>	Anxiety	Withdrawal	
	Disdainful	Tragic	Grief	<u>75</u>	Regret	Despondence	
	Condemning	Hopeless	Apathy	<u>50</u>	Despair	Abdication	
	Vindictive	Evil	Guilt	<u>30</u>	Blame	Destruction	
	Despising	Miserable	Shame	<u>20</u>	Humiliation	Elimination	

POWER is self-sustaining, permanent, stationary, and invincible.

FORCE is temporary, consumes energy, and moves from location to location.

Sankhya BG2.10-38	Karma kandBG 2.38- 47	Karma Yoga BG 2.4	Gyan yoga BG 4	Dhyan yoga BG 6	Bhakti Yoga BG 7-18
Soul science	Frutitive activities	Krishna seva	Transcendent al	Meditate on Krishna	Krishna conscious Work
Duty	Ved	Akarm	Knowledge	Mind control	Mind control
Heaven	Heaven	Liberation	Liberation	Liberation Parmatm	Krishna



‘Fulfill your Karmic obligation because it is the smart thing to do. Just as you created your present condition through your past, you create your future condition through your present deeds.’

Giving Forgiveness Prayer

Atma.....Namaste

I salute the divinity within u.We all are children of God,
Children of the Supreme Being,we all make mistakes.

I forgive you for your mistakes.

I forgive you for the hurt and pain caused by you.

You are forgiven and the matter is forgotten.

May the Supreme Being bless you with divine forgiveness.

May the Supreme Being neutralise your negative Karma.

May peace be with you and me.

Om Shanti Shanti Shanti Om

Asking Forgiveness Prayer

Atma.....Namaste

Asking Forgiveness Prayer

Atma.....Namaste

I salute the divinity within u. We all are children of God,
Children of the Supreme Being, we all make mistakes.

I sincerely apologise for my mistakes.

I am truly sorry for the hurt and pain caused by me.

Please forgive me and let go of the matter.

May the Supreme Being bless me with divine forgiveness.

May the Supreme Being neutralise my negative Karma.

May peace be with you and me.

Om Shanti Shanti Shanti Om

kill him, He has entered our Village.

Gentleman, Watch closely your Village has entered in my Jungle.



Rohit

Mantra Meditation
Seva - helping others
Smile.

Yoga.

Twinheart meditation

Pyramid meditation

Sigma healing

Pramic healing

Riki healing

Quantum healing

Tai chi healing

Ayurvedic herbs

Marma chikitsa

Acupuncture

Acupressure

Homeopathy

Walking bare foot

walk in woods

Bathe in river/ ocean

visit to mountain

Deep breathing

mindfullness

visit to farm

Domestic animal

Pets

sound therapy

Neurotherapy

massage

sea salt

direct sunlight

Eastern pots

Copper vessels

sacred items.

eg Bells

incense

music.

sandalwood paste

kumkum

Churnamrita

Mala - Beads.

Scriptures .

Congregation of Positive People

(satsang)

Kirtan

Worship

Prayers .

THANK YOU

DANKSCHEEN
SPASIBO
SNACHALHIYA
NURUN
CHALTU
YAQHANYELAY
TASHAKKUR ATU
YUSPAGARAYAM
TINGKI
BIYAN
SHUKRIA
SUKSAMA
SUKAMA
HATUHU
ENOJU
SIKONG
MARITNI
HINNONCHUB
BOLZIN
MERCI
PALDIES
MEHRBANI
GRAZIE
MAAKE
LAH
KOMAPSUMNIDA
ARIGATO
SHUKURIA
MERASTAMIV
GAEJTHO
GOZAIMASHITA
EFCHARISTO
AGUYJE
FAKAAUE
JUSPAXAR
SHUKA
TAVYAPUCH
MEDAMASSE
DANKSCHEEN