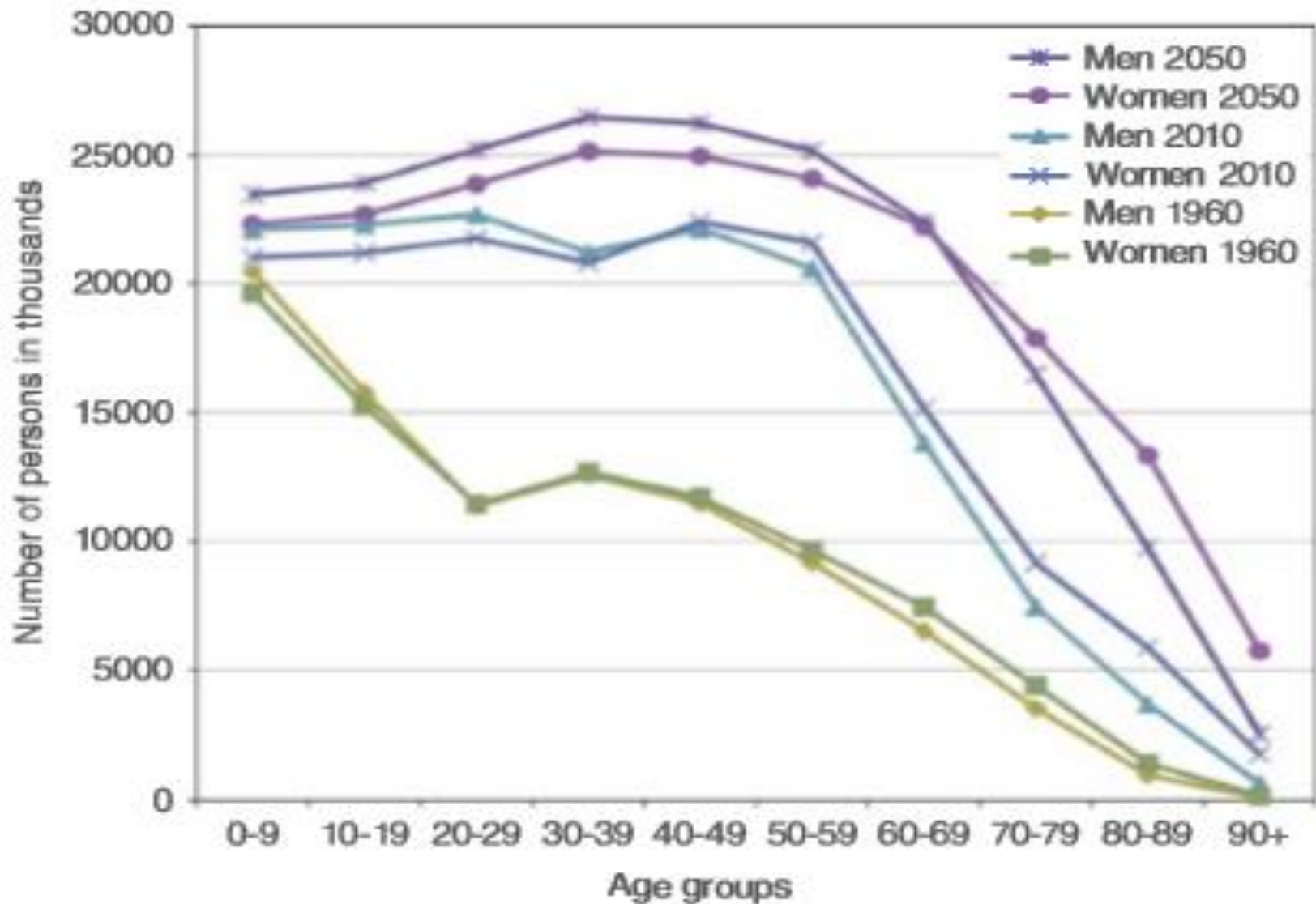


PHYSIOLOGICAL CHANGES DUE TO AGEING

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Demographic change in Population



Indian scenario

- Since 1950 Life expectancy at Birth in India is doubled from 32 to 65 years
- In 1950 population of 60+19 millions
- In 2050 it will be.....330 millions
- Population of 80 years and above are growing at a faster rate

Geriatric vs General Medicine

- Problems of Older persons
 - Long term treatment with multiple drugs
 - Physical and Rehabilitative therapies
 - Degenerative disorders
 - Atypical and Different presentation

- Vulnerable to confusion and drowsiness in response to acute events
- Approach to Older patients

Developing Rapport

Patient listener

Comprehensive assessment

Limited but necessary investigation

Ageing

- Progressive decline in Homeostatic Reserve of every organ system
- Evident from 3rd Decade and is then gradually progressive
- Effects are usually insufficient to interfere with functions of organ under baseline condition
- Sufficient to reduce the reserve capacity

Factors influencing Ageing

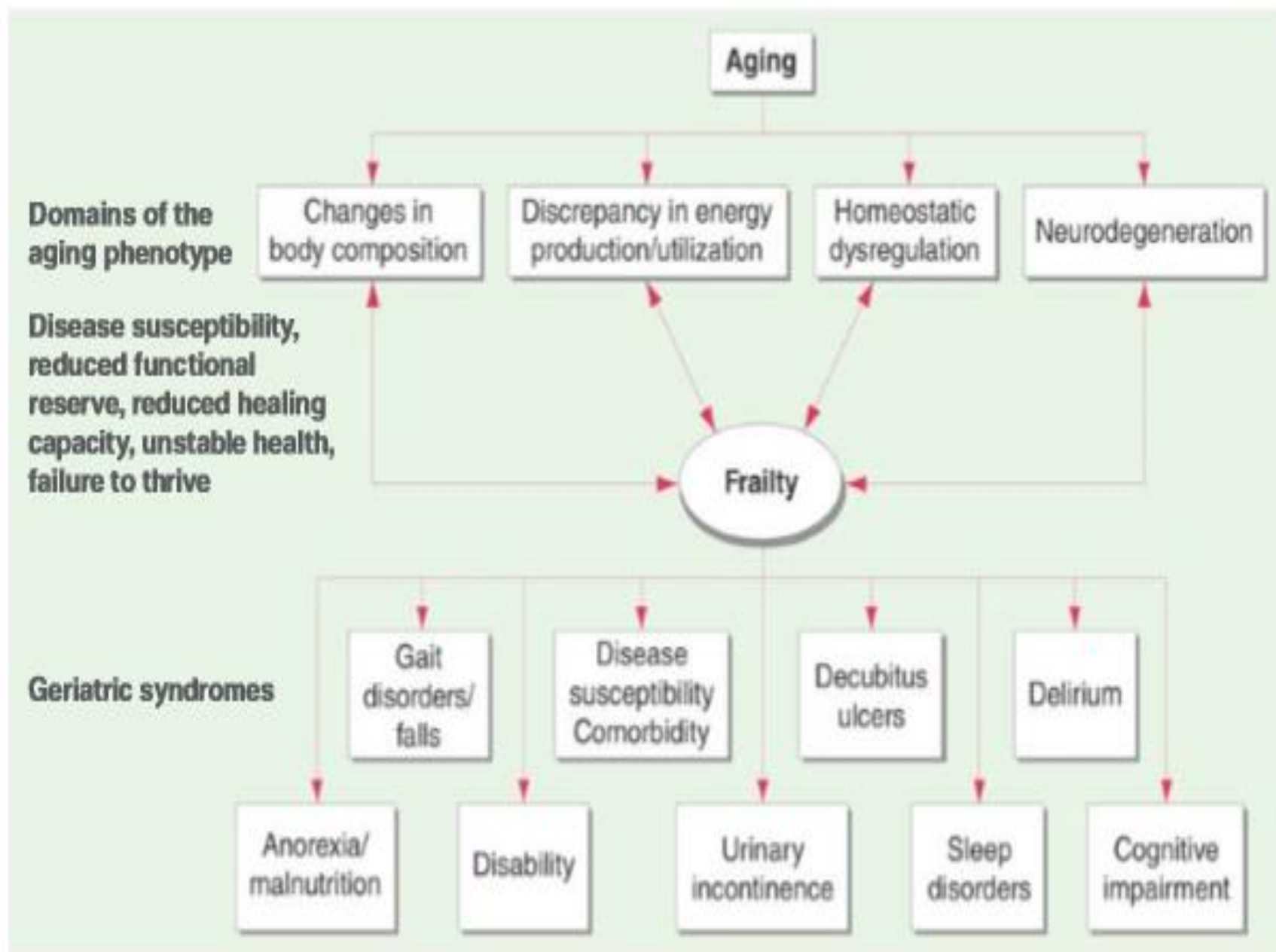
- Genetic
- Environmental
- Diet
- Personal Habits

Postulated Mechanism

- Cumulative spontaneous Somatic Mutation
- Errors in Protein Synthesis
- Ongoing DNA Rearrangements
- Result of damage by Free Radicals

Systemic effects of Ageing

- Body composition
- Balance between energy Availability vs Demand
- Signaling network that maintained Homeostasis
- Neurodegeneration



A unifying model of aging, frailty, and the geriatric syndromes.

Age related Physiological changes

- ...all people age, but not at the same rate

At age 75, the average person, compared to age 30:

- 92% of brain weight
- 84% of basal metabolism
- 70% kidney filtration rate
- 43% of maximal breathing capacity
- We are not the people we once were!

CHANGES IN THE SKIN

- “To most people, the condition of the skin, hair, and connective tissue collectively represents the ultimate indicator of age”. |

SKIN: Wrinkling

- Muscles of the face are capable of tremendous movement. “Smiles, laughter, frowns, disappointment, anger, rage, and surprise are all recorded. The hand of time captures these expressions and outlines them on the face....By the age of 40, most people bear the typical lines of their expressions.”

SKIN--Wrinkling:

- Loss of subcutaneous fat
 - > vulnerability to pressure sores
 - less insulation of body to cold (also affected by diminished blood flow to skin & extremities) & heat

- 
- 
- Atrophic changes in sweat glands
 - Thickened fingernails & toenails
 - Generalized loss of body hair and head hair
 - Decrease in # of functioning pigment-producing cells-->graying
 - Some remaining pigment cells enlarge--> “age spots”
 - Skin changes increase. vulnerability to infections/disorders

Musculoskeletal system

- Decline in number of Anterior horn cells resulting in muscle weakness and wasting
- Accentuated by Physical Inactivity

- “Arthritis & allied bone and muscular conditions are among the most common of all disorders affecting people 65 years of age and over.”
- Arthritis: A generic term that refers to an inflammation or degenerative change in a joint
 - Occurs world wide & is one of the oldest known diseases

ARTHRITIS

- Osteoarthritis

- Cause not known
- Also referred to as degenerative joint disease
- A gradual wearing away of joint cartilage that results in the exposure of rough underlying bone ends
- Can do damage to internal ligaments
- Most commonly associated weight bearing joint
- Degeneration of cervical and lumbar vertebrae and intervertebral discs may lead to Cervical and Lumbar spondylosis

- Osteopenia --> Osteoporosis:

- Gradual loss of bone that reduces skeletal mass without disrupting the proportions of minerals & organic materials
- For many, it is asymptomatic
- Bones most critically involved: vertebra, wrist, hip

- Sarcopenia:

- Loss of muscle mass that occurs with aging
- Cause not completely understood
- Preventable/reversible with regular physical activity

GASTROINTESTINAL SYSTEM

- Atrophy of secretion mechanisms
- Decreasing motility of the gut
- Loss of strength/tone of muscular tissue & supporting structures
- Changes in neurosensory feedback
 - Enzyme & hormone release
 - Innervation of the tract
 - Diminished response to pain & internal sensations

CARDOPULMONARY SYSTEM

- In the absence of disease, the heart tends to maintain its size
- Heart valves tend to increase in thickness with age
- BP tends to go up with age
 - Systolic stabilizes at about age 75
 - Diastolic stabilizes at about 65 then may gradually decline

Atherosclerosis vs. Arteriosclerosis

- Atherosclerosis

- A narrowing of arterial passageways as a result of the development of plaques on their interior walls
- Reduces the size of the passageway--even to the pt of closing it off. A cause of ischemic heart tissue (tissue deprived of adequate blood supply)

- Arteriosclerosis:

- A generic term referring to the loss of elasticity of arterial walls
- Often referred to as “hardening of the arteries”
- Considered a general aging phenomenon

Respiratory Changes

- Airways & tissues become less elastic & more rigid with age
- Osteoporosis may alter the size/shape of the chest cavity
- Power of respiratory & abdominal muscles becomes reduced--hinders diaphragmatic movement

Immune System

- Ageing , Poor nutrition and chronic Ill health interfere with Immune Function
- Attenuated inflammatory response to local and systemic infections
- Atypical presentations
- Reduce immune surveillance predisposes to Malignancy

Characteristics of diseases in old age

- Multiple Aetiology and Pathology
- Non specific presentation of Disease
- Findings abnormal in young may be relatively common in old age

Atypical presentation of Disease in Elderly

- Myocardial Infarction
- Bronchopneumonia
- Appendicitis
- Peptic Ulcer
- UTI
- Dehydration
- Hypothyroidism
- Thyrotoxicosis
- Diabetes Mellitus
- Brain Tumor

Giants of Geriatric Medicine

- Acute Confusion
- Urinary Incontinence
- Immobility
- Falls
- Postural Hypotension

THANK
YOU!

