# Approach to geriatric patients

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# outline

- Definition of aging, senescence and healthy aging
- Homeostenosis (Not homeostasis) and theories of aging
- Theories of aging
- Physiologic changes that normally occur with aging
- Comprehensive Geriatric Assessment
- Geriatric review of systems/ Geriatric Syndromes
- Geriatric physical examination
- Multimorbidity vs Co-morbidity
- Address necessary physical office characteristics
- Preventive-medicine measures

# Who is an Older Adult?

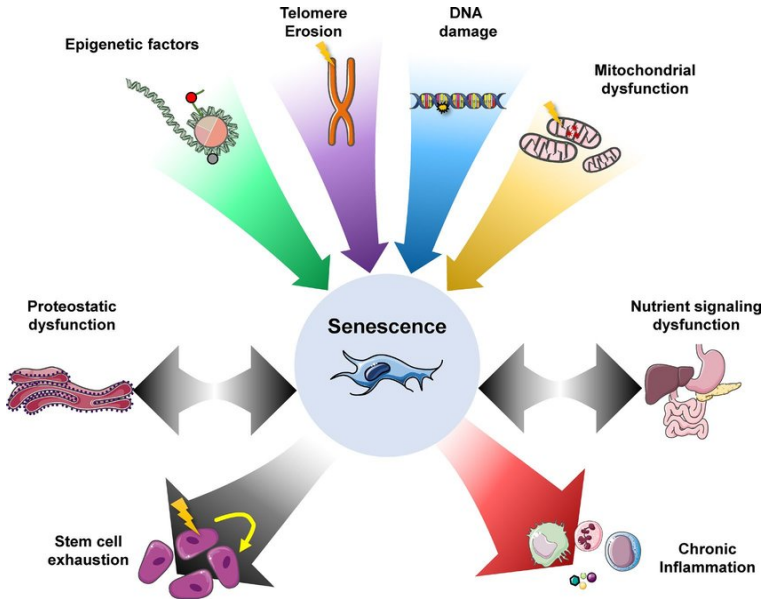
## 65 or 60?

# Aging

- Ageing or aging is the process of becoming older.
- It represents the accumulation of changes in a human being over time, encompassing physical, psychological, and social changes.
- Reaction time, for example, may slow with age, while knowledge of world events and wisdom may expand.
- Aging is among the greatest known risk factors for most human diseases: of the roughly 150,000 people who die each day across the globe, about two thirds die from age-related causes.

# Senescence

- Senescence or biological aging is the gradual deterioration of functional characteristics. The word senescence can refer either to cellular senescence or to senescence of the whole organism.
- It is cellular program that induces a stable growth arrest accompanied by distinct phenotypic alterations.
- Accumulation of a wide variety of molecular and cellular damage over time. This leads to a gradual decrease in physical and mental capacity, a growing risk of disease, and ultimately, death.



# WHO definition of healthy aging

- WHO defines Healthy Ageing "as the process of developing and maintaining the functional ability that enables wellbeing in older age".

***Key terms: Healthy Ageing***

**Functional ability** is about having the capabilities that enable people to be and do what they have reason to value. There are five key domains of functional ability, each of which can be enhanced (or constrained) by environmental factors. These are the abilities to: meet basic needs; learn, grow and make decisions; be mobile; build and maintain relationships; and contribute to society.

Being able to live in environments that support and maintain your intrinsic capacity and functional ability is key to *Healthy Ageing*. Functional ability is made up of the intrinsic capacity of the individual, relevant environmental characteristics and the interaction between them.

**Intrinsic capacity** comprises all the mental and physical capacities that a person can draw on and includes their ability to walk, think, see, hear and remember. The level of intrinsic capacity is influenced by several factors such as the presence of diseases, injuries and age-related changes.

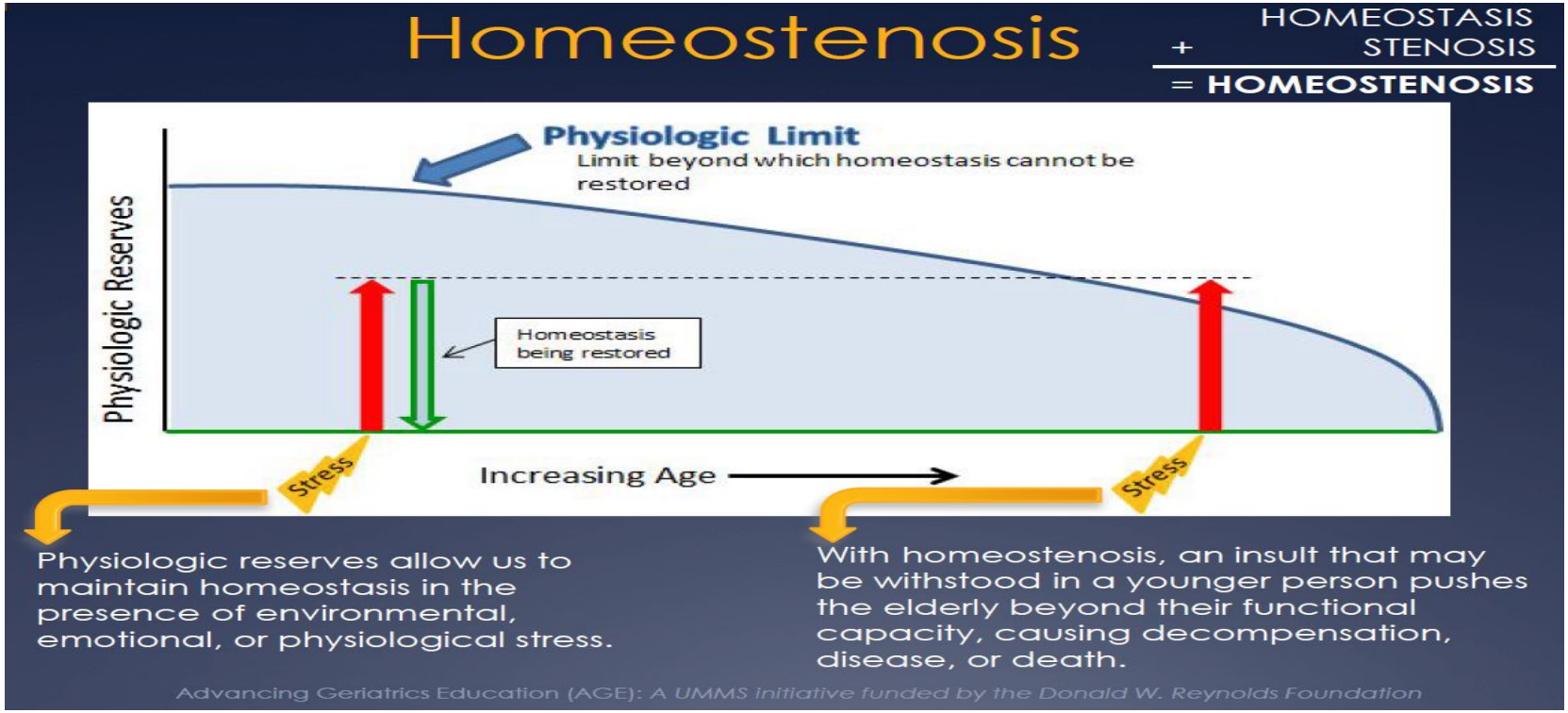
**Environments** include the home, community and broader society, and all the factors within them such as the built environment, people and their relationships, attitudes and values, health and social policies, the systems that support them and the services that they implement.

# Homeostenosis

- The term *homeostenosis* is used to describe the narrowing of reserve capacity that underlies a decreased ability to maintain homeostasis under stress. As people age, there is a much greater demand on their physiologic reserve (in terms of proportion of the total capacity that is taxed) to maintain homeostasis. Sooner or later the corrective capacity is exceeded, resulting in loss of homeostasis and development of disease.

# Example

- Increasing the oxygen demand to the heart in a healthy young adult meets an increase in the cardiac output ( heart response), however, in an elderly person, the heart cannot meet the demand and will augment he CO, this will lead to Myocardial infarction.



# Theories of aging

Evolutionary theories of aging explain historical and evolutionary aspects, addressing why aging exists in living things and how it may have evolved as a process. Physiologic theories of aging explain structural and functional age changes and elaborate a framework for translating the “what” and “where” of aging from molecules to organ systems and homeostasis.

# • Evolutionary theories

Mutation Accumulation Theory

- In this theory, aging is viewed as a nonadaptive trait. That is, traits that yield aging are neither selected for nor against. No selective pressure is brought to bear on older, postreproductive-age organisms expressing a mutation that has minimal effects on fitness. Thus, these late-acting genes accumulate over time and yield the aging phenotype.

Antagonistic Pleiotropy Theory

- A single gene is described as pleiotropic if it controls or influences multiple traits. The antagonistic pleiotropic theory considers aging an adaptive trait. Genes that can influence several traits are selected for and affect individual fitness in opposite (ie, antagonistic) ways at different stages of life.

# Physiologic theories

1- Target theory of genetic damage

2- Mitochondrial DNA damage theory

3- Free radical theory

4-Telomere theory

5-Transposable element activation

6-Epigenetic theory

- Target theory of genetic damage:

States that genes are susceptible to hits from radiation or otherr damaaging agents that then alter function of structural, signaling, and/or repair molecules and that these cumulative hits give rise to an aging phenotype

- Mitochondrial DNA damage theory:

Occurs faster than nuclear DNA damage, it cannot repair itself so, damaged mtDNA replicate faster than undamaged → expansion of aberrant mitochondria

- Free Radical injury : (produced in the mitochondria)

- Telomere Theory:

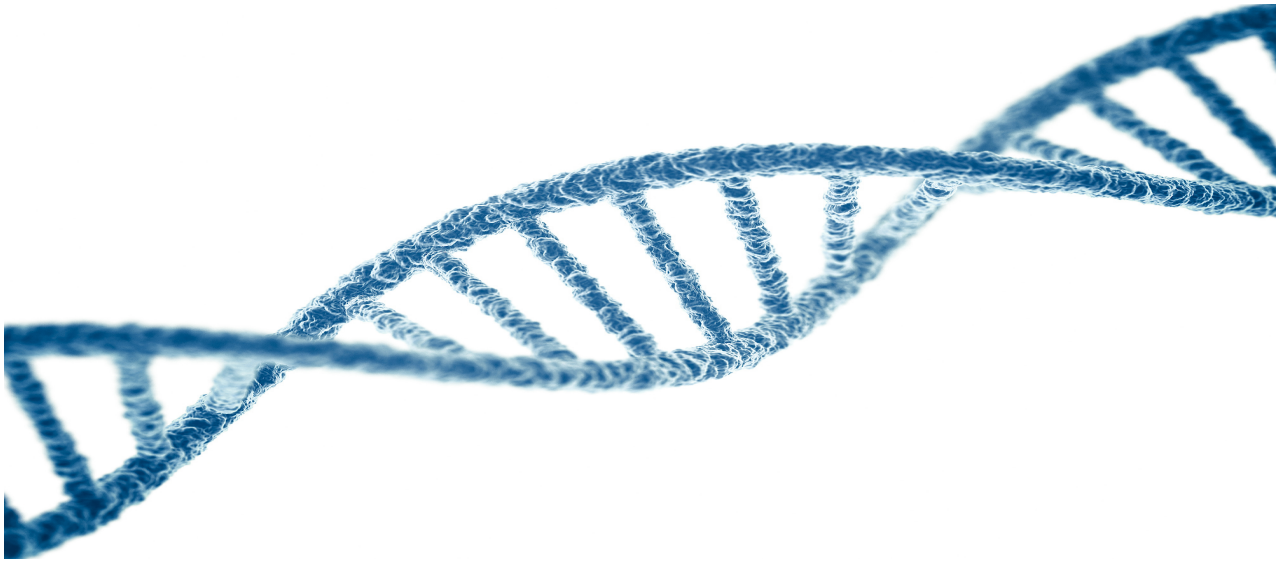
DNA replication → progressivee shortening of telomeres → once telomeres are reduced beyond a threshold → cell enters a nonreplicating state (aging through inducing replicative senescence)

- Transposable Element activation:

Transposable elements are pieces of DNA that can move from one location in the genome to another resulting in mutagenesis (DNA damage and genomic instability)

- Epigenetic theory:

States that phenotypic drift arising from in appropriate epigentic modifications leads to altered gene expression and ceellular function and the aging phenotype



# Common systemic changes that occur with age

**Endocrine system**

- Impaired glucose tolerance (fasting glucose increased 1 mg/dl/decade; postprandial increased 10 mg/dl/decade)
- Increased serum insulin and increased HgbA1C nocturnal growth hormone peaks lost, decreased 1GF-1
- Marked decrease in dehydroepiandrosterone (DHEA)
- Decreased free and bioavailable testosterone
- Decreased T3
- Increased parathyroid hormone (PTH)
- Decreased production of vitamin D by skin
- Ovarian failure, decreased ovarian hormones
- Increased serum homocysteine levels

**Cardiovascular**

- Unchanged resting heart rate (HR), decreased maximum HR
- Impaired left ventricular filling
- Marked dropout of pacemaker cells in SA node
- Increased contribution of atrial systole to ventricular filling
- Left atrial hypertrophy
- Prolonged contraction and relaxation of left ventricle
- Decreased inotropic, chronotropic, lusitropic response to beta-adrenergic stimulation
- Decreased maximum cardiac output
- Decreased hypertrophy in response to volume or pressure overload
- Increased serum atrial natriuretic peptide (ANP)
- Large arteries increase in wall thickness, lumen, and length, become less distensible, and compliance decreases
- Subendothelial layer thickened with connective tissue
- Irregularities in size and shape of endothelial cells
- Fragmentation of elastin in media of arterial wall
- Periph[illegible] vascular resistance increases

Blood pressure
- Increased systolic blood pressure (BP), unchanged diastolic BP
- Beta-adrenergic-mediated vasodilatation decreased
- Alpha-adrenergic-mediated vasoconstriction unchanged
- Brain autoregulation of perfusion impaired

Pulmonary
- Decreased $FEV_1$ and FVC
- Increased residual volume
- Cough less effective
- Ciliary action less effective
- Ventilation–perfusion mismatching causes $PaO_2$ to decrease with age: $100 - (0.32 * \text{age})$
- Trachea and central airways increase in diameter
- Enlarged alveolar ducts due to lost elastic lung parenchyma structural support result in decreased surface area
- Decreased lung mass
- Expansion of thorax
- Maximum inspiratory and expiratory pressures decrease
- Decreased respiratory muscle strength
- Chest wall stiffens
- Diffusion of CO decreased
- Decreased ventilatory response to hypercapnia

Hematologic
- Bone marrow reserves decreased in response to high demand
- Attenuated reticulocytosis to erythropoeitin administration

Renal
- Decreased creatinine clearance and GFR 10 ml/decade
- Decrease of 25% in renal mass, mostly from cortex with a relative increased perfusion of juxtamedullary nephrons
- Decreased sodium excretion and conservation
- Decreased potassium excretion and conservation
- Decreased concentrating and diluting capacity
- Impaired secretion of acid load
- Decreased serum renin and aldosterone
- Accentuated ADH release in response to dehydration
- Decreased nitric oxide production
- Increased dependence of renal prostaglandins to maintain perfusion
- Decreased vitamin D activation

Peripheral nervous system
- Loss of spinal motor neurons
- Decreased vibratory sensation, especially in feet
- Decreased thermal sensitivity (warm–cool)
- Decreased sensory nerve action potential amplitude
- Decreased size of large myelinated fibers
- Increased heterogeneity of axon myelin sheaths

Central nervous system
- Small decrease in brain mass
- Decreased brain blood flow and impaired autoregulation of perfusion
- Nonrandom loss of neurons to modest extents
- Proliferation of astrocytes
- Decreased density of dendritic connections
- Increased numbers of scattered neurofibrillary tangles
- Increased numbers of scattered senile plaques
- Decreased myelin and total brain lipid
- Altered neurotransmitters, including dopamine and serotonin
- Increased monoamine oxidase activity
- Decrease in hippocampal glucocorticoid receptors
- Decline in fluid intelligence
- Slowed central processing and reaction time

Gastrointestinal (GI)
- Decreased liver size and blood flow
- Impaired clearance by liver of drugs that require extensive phase I metabolism
- Reduced inducibility of liver mixed-function oxidase enzymes Mild decrease in bilirubin
- Hepatocytes accumulate secondary lysosomes, residual bodies, and lipofuscin
- Mild decrease in stomach acid production, probably due to nonautoimmune loss of parietal cells
- Impaired response to gastric mucosal injury
- Decreased pancreatic mass and enzymatic reserves
- Decrease in effective colonic contractions
- Decreased calcium absorption
- Decrease in gut-associated lymphoid tissue

Muscle
- Marked decrease in muscle mass (sarcopenia) due to loss of muscle fibers
- Aging effects smallest in diaphragm (role of activity), more in legs than arms
- Decreased myosin heavy chain synthesis
- Small if any decrease in specific force
- Decreased innervation, increased number of myofibrils per motor unit
- Infiltration of fat into muscle bundles
- Increased fatigability
- Decrease in basal metabolic rate (decrease 4%/decade after age 50) parallels loss of muscle

Bone
- Slower healing of fractures
- Decreasing bone mass in men and women, both trabecular and cortical bone
- Decreased osteoclast bone formation

Joints
- Disordered cartilage matrix
- Modified proteoglycans and glycosaminoglycans

Vision
- Impaired dark adaptation
- Yellowing of lens
- Inability to focus on near items (presbyopia)
- Minimal decrease in static acuity, profound decrease in dynamic acuity (moving target)
- Decreased contrast sensitivity
- Decreased lacrimation

Smell
- Detection decreased by 50%

Thirst
- Decreased thirst drive
- Impaired control of thirst by endorphins

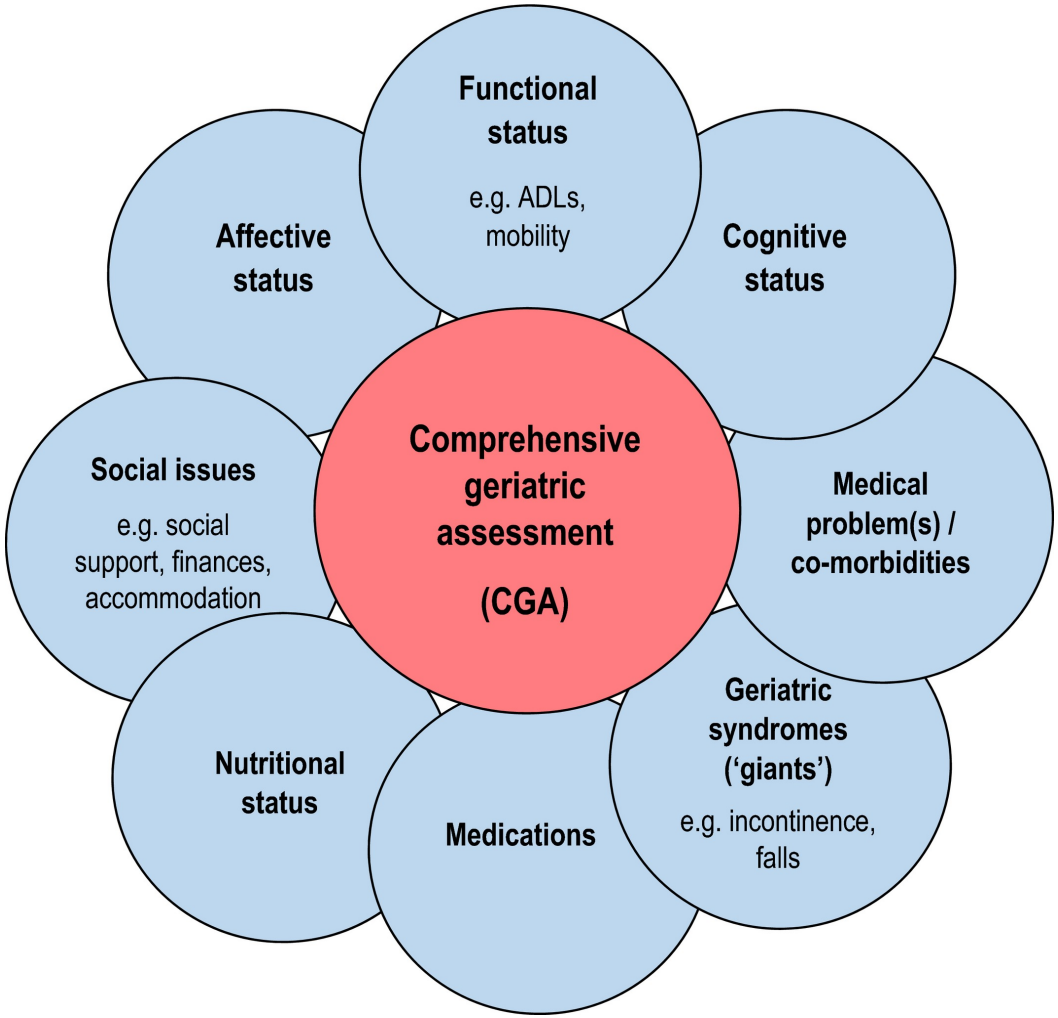
Balance
- Increased threshold vestibular responses
- Reduced number of organ of Corti hair cells

Audition
- Bilateral loss of high-frequency tones
- Central processing deficit
- Difficulty discriminating source of sound
- Impaired discrimination of target from noise

# comprehensive geriatric assessment (CGA)

- **Comprehensive geriatric assessment** (CGA) is defined as a multidisciplinary diagnostic and treatment process that identifies medical, psychosocial, and functional limitations of a frail older person in order to develop a coordinated plan to maximize overall health with aging
- https://elearning-med.ju.edu.jo/med/pluginfile.php/8444/mod_resource/content/3/CGA%20students.pdf

# Domains of CGA



**Key elements of comprehensive geriatric assessment**

- Medical assessment
  - Problem list
  - Comorbidities
  - Medications
  - Nutritional assessment
- Functional assessment
  - Basic activities of daily living
  - Instrumental activities of daily living
  - Gait and balance assessment
  - Exercise/activity assessment
- Psychological assessment
  - Cognitive status
  - Assessment of mood
- Social assessment
  - Informal social support
- Environmental assessment
  - Care resource eligibility/financial assessment
  - Home safety
  - Access to transport facilities

# Medical assessment

1. Past medical
2. Past surgical
3. Past psychiatric history
4. Medications/allergies
5. Nutritional assessment

# Psychological assessment

**1- Cognitive assessment AND 2. Affective/mood assessment**

Mental status tests/ Cognitive:

- **Formal** (eg : mini-mental state examination (MMSE))

30-point questionnaire that is used extensively in clinical and research settings to measure cognitive impairment

A score equal or more than 24 is normal.

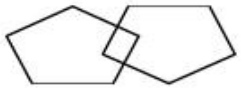
- **Informal** (eg : Mini-cog test)
- A test used for **rapid** assessment of cognitive status

# MMSE

## Mini-Mental State Examination (MMSE)

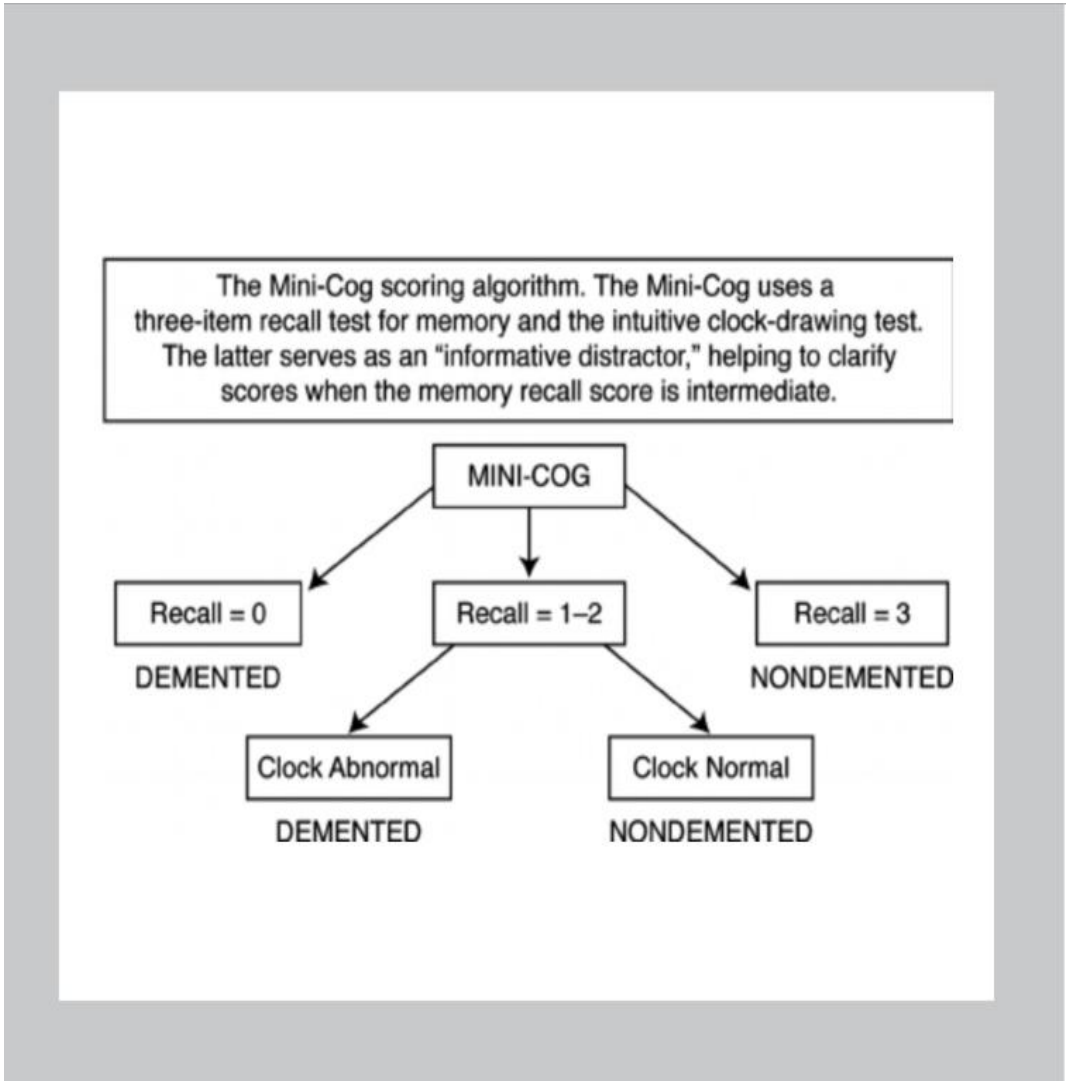
Patient's Name: _____ Date: _____

***Instructions: Score one point for each correct response within each question or activity.***

| Maximum Score | Patient's Score | Questions |
|---|---|---|
| 5 | | "What is the year? Season? Date? Day? Month?" |
| 5 | | "Where are we now? State? County? Town/city? Hospital? Floor?" |
| 3 | | The examiner names three unrelated objects clearly and slowly, then the instructor asks the patient to name all three of them. The patient's response is used for scoring. The examiner repeats them until patient learns all of them, if possible. |
| 5 | | "I would like you to count backward from 100 by sevens." (93, 86, 79, 72, 65, …)<br>Alternative: "Spell WORLD backwards." (D-L-R-O-W) |
| 3 | | "Earlier I told you the names of three things. Can you tell me what those were?" |
| 2 | | Show the patient two simple objects, such as a wristwatch and a pencil, and ask the patient to name them. |
| 1 | | "Repeat the phrase: 'No ifs, ands, or buts.'" |
| 3 | | "Take the paper in your right hand, fold it in half, and put it on the floor." (The examiner gives the patient a piece of blank paper.) |
| 1 | | "Please read this and do what it says." (Written instruction is "Close your eyes.") |
| 1 | | "Make up and write a sentence about anything." (This sentence must contain a noun and a verb.) |
| 1 | | "Please copy this picture." (The examiner gives the patient a blank piece of paper and asks him/her to draw the symbol below. All 10 angles must be present and two must intersect.)<br>  |
| 30 | | TOTAL |

# Mini Cog Test

- Step 1: Three-word registration
- Step 2: Clock drawing
- Step 3: ask the patient to recall the 3 words you said in step 1
- <3 points need screening for dementia

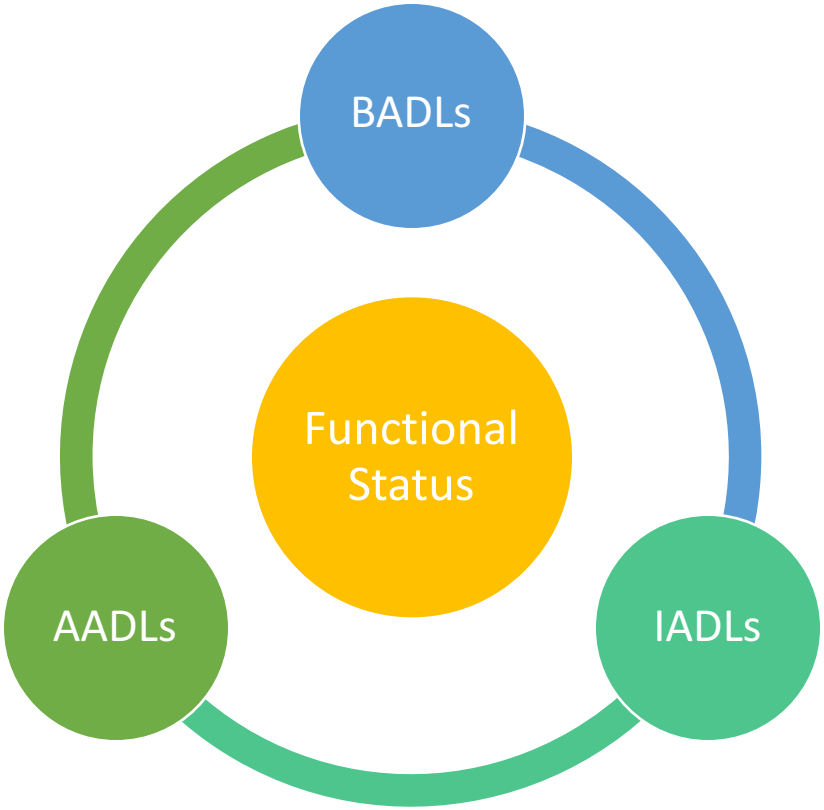


# Mood assessment

- "During the past month, have you been bothered by feeling down, depressed, or hopeless?"
- "During the past month, have you been bothered by little interest or pleasure in doing things?

- Or use: GDS scale/ short form (out of 15)

# Functional assessment



# Functional assessment

- Basic ADL: The activities meeting the basic physiological and self maintenance needs.
- Instrumental ADL (IADL) are essential, together with BADL, to maintain independent living.
- Advanced ADL (AADL) are more sophisticated activities, beyond those necessary to live independently

# Katz Index of Independence in Activities of Daily Living (ADL)

- Katz Index of Independence in Activities of Daily Living, commonly referred to as the Katz ADL, is the most appropriate instrument to assess functional status as a measurement of the client's ability to perform activities of daily living independently. Clinicians typically use the tool to assess function and detect problems in performing activities of daily living and to plan care accordingly. The Index ranks adequacy of performance in the six functions of bathing, dressing, toileting, transferring, continence, and feeding. Clients are scored yes/no for independence in each of the six functions. A score of 6 indicates full function, 4 indicates moderate impairment, and 2 or less indicates severe functional impairment.

# Katz Index of Independence in Activities of Daily Living

| ACTIVITIES<br>POINTS (1 OR 0) | INDEPENDENCE:<br>(1 POINT)<br>**NO** supervision, direction or personal assistance | DEPENDENCE:<br>(0 POINTS)<br>**WITH** supervision, direction, personal assistance or total care |
|---|---|---|
| **BATHING**<br>POINTS:_____ | (1 POINT) Bathes self completely or needs help in bathing only a single part of the body such as the back, genital area or disabled extremity. | (0 POINTS) Needs help with bathing more than one part of the body, getting in or out of the tub or shower. Requires total bathing. |
| **DRESSING**<br>POINTS:_____ | (1 POINT) Gets clothes from closets and drawers and puts on clothes and outer garments complete with fasteners. May have help tying shoes. | (0 POINTS) Needs help with dressing self or needs to be completely dressed. |
| **TOILETING**<br>POINTS:_____ | (1 POINT) Goes to toilet, gets on and off, arranges clothes, cleans genital area without help. | (0 POINTS) Needs help transferring to the toilet, cleaning self or uses bedpan or commode. |
| **TRANSFERRING**<br>POINTS:_____ | (1 POINT) Moves in and out of bed or chair unassisted. Mechanical transferring aides are acceptable. | (0 POINTS) Needs help in moving from bed to chair or requires a complete transfer. |
| **CONTINENCE**<br>POINTS:_____ | (1 POINT) Exercises complete self control over urination and defecation. | (0 POINTS) Is partially or totally incontinent of bowel or bladder. |
| **FEEDING**<br>POINTS:_____ | (1 POINT) Gets food from plate into mouth without help. Preparation of food may be done by another person. | (0 POINTS) Needs partial or total help with feeding or requires parenteral feeding. |

**TOTAL POINTS** = _____ *6 = High (patient independent) 0 = Low (patient very dependent)*

# The Lawton Instrumental Activities of Daily Living (IADL) Scale

- Provides objective data to assist with targeting individualized rehabilitation needs and plans for specific in-home services such as meal preparation, nursing and personal care, home-maker services, financial and medication management, and/or continuous supervision
- 8 domains: Ability to Use Telephone, Shopping, Food Preparation, Housekeeping, Laundry, Transportation, Responsibility for Own Medications, Ability to Handle Finances.
- Score ranges from 0 (low function, dependent) to 8 (high function, independent)

# The Lawton Instrumental Activities of Daily Living Scale

## A. Ability to Use Telephone

1. Operates telephone on own initiative; looks up and dials numbers ..... 1
2. Dials a few well-known numbers ..... 1
3. Answers telephone, but does not dial ..... 1
4. Does not use telephone at all ..... 0

## B. Shopping

1. Takes care of all shopping needs independently ..... 1
2. Shops independently for small purchases ..... 0
3. Needs to be accompanied on any shopping trip ..... 0
4. Completely unable to shop ..... 0

## C. Food Preparation

1. Plans, prepares, and serves adequate meals independently ..... 1
2. Prepares adequate meals if supplied with ingredients ..... 0
3. Heats and serves prepared meals or prepares meals but does not maintain adequate diet ..... 0
4. Needs to have meals prepared and served ..... 0

## D. Housekeeping

1. Maintains house alone with occasion assistance (heavy work) ..... 1
2. Performs light daily tasks such as dishwashing, bed making ..... 1
3. Performs light daily tasks, but cannot maintain acceptable level of cleanliness ..... 1
4. Needs help with all home maintenance tasks ..... 1
5. Does not participate in any housekeeping tasks ..... 0

## E. Laundry

1. Does personal laundry completely ..... 1
2. Launders small items, rinses socks, stockings, etc ..... 1
3. All laundry must be done by others ..... 0

## F. Mode of Transportation

1. Travels independently on public transportation or drives own car ..... 1
2. Arranges own travel via taxi, but does not otherwise use public transportation ..... 1
3. Travels on public transportation when assisted or accompanied by another ..... 1
4. Travel limited to taxi or automobile with assistance of another ..... 0
5. Does not travel at all ..... 0

## G. Responsibility for Own Medications

1. Is responsible for taking medication in correct dosages at correct time ..... 1
2. Takes responsibility if medication is prepared in advance in separate dosages ..... 0
3. Is not capable of dispensing own medication ..... 0

## H. Ability to Handle Finances

1. Manages financial matters independently (budgets, writes checks, pays rent and bills, goes to bank); collects and keeps track of income ..... 1
2. Manages day-to-day purchases, but needs help with banking, major purchases, etc ..... 1
3. Incapable of handling money ..... 0

Scoring: For each category, circle the item description that most closely resembles the client's highest functional level (either 0 or 1).

# Advanced activities of daily living

- Evaluates the persons ability to participate in societal, community, and family roles.
- It also assesses for recreational and occupational activities. These activities varies among individuals and may be a valuable tools in monitoring functional status prior to the development of disability.
- Impairment is due to cognitive deficits, and not to co-morbidities and physical impairments, commonly present in older patients

# AADLs

- Includes cognitive stimulating activities:

playing games, reading books, playing a musical instrument, art and crafts.

To develop oneself by formal or informal learning: attending a course, going to lectures.

To engage in organized social life or leisure activities

# Social assessment

Living Arrangement: With Whom:

Birthplace:

Education:

Work History:

Marital status: Children: Siblings: Parents:

Finance: Will/POA:

Hobbies/Leisure:

Smoking (pack . year):

Alcohol:

Family Hx of Dementia/depression/psychotic illness/PD/CVA

# Environmental assessment

- Home safety

  Stairs into/in the house, Bathroom location
- Access to transport facilities
- Assistive devices :

Walker/wheelchair/cane/bath grab bars/bath seats/stair glide

# Gait and balance assessment

- In addition to measures of ADLs, gait speed alone predicts functional decline and early mortality in older adults. Assessing gait speed in clinical practice may identify patients at increased risk of falls.
- Approximately one-third of community-dwelling persons age 65 years and one-half of those over 80 years of age fall each year. Patients who have fallen or have a gait or balance problem are at higher risk of having a subsequent fall and losing independence. An assessment of fall risk should be integrated into the history and physical examination of all geriatric patients

# Geriatric syndromes/Giants

A term used to describe the common conditions and/or syndromes that can adversely impact a senior's functional abilities. They are frequently interdependent thereby increasing the potential for adverse outcomes.

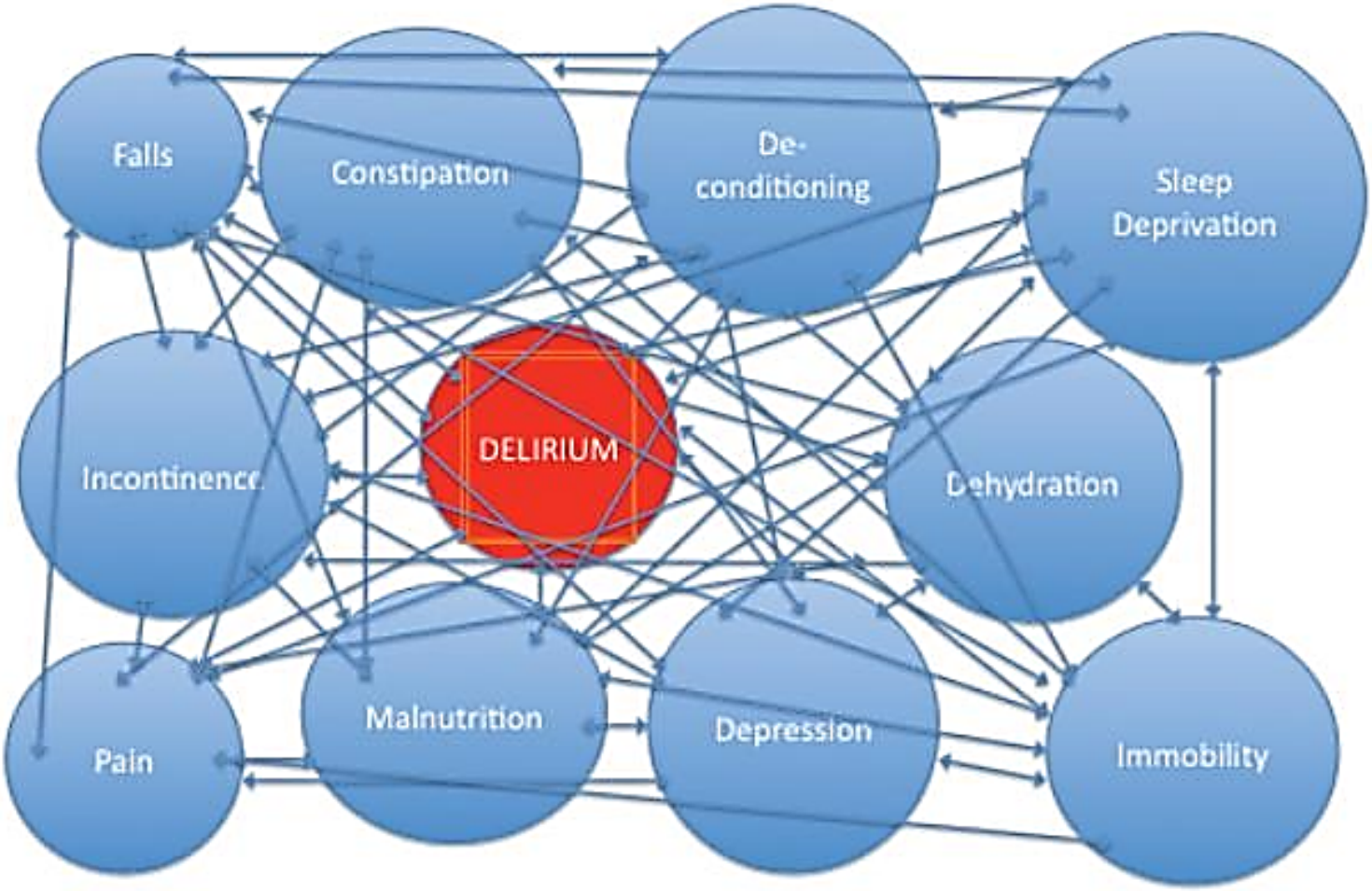
These include:

Delirium, depression, dementia, inappropriate medication, sleep and rest disturbance, pain, skin breakdown, bladder and bowel incontinence, malnutrition/dehydration and poor oral health, falls and injuries, deconditioning, elder abuse/neglect

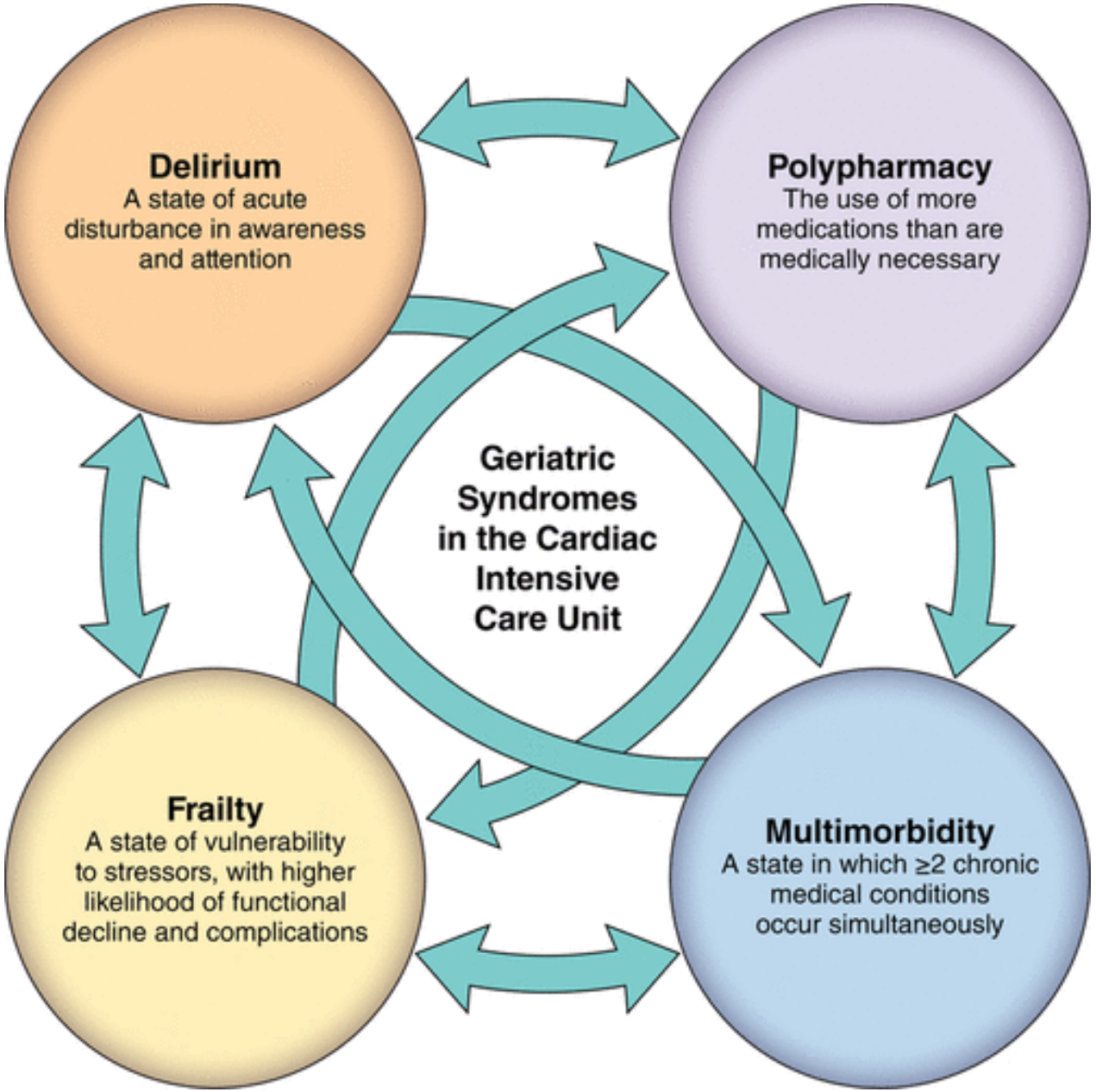
Often, they represent the loss of specific functional capacities caused by multiple pathologies in multiple organ systems. They are associated with reduced life expectancy.

(Dwolatzky, 2007; Inouye, Studenski, Tinetti, & Kuchel, 2007).

# Geriatric Vicious Circles




Sandra Whytock RN MSN


Delirium
A state of acute disturbance in awareness and attention
Polypharmacy
The use of more medications than are medically necessary
Geriatric Syndromes in the Cardiac Intensive Care Unit
Frailty
A state of vulnerability to stressors, with higher likelihood of functional decline and complications
Multimorbidity
A state in which ≥2 chronic medical conditions occur simultaneously

# Geriatric Giants

- Each Geriatric Giant does not stand alone.
- There is a constant interplay, interdependence and interaction among all the Geriatric Giants.
- Identifying and responding to one identified Geriatric Giant will impact upon all the Geriatric Giants.
- They put patients at Risk for:

✓Dependence/ Decreased Quality of Life

✓Pain/Suffering

✓Altered Cognition

✓Restraints/Falls

✓Skin Breakdown

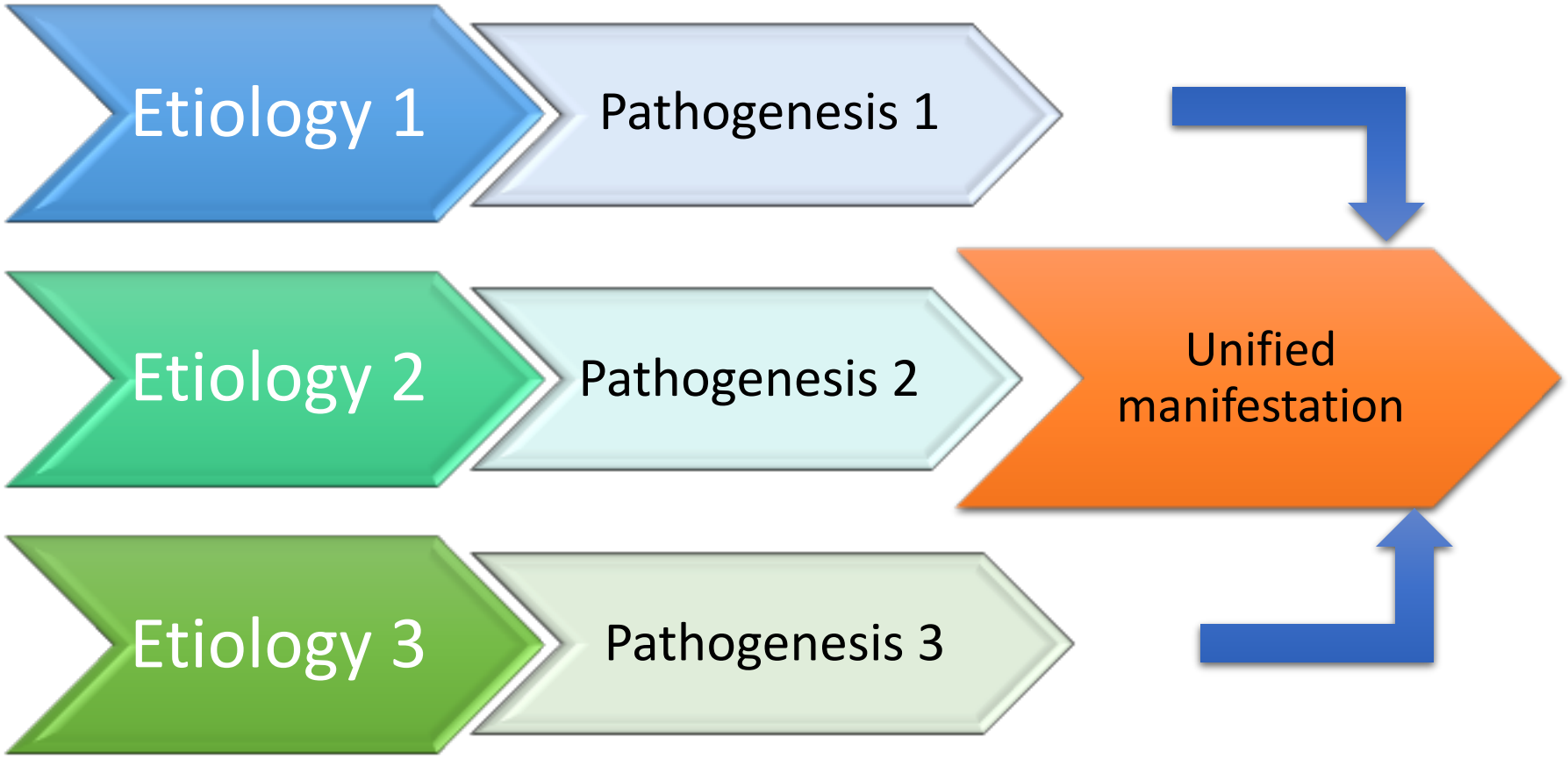
✓Increased Chronicity

✓Excess disability

✓DEATH

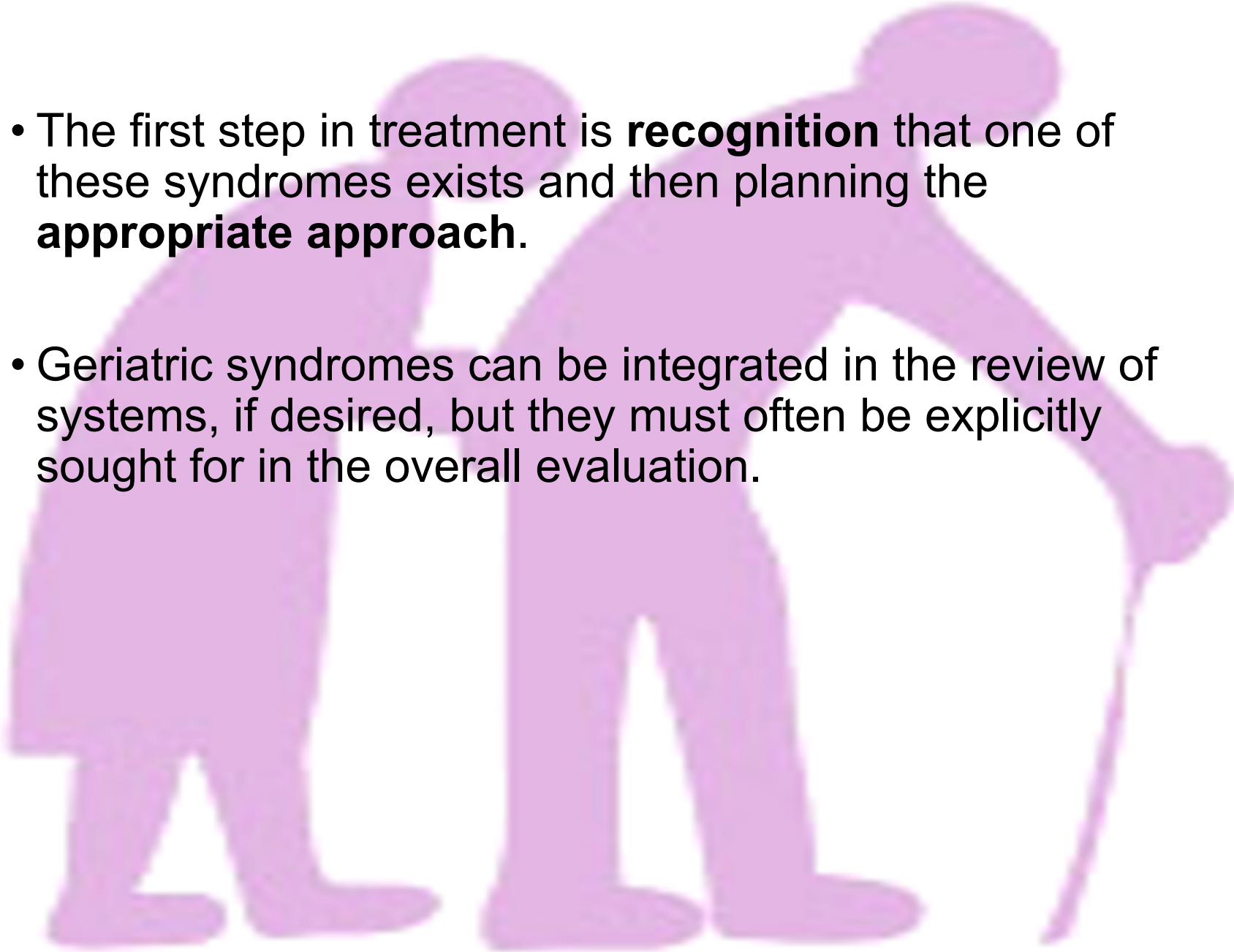
# Disease vs. Syndrome vs. Geriatric Syndrome

# Geriatric Syndrome




Olde Rikkert MG, Rigaud AS, van Hoeyweghen RJ et al. Geriatric syndromes: Medical misnomer or progress in geriatrics? Neth J Med 2003;61:83–87.

- These syndromes commonly occur in older patients and now have defined evidence-based approaches to assessment and treatment.



- The first step in treatment is **recognition** that one of these syndromes exists and then planning the **appropriate approach**.

- Geriatric syndromes can be integrated in the review of systems, if desired, but they must often be explicitly sought for in the overall evaluation.

| Classic Geriatric Syndromes |
| --- |
| ● Dementia |
| ● Delirium |
| ● Urinary incontinence |
| ● Falls and gait abnormalities |
| ● Behavioral changes |
| ● Weight loss |
| ● Dizziness |
| ● Poor nutrition or feeding impairment |
| ● Sleep disorders |

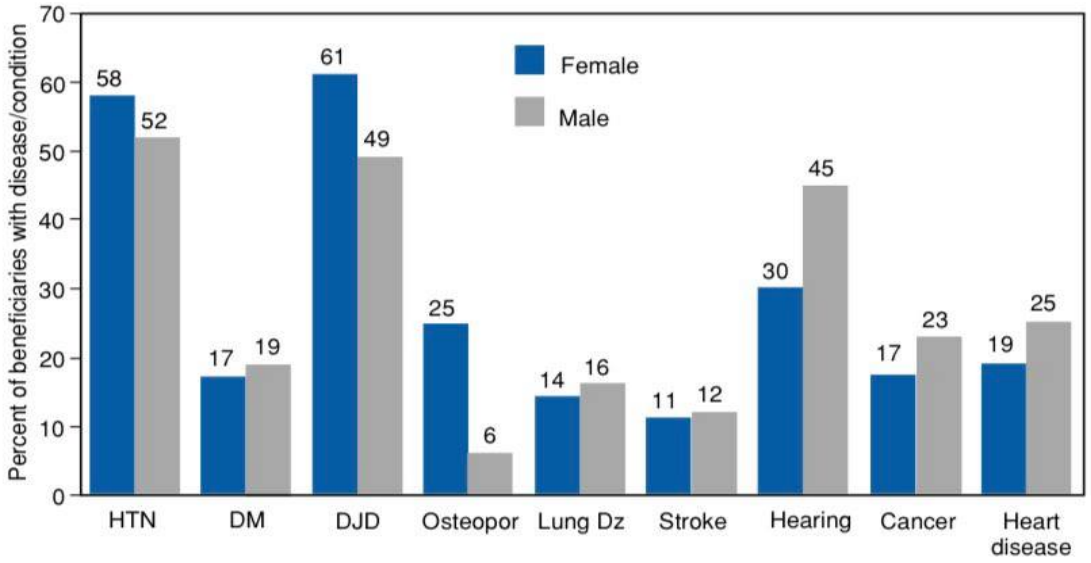
# Review of Systems

- The review of systems goes beyond the history of present illnesses and past history and uses direct questions to ensure that all systems are adequately Covered.

- This review is particularly important in examining older patients because of the large number of hidden illnesses and geriatric syndromes that are often not mentioned owing to embarrassment, ignorance that something can be done, or fear of a negative impression.

# Multiple medical conditions

- The typical older patient usually has several medical
- conditions, such as arthritis, lung, and heart disease.



# Co-morbidity vs Multi-morbidity

**Co-morbidity**

A condition or conditions that coexist in the context of an index disease.

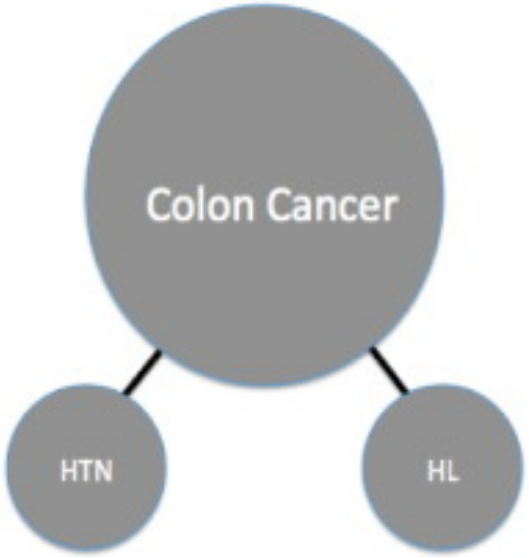
VS.

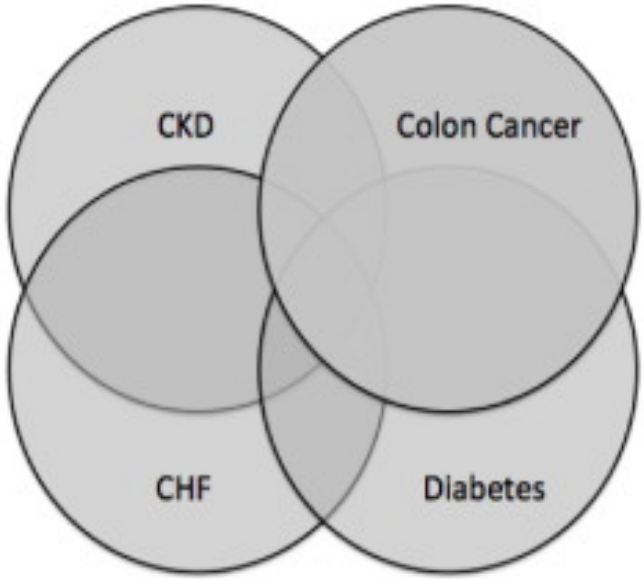
**Multi-morbidity**

The co-occurrence of two or more medical or psychiatric conditions, which may or may not directly interact with each other within the same individual.

# Co-morbidity vs Multi-morbidity

| *Case 1: Concept of Comorbidity* | *Case 2: Concept of Multimorbidity* |
|---|---|
| *Mr X is a 71 yo man with newly diagnosed stage 3 colon cancer. He also has a h/o well-controlled hypertension and hyperlipidemia. He has a total of 2 daily medications and has not been hospitalized in the past year.* | *Mr Y is a 71 yo man with newly diagnosed stage 3 colon cancer. He also has a h/o diabetes, hypertension, congestive heart failure, and CKD, all of moderate severity. He takes a total of 7 daily medications and has been hospitalized for a heart failure exacerbation once in the last year.* |



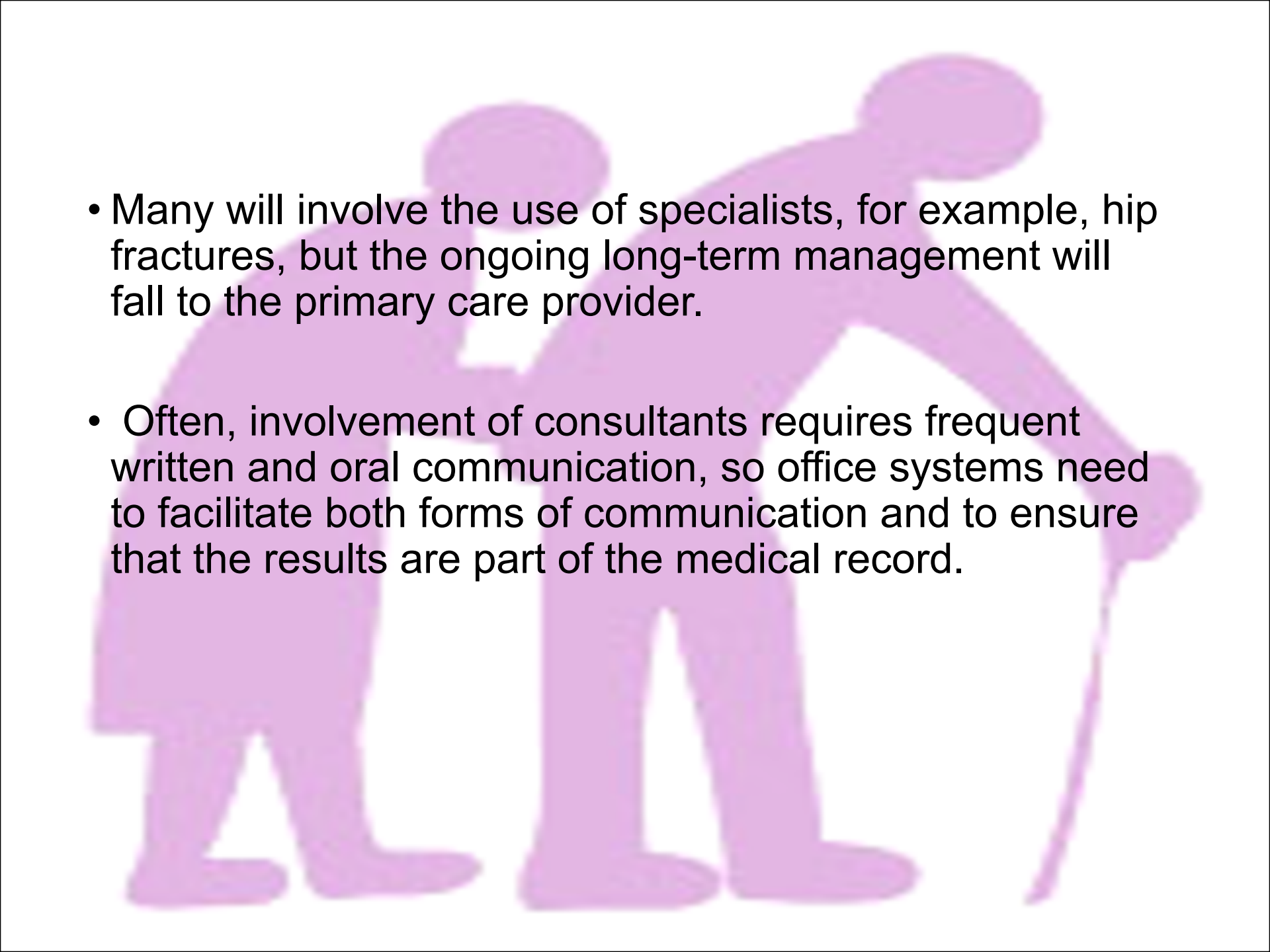




Adapted from: Public Health Reviews, Vol. 32, No 2, 451-474

# Exclusive Disease Entities

- Certain disease entities occur almost exclusively in older patients, such as hip fracture, Parkinson's disease, and polymyalgia rheumatica .

- These geriatric-specific conditions are common, and health care providers need to be comfortable in caring for them in the office setting.



- Many will involve the use of specialists, for example, hip fractures, but the ongoing long-term management will fall to the primary care provider.

- Often, involvement of consultants requires frequent written and oral communication, so office systems need to facilitate both forms of communication and to ensure that the results are part of the medical record.

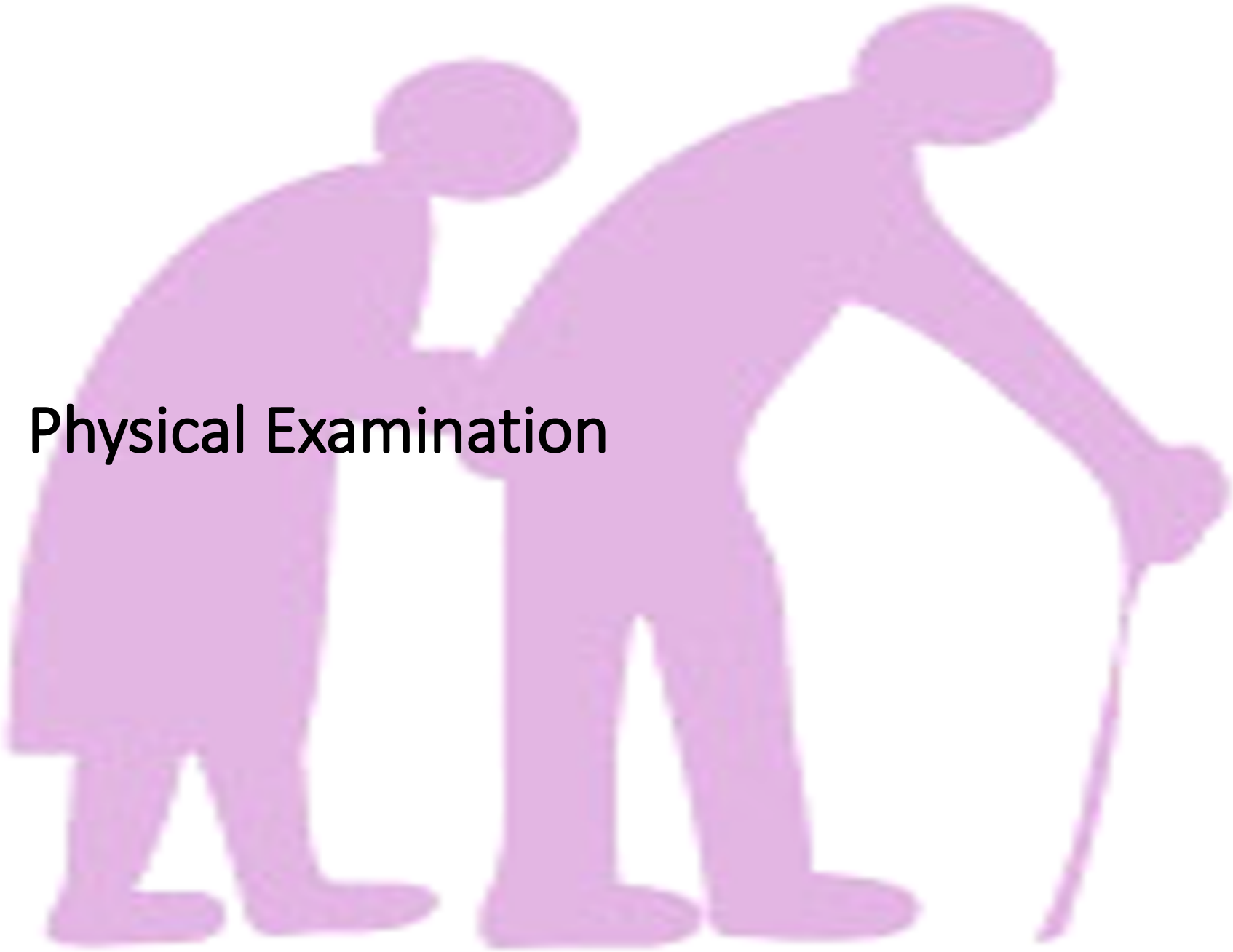
| Geriatric-Specific Disease Entities |
| --- |
| • Osteoporosis |
| • Alzheimer’s disease |
| • Stroke |
| • Hip fracture |
| • Polymyalgia rheumatica and/or temporal arteritis |
| • Parkinson’s disease |
| • Pressure sores |
| • Macular degeneration |
| • Sexual dysfunction |
| • Gonadal failure in men |

# Vague ,Ill-defined symptoms

- -It is not uncommon for older persons to present with
- vague, often puzzling symptoms such as “weakness,”
- “not feeling right,” or “losing energy.”

- - While such symptoms in older patients are nonspecific and difficult to interpret, they often represent new functional
- deficits that reflect a new illness or condition.

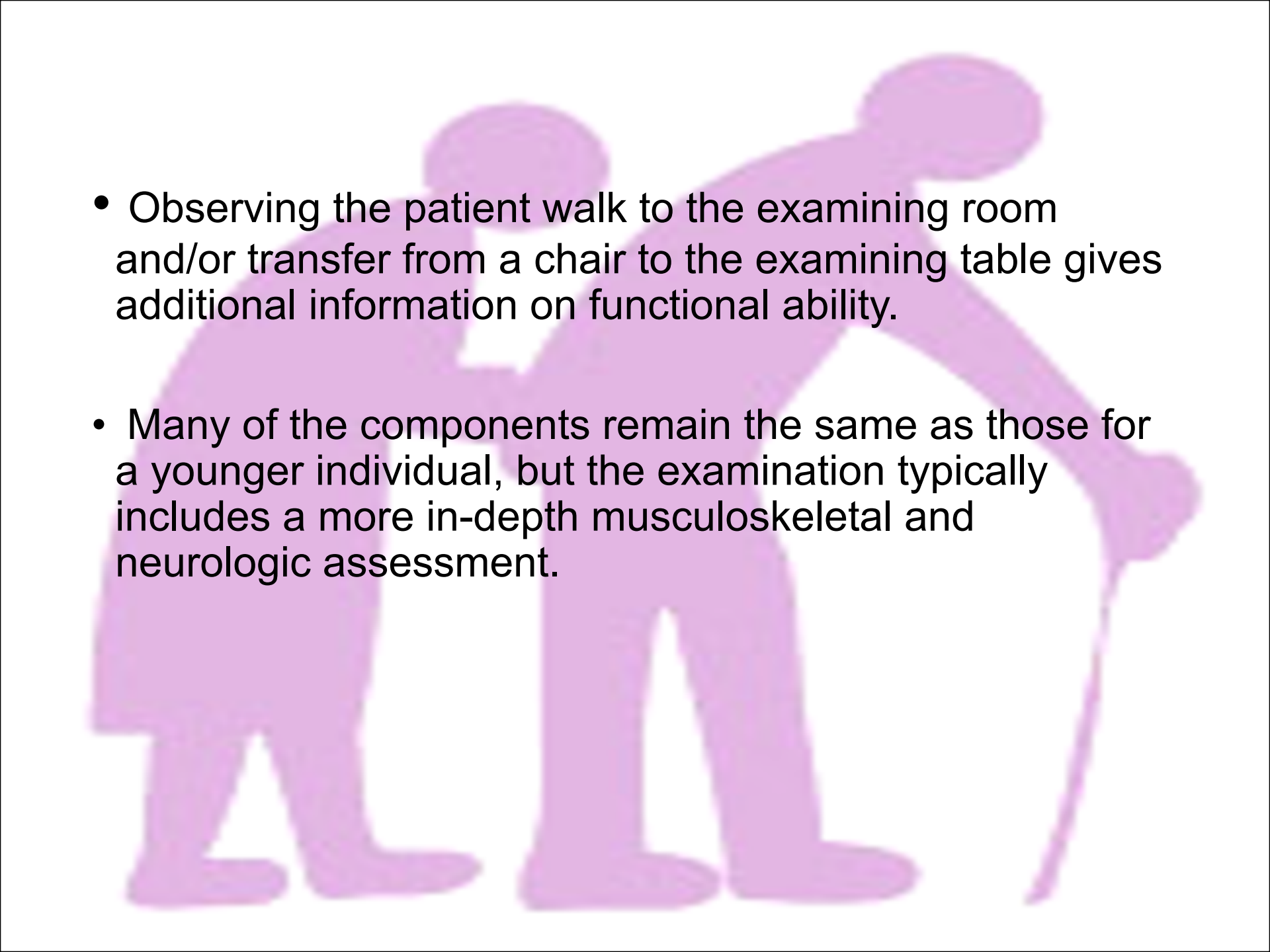
# Physical Examination



# Conduct of physical examination

- The conduct of the history taking has already given you considerable opportunity and cues to the issues regarding the physical examination.

- The general appearance of the patient, quality and loudness of the voice, and robustness of the handshake are clues.



- Observing the patient walk to the examining room and/or transfer from a chair to the examining table gives additional information on functional ability.

- Many of the components remain the same as those for a younger individual, but the examination typically includes a more in-depth musculoskeletal and neurologic assessment.

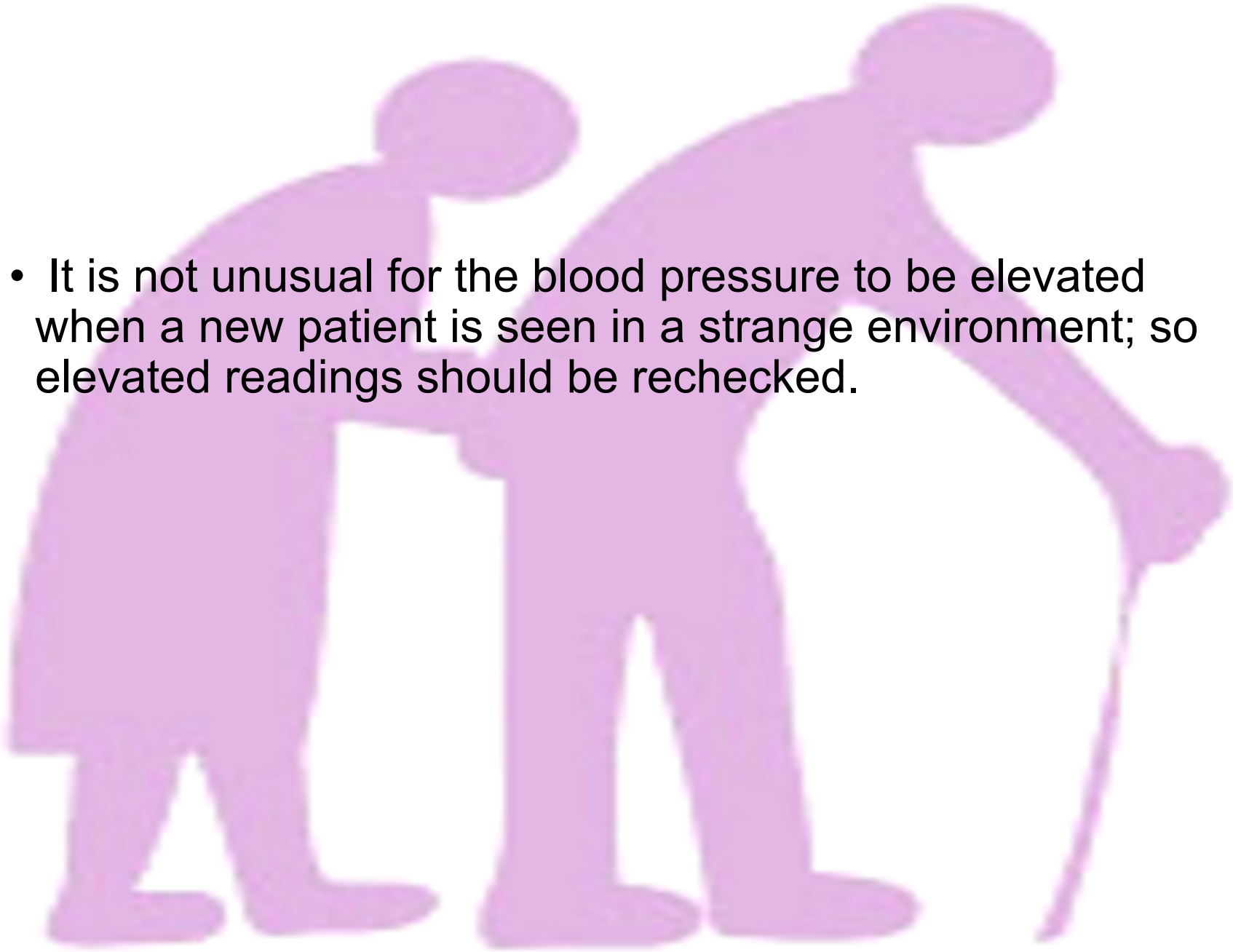
# General

- **Weight change**
- **Sleep quality**
- **Depression**
- **Hearing loss**
- **Alcoholism**
- **Falls**
- **visual impairment**
- **constipation**

# 1-Vital signs

- Once the patient is comfortable, a critical place to start the physical examination is the vital signs. All are important indicators of well-being, especially in the older patient.

- Abnormalities such as weight loss, an irregular pulse, or mild tachypnea have important implications.



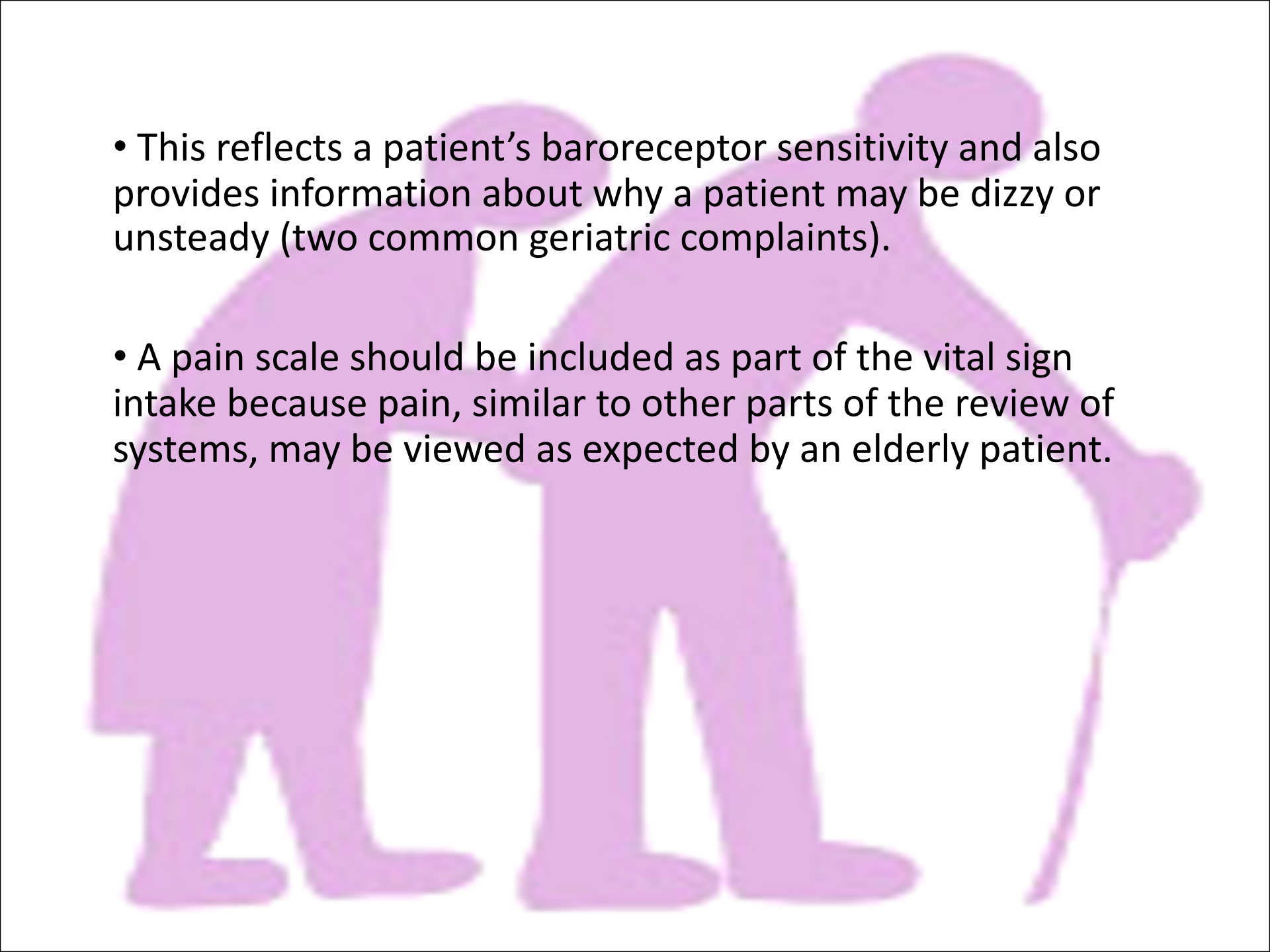
- It is not unusual for the blood pressure to be elevated when a new patient is seen in a strange environment; so elevated readings should be rechecked.

Q. how to measure the blood pressure?

1- the patient must be supine , and blood pressure should be taken 10 minutes after rest.

2- in standing position , wait 3 minutes then measure the blood pressure.

- Note:- orthostatic hypotension defined as a drop of 20 mm Hg in systolic blood pressure,  which rises rapidly with advancing age and is a common finding in those over the age of 85.



- This reflects a patient's baroreceptor sensitivity and also provides information about why a patient may be dizzy or unsteady (two common geriatric complaints).

- A pain scale should be included as part of the vital sign intake because pain, similar to other parts of the review of systems, may be viewed as expected by an elderly patient.

# 2-Head , neck , ENT and Eye exam

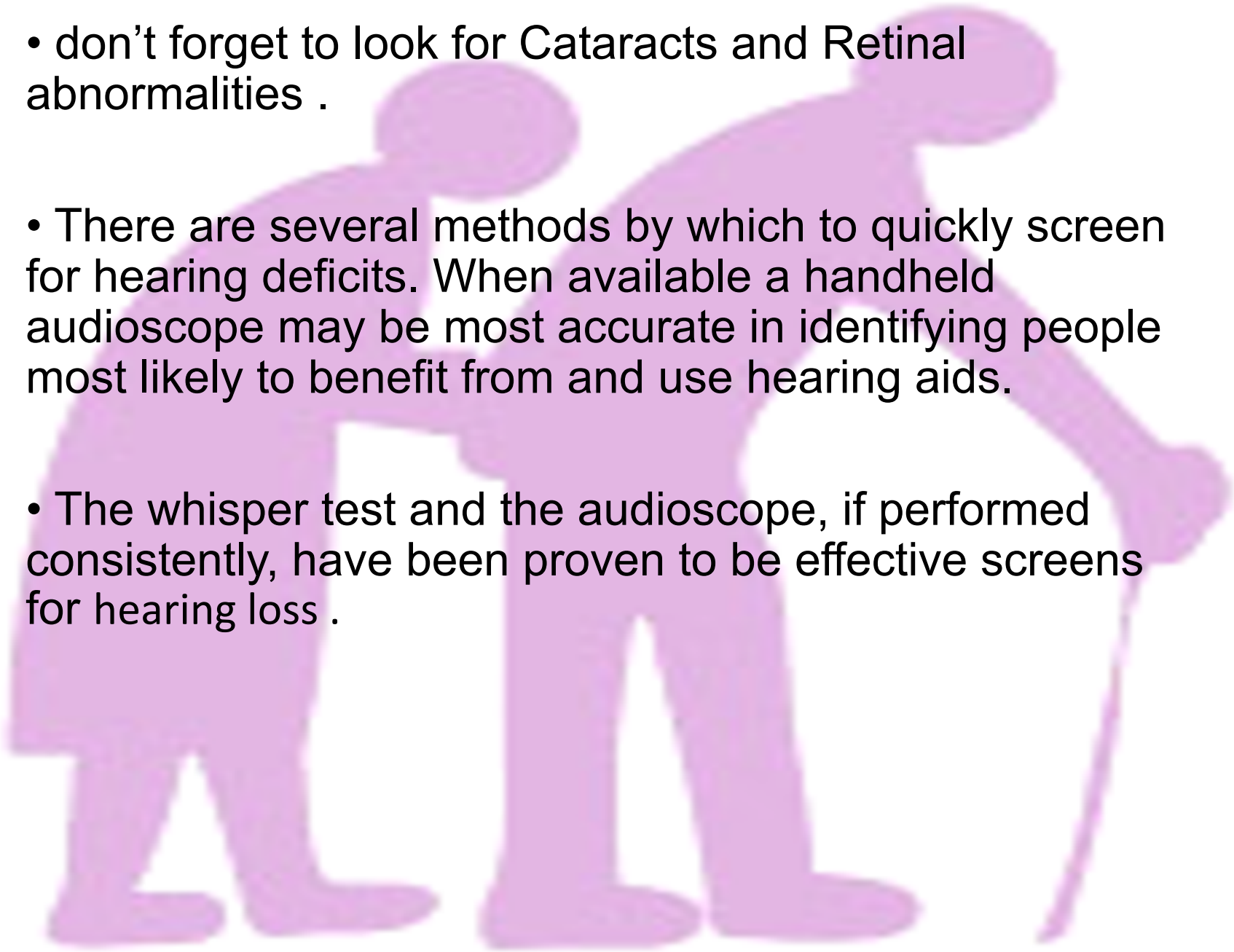
- Vision and hearing screening are important, given the high prevalence of impaired vision and hearing among older patients. These conditions lead to subsequent functional loss.

- Visual impairment was predictive of mortality over 10 years, and combined impairment had the highest risk of 10-year functional decline.

- Annual eye examinations by eye specialists should be encouraged, owing to the high incidence of silent diseases such as glaucoma and macular degeneration.

- During the head, ears, eyes, nose and throat examination, visual acuity and visual fields should be checked for deficits.

- Visual assessment becomes particularly important if the patient has a problem with falls or if there are questions regarding driving abilities.



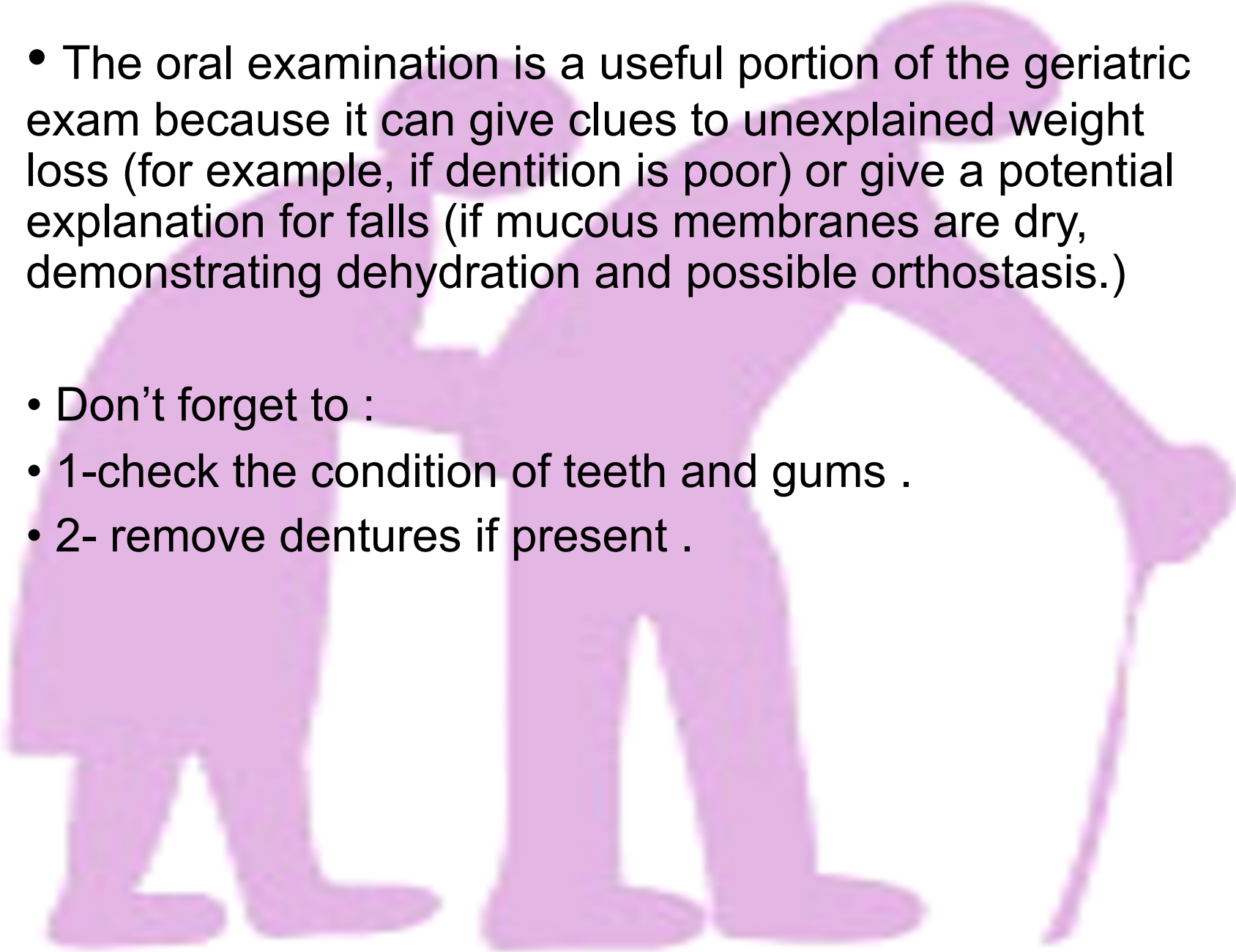
• don’t forget to look for Cataracts and Retinal abnormalities .

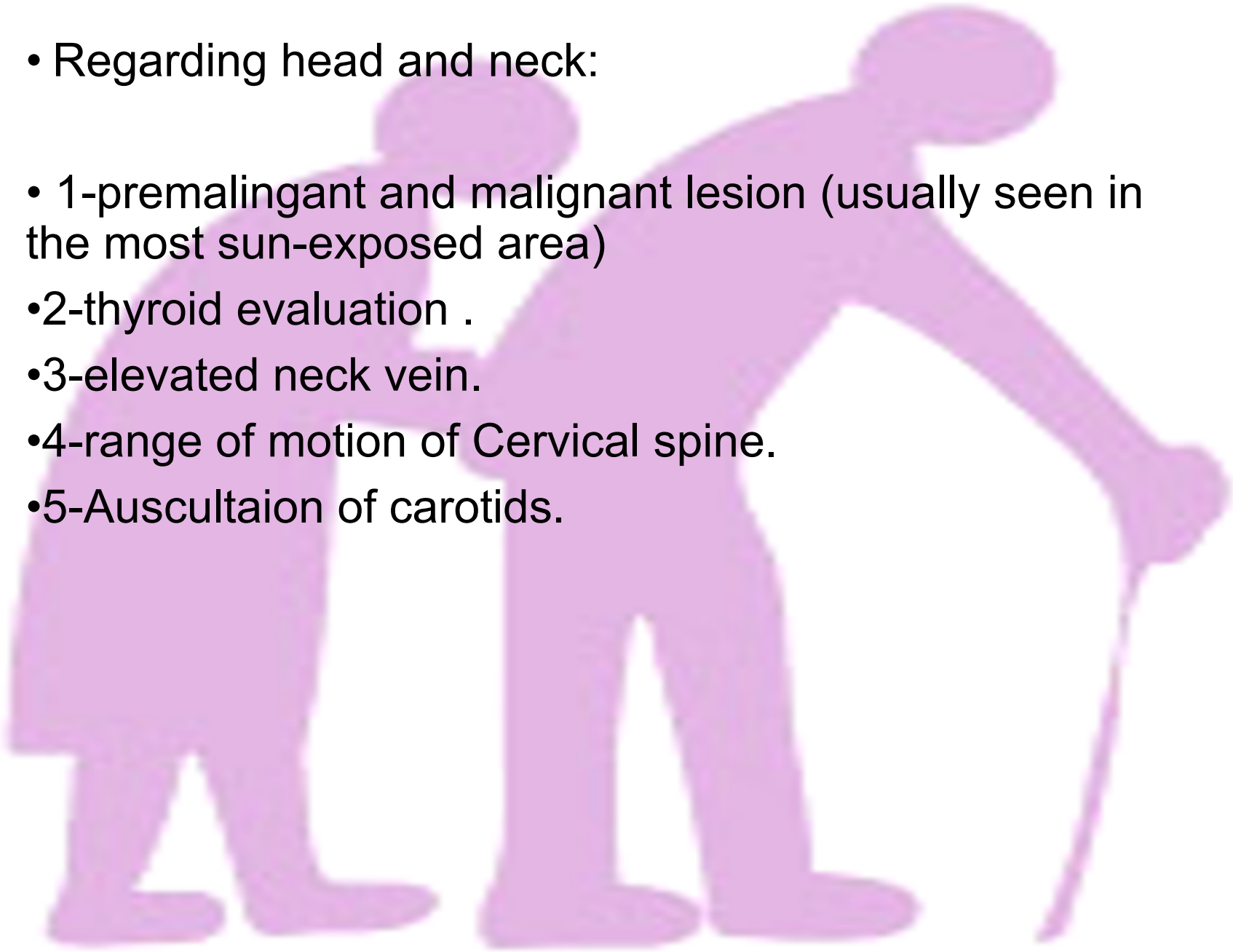
• There are several methods by which to quickly screen for hearing deficits. When available a handheld audioscope may be most accurate in identifying people most likely to benefit from and use hearing aids.

• The whisper test and the audioscope, if performed consistently, have been proven to be effective screens for hearing loss .

- The oral examination is a useful portion of the geriatric exam because it can give clues to unexplained weight loss (for example, if dentition is poor) or give a potential explanation for falls (if mucous membranes are dry, demonstrating dehydration and possible orthostasis.)

- Don’t forget to :
- 1-check the condition of teeth and gums .
- 2- remove dentures if present .





- Regarding head and neck:

- 1-premalingant and malignant lesion (usually seen in the most sun-exposed area)
- 2-thyroid evaluation .
- 3-elevated neck vein.
- 4-range of motion of Cervical spine.
- 5-Auscultaion of carotids.

# 3- Respiratory system Examination

- The chest can be difficult to examine because the rib cage is often fixed owing to the changes of aging. Diaphragmatic breathing plays a much more important role in respiratory function in older patients for this reason.

- Breath sounds may be more difficult to hear, and often dry crackles can be heard at the bases that do not imply serious pathology.

# 4-Cardiac examination :

- The cardiac examination in the older patient will often have some findings. Atrial and ventricular ectopy of a benign nature are common and do not imply an ominous prognosis.

- A split second heart sound, with inspiration increasing the split, is a normal finding in older patients.

- An S4 heart sound is common among older patients without cardiac disease, but an S3 is always suggestive of congestive heart failure.

- Another common cardiac finding is the presence of systolic murmurs in many older patients.

- Benign murmurs in older patients will typically be an ejection type murmur that is soft (grade 2/6 or less) and heard best at the base and possibly at the apex.

- These murmurs probably represent turbulence over sclerotic aortic valves.

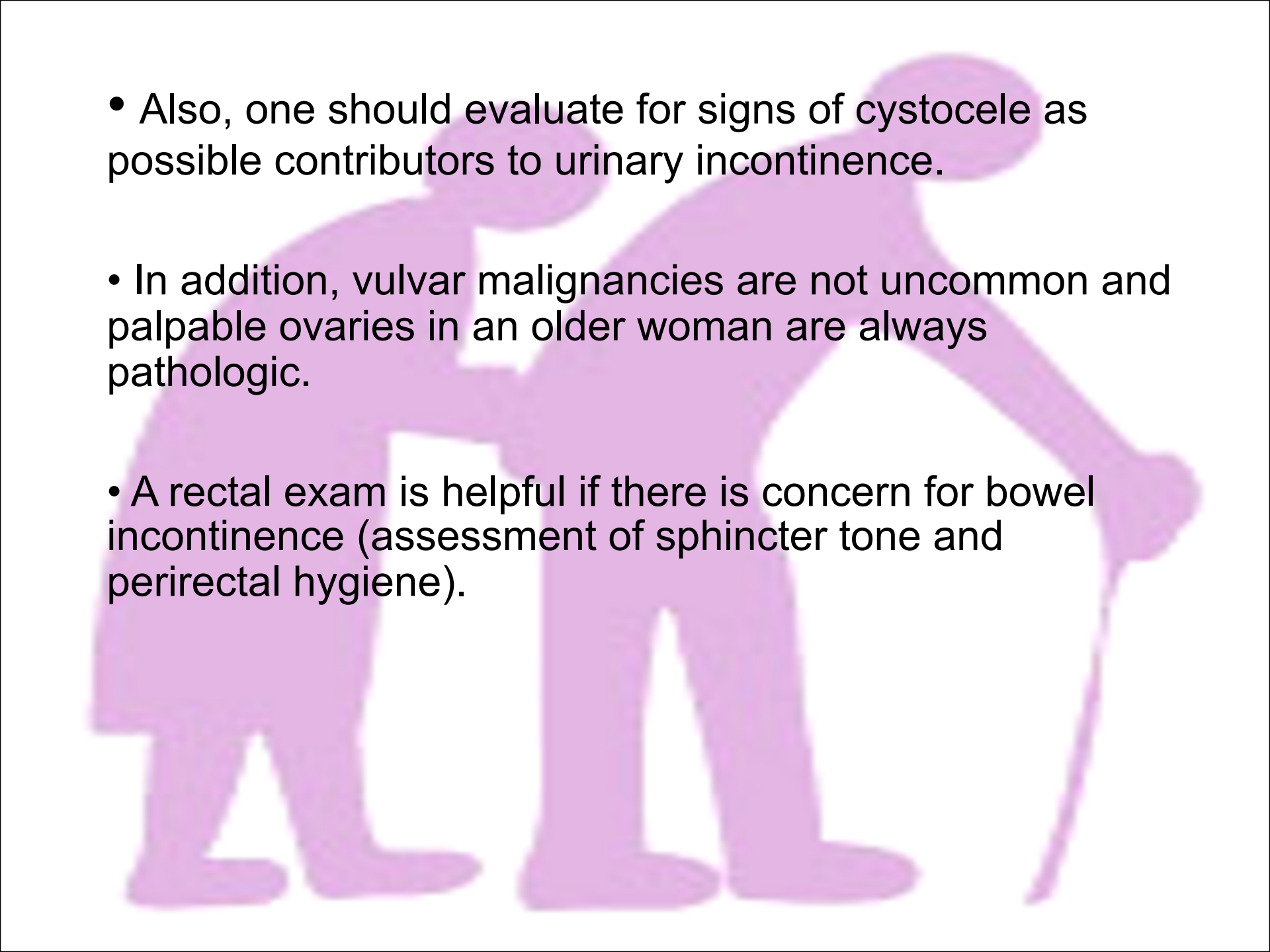
- If the murmur is concerning, some patients may merit further evaluation with an electrocardiograph (ECG) and echocardiography. Because left ventricular enlargement has a serious prognosis, careful physical examination for cardiac size is important and, if found, warrants further diagnostic studies.

- Check Arterial pulses in extremities (especially legs and feet).

# 5-Genitourinary Exam .

• A genitourinary exam is helpful based on patient presentation. With patients who complain of urinary incontinence it is an important part of the evaluation for etiology .

•Examine for stress incontinence by locating the urethral meatus and asking a patient to cough. Leakage of urine with cough is positive for stress incontinence.



- Also, one should evaluate for signs of cystocele as possible contributors to urinary incontinence.

- In addition, vulvar malignancies are not uncommon and palpable ovaries in an older woman are always pathologic.

- A rectal exam is helpful if there is concern for bowel incontinence (assessment of sphincter tone and perirectal hygiene).

• Additionally, checking for occult blood can explain anemia, or uncover an impaction that points to the etiology of fecal soiling.

•In a male with urinary symptoms consistent with benign prostatic hyperplasia (urgency, frequency, nocturia, etc.), a rectal exam can give clues to prostate size and more worrisome symptoms of malignancy such as nodules.

•Because hyperplasia limited to the vicinity of the urethra (median lobe hypertrophy) can impair urine flow significantly, a gland that feels normal on palpation does not rule out benign prostatic hyperplasia as the cause.

# 6-Musculoskeletal examination

- The musculoskeletal system is the source for many common complaints in older patients. Gait and balance testing should be a part of all initial examinations of all older adults.

- This can be as simple and unobtrusive as the get up and go test. This test was subsequently modified to the timed get up and go test, in which the time taken to perform the test is measured and used as a score

- Observation of the patient while he or she performs this simple evaluation can be very revealing.

• Examine the gait for step length, arm swing, and base width. Be sure to note unsteadiness, favoring of one side versus the other, or staggering during a turn.

•Once the patient is on the examination table, test range of motion, particularly in the hips, shoulders, and hands, because these are most closely related to functional activities.

•Assess for strength, muscle tone, and bulk.

• Assess for manual dexterity or clumsiness with rapid alternating movements.

•observe for signs of osteoporosis (for example, kyphosis) and examine specific joints of complaint.

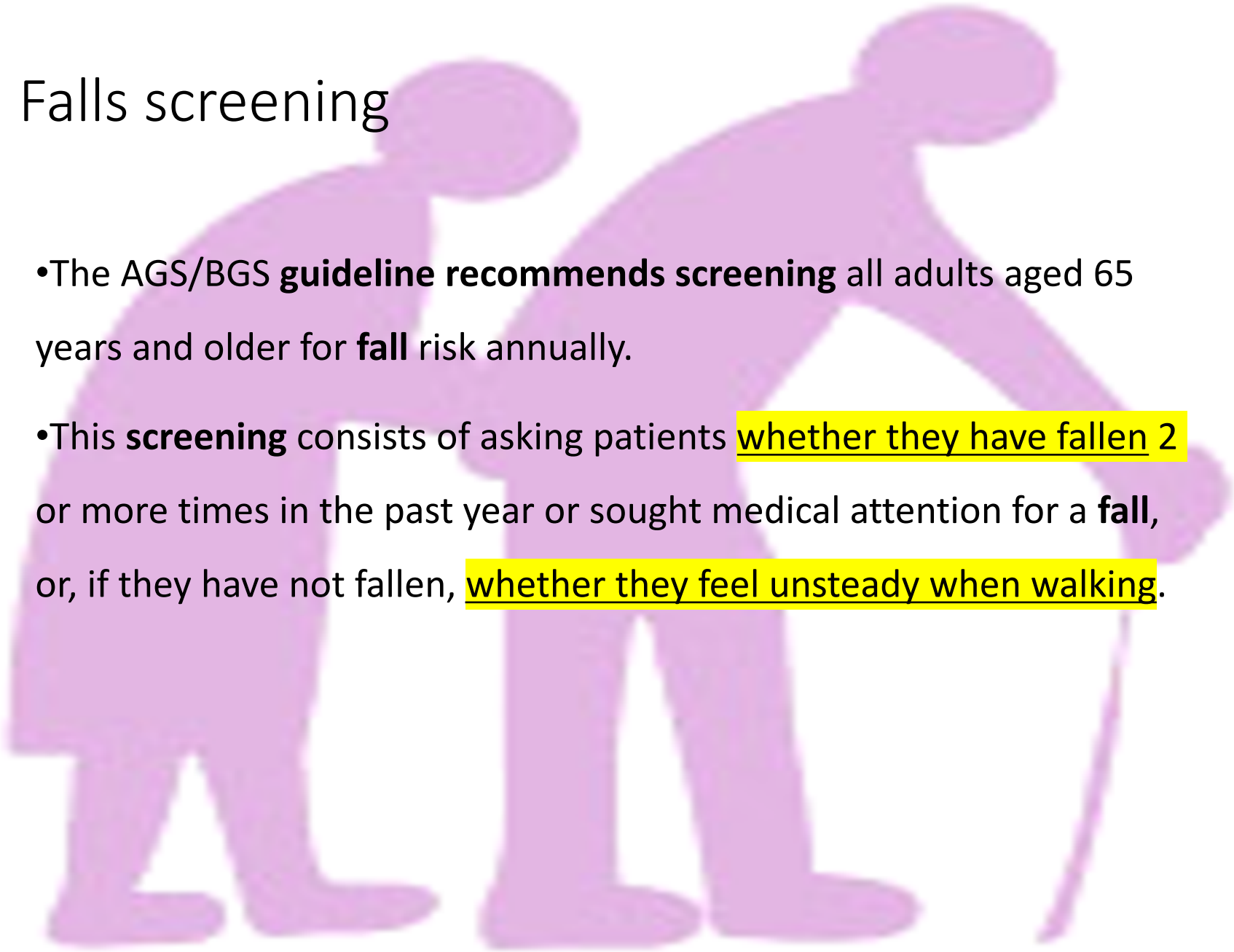
• examine lower extremities for :

•1-hygiene

•2-condition of toenails

•3-presence of edema .

# Falls screening



- The AGS/BGS **guideline recommends screening** all adults aged 65 years and older for **fall** risk annually.
- This **screening** consists of asking patients whether they have fallen 2 or more times in the past year or sought medical attention for a **fall**, or, if they have not fallen, whether they feel unsteady when walking.

# Falls screening- the USPSTF

| Population | Recommendation | Grade |
|---|---|---|
| Adults 65 years or older | The USPSTF recommends exercise interventions to prevent falls in community-dwelling adults 65 years or older who are at increased risk for falls. | B |
| Adults 65 years or older | The USPSTF recommends that clinicians selectively offer multifactorial interventions to prevent falls to community-dwelling adults 65 years or older who are at increased risk for falls. Existing evidence indicates that the overall net benefit of routinely offering multifactorial interventions to prevent falls is small. When determining whether this service is appropriate for an individual, patients and clinicians should consider the balance of benefits and harms based on the circumstances of prior falls, presence of comorbid medical conditions, and the patient's values and preferences.<br><br>See the Clinical Considerations section for information on risk assessment for falls. | C |
| Adults 65 years or older | The USPSTF recommends against vitamin D supplementation to prevent falls in community-dwelling adults 65 years or older. | D |

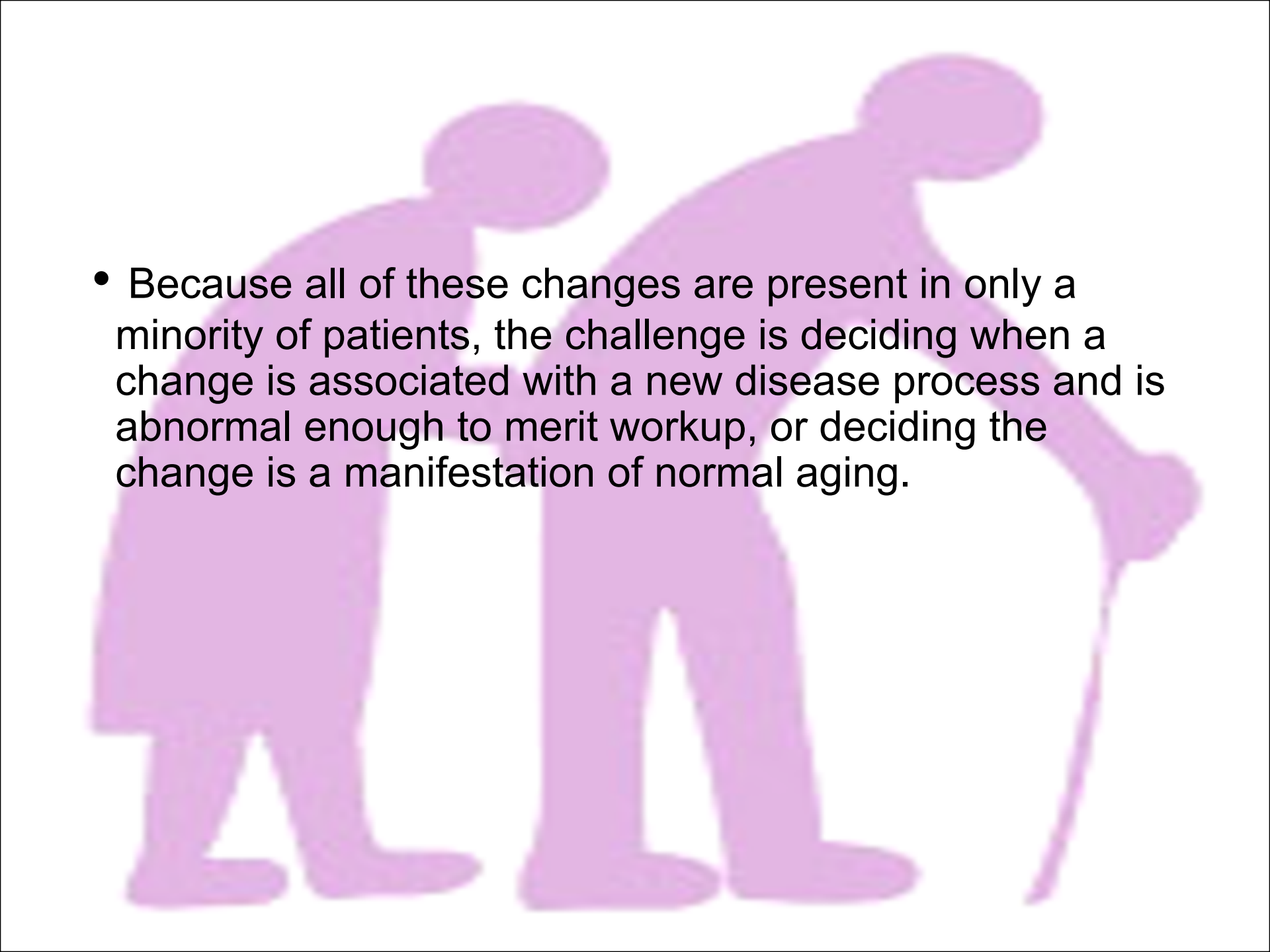
# Falls screening- USPSTF

| | | | |
|---|---|---|---|
| Population | Community-dwelling adults 65 years or older at increased risk for falls, without osteoporosis or vitamin D deficiency | | |
| Recommendation | Recommend exercise | Selectively offer multifactorial | Do not recommend vitamin D |

# 7-CNS examination

- The nervous system permeates the entire body, so it is not surprising that neurologic changes are extensive in older patients.

- The prevalence of several neurologic findings not associated with disease increases with age. These include elements of cranial nerve function, extrapyramidal function, and some primitive reflexes.



- Because all of these changes are present in only a minority of patients, the challenge is deciding when a change is associated with a new disease process and is abnormal enough to merit workup, or deciding the change is a manifestation of normal aging.

# Common Neurological changes in older patients .

- Cranial nerve function: eye signs

1-Unequal pupils (11%)

2-Diminished reaction to light and near reflex (9%).

- Auditory

1-Hearing loss for higher tones

- Olfactory

1-Diminished olfactory sensitivity

- Extrapyramidal function :

1-Abnormal gait (20%)

2-Increased rigidity and tone in the legs (22%)

3-Flexion posture

4-Diminished reaction time

5-Decreased arm swing (29%)

- Motor

1-Tremor (17%)

2-Increased muscle tone in legs (22%)

3-Diminished muscle strength in legs and arms (5%)

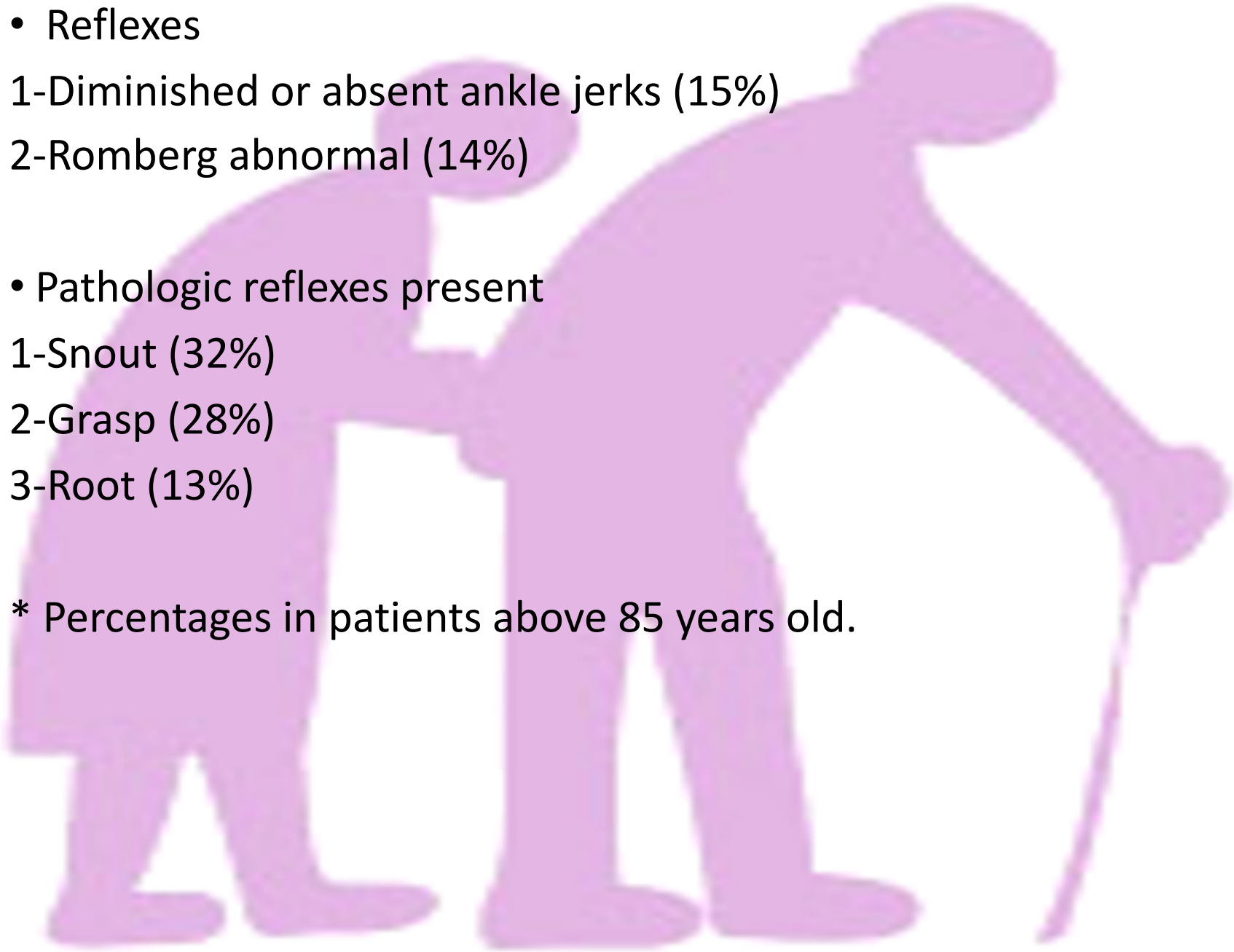
4-Spontaneous movement decrease (14%)

- Sensory

1-Diminished vibratory sense distally (21%)

2-Proprioception preserved

3- Mild increase in threshold for light touch, pain, and temperature



- Reflexes

1-Diminished or absent ankle jerks (15%)

2-Romberg abnormal (14%)

- Pathologic reflexes present

1-Snout (32%)

2-Grasp (28%)

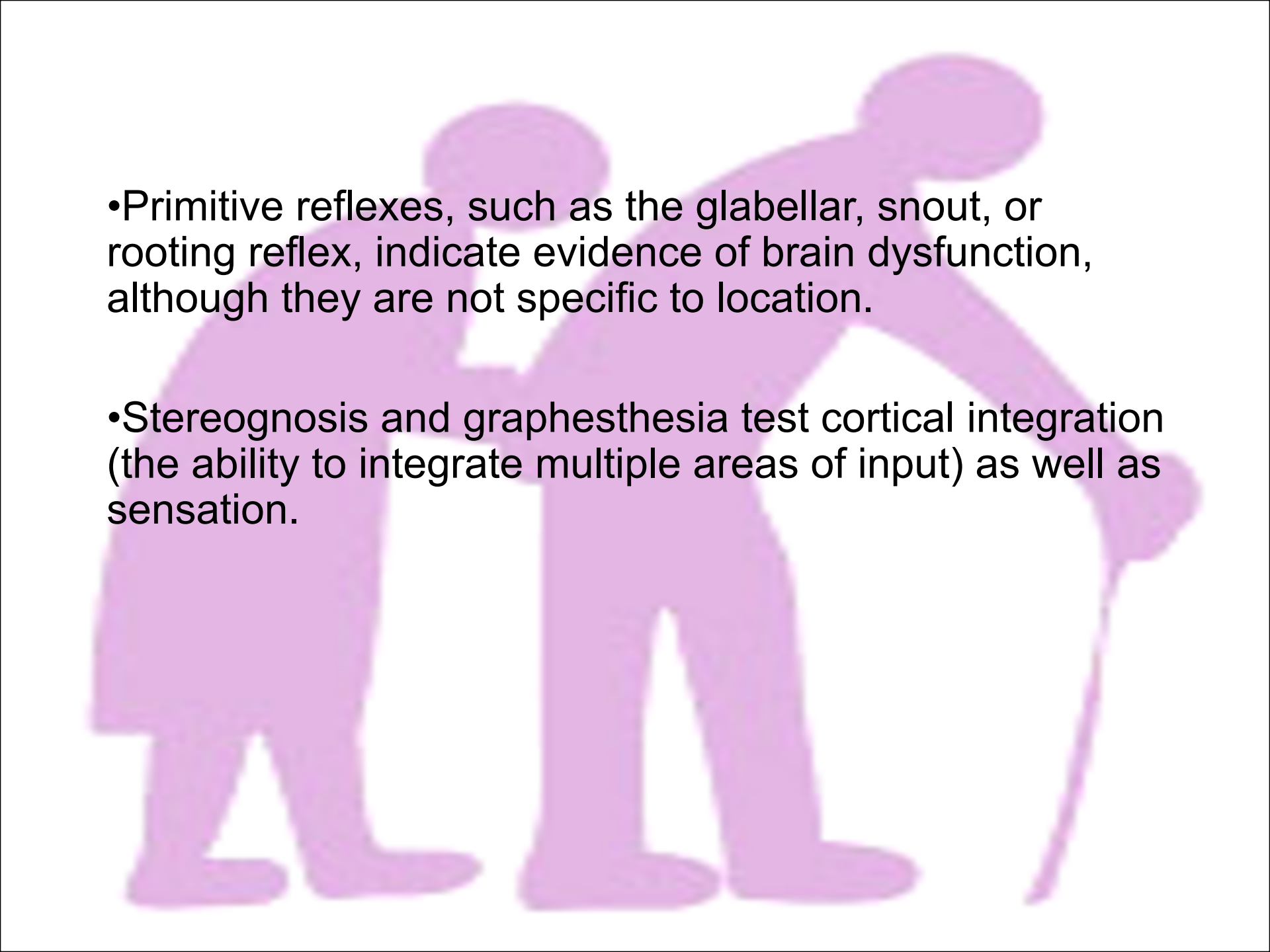
3-Root (13%)

* Percentages in patients above 85 years old.

# Notes on CNS examination :

•When testing cranial nerves, observe for signs of facial droop or tongue deviation that may be indicative of prior stroke.

•Loss of sense of smell (cranial nerve 1) may occur early in Alzheimer's disease, although this is nonspecific.



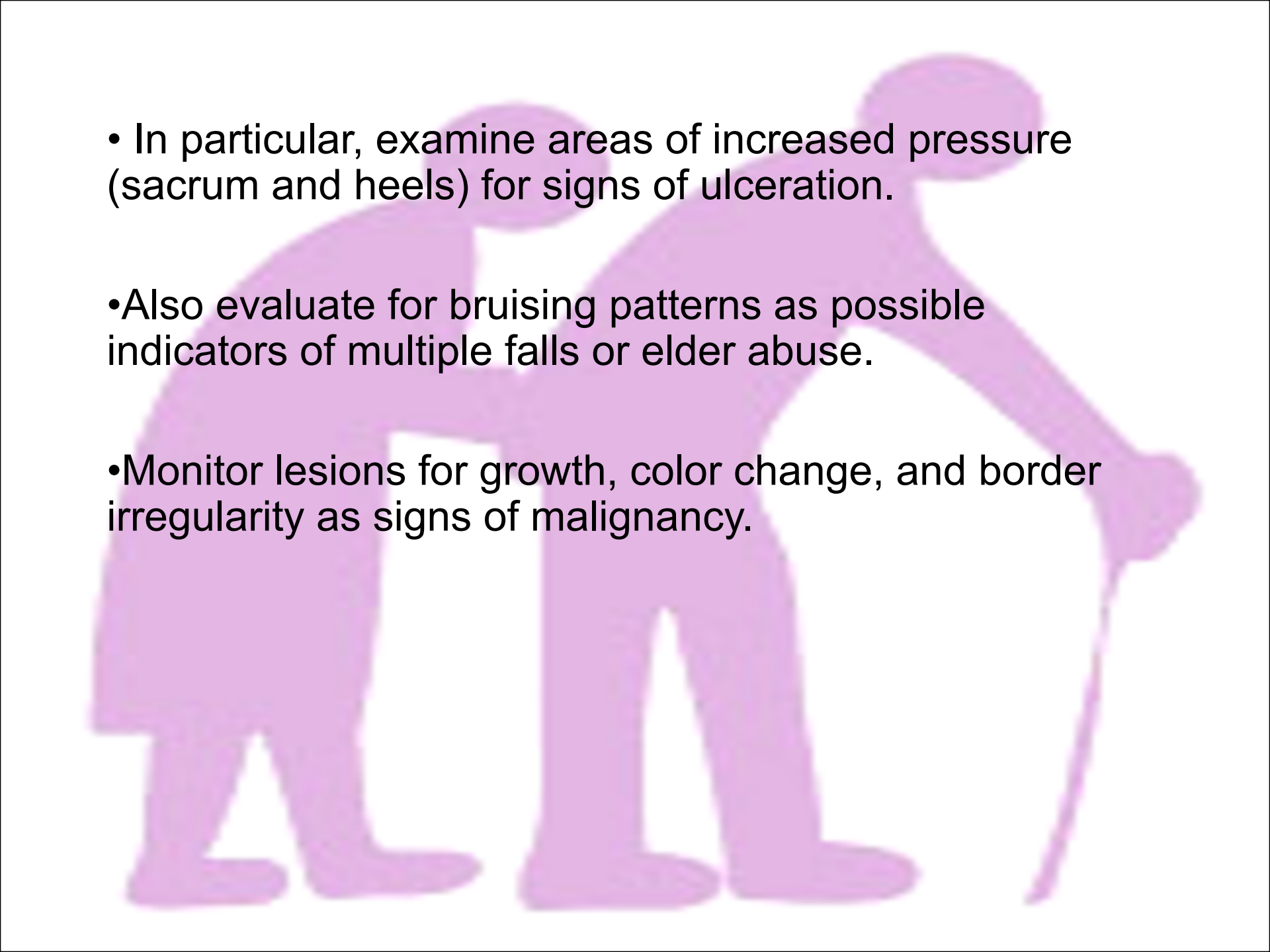
•Primitive reflexes, such as the glabellar, snout, or rooting reflex, indicate evidence of brain dysfunction, although they are not specific to location.

•Stereognosis and graphesthesia test cortical integration (the ability to integrate multiple areas of input) as well as sensation.

# 8-Skin examination

•Skin examination in older adults can often be overlooked; however, skin is an important source of pathology.

•Evaluate closely for skin tears and early signs of pressure ulceration in at-risk patients (for example, patients with poor mobility).

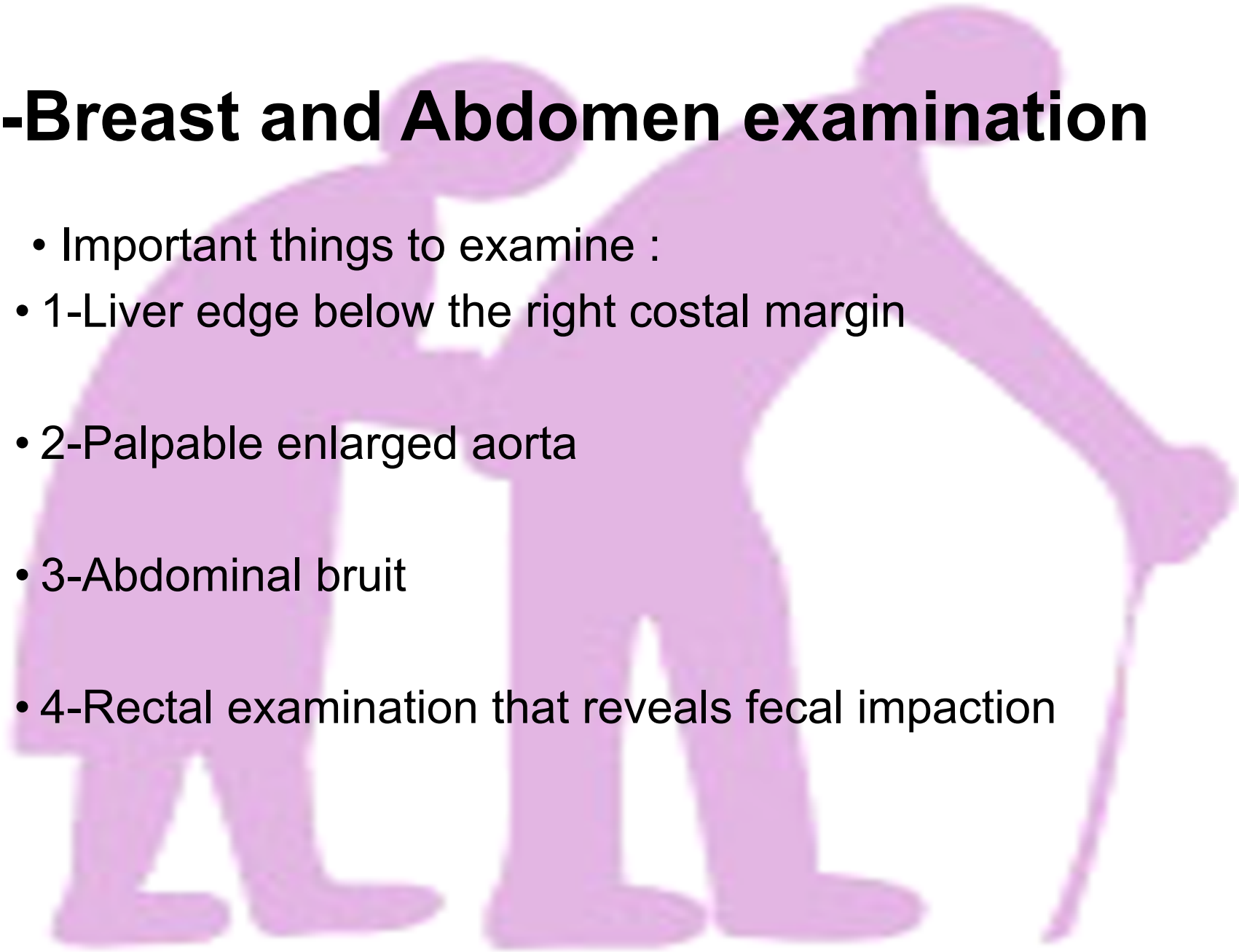


- In particular, examine areas of increased pressure (sacrum and heels) for signs of ulceration.

- Also evaluate for bruising patterns as possible indicators of multiple falls or elder abuse.

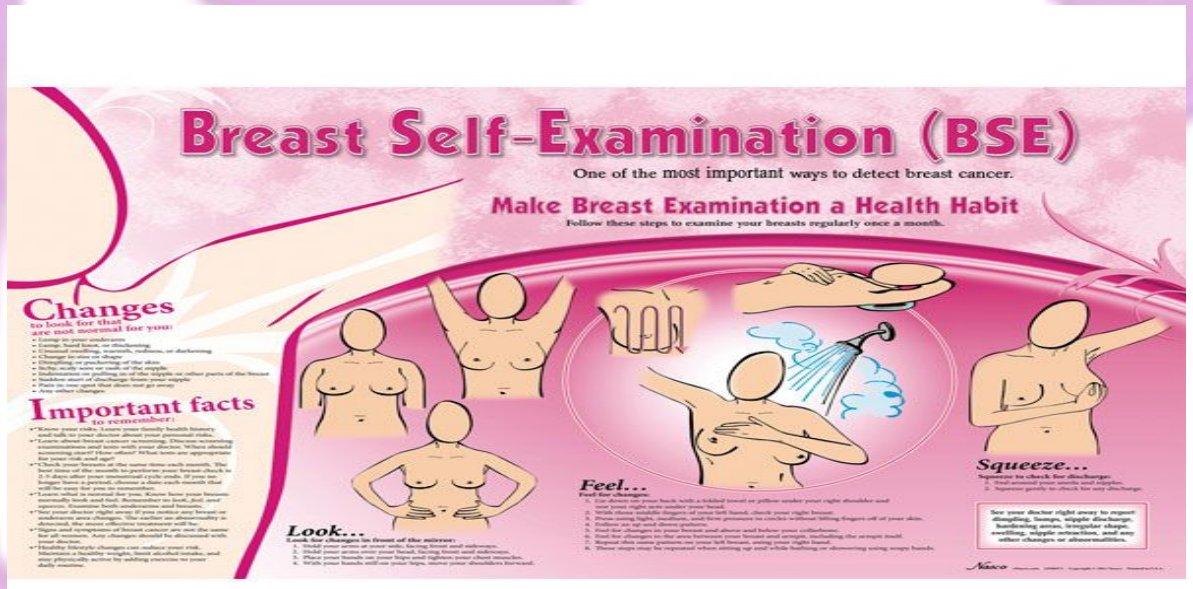
- Monitor lesions for growth, color change, and border irregularity as signs of malignancy.

# 9-Breast and Abdomen examination



- Important things to examine :
- 1-Liver edge below the right costal margin
- 2-Palpable enlarged aorta
- 3-Abdominal bruit
- 4-Rectal examination that reveals fecal impaction

# Remember that breast cancer can occur in the very old.



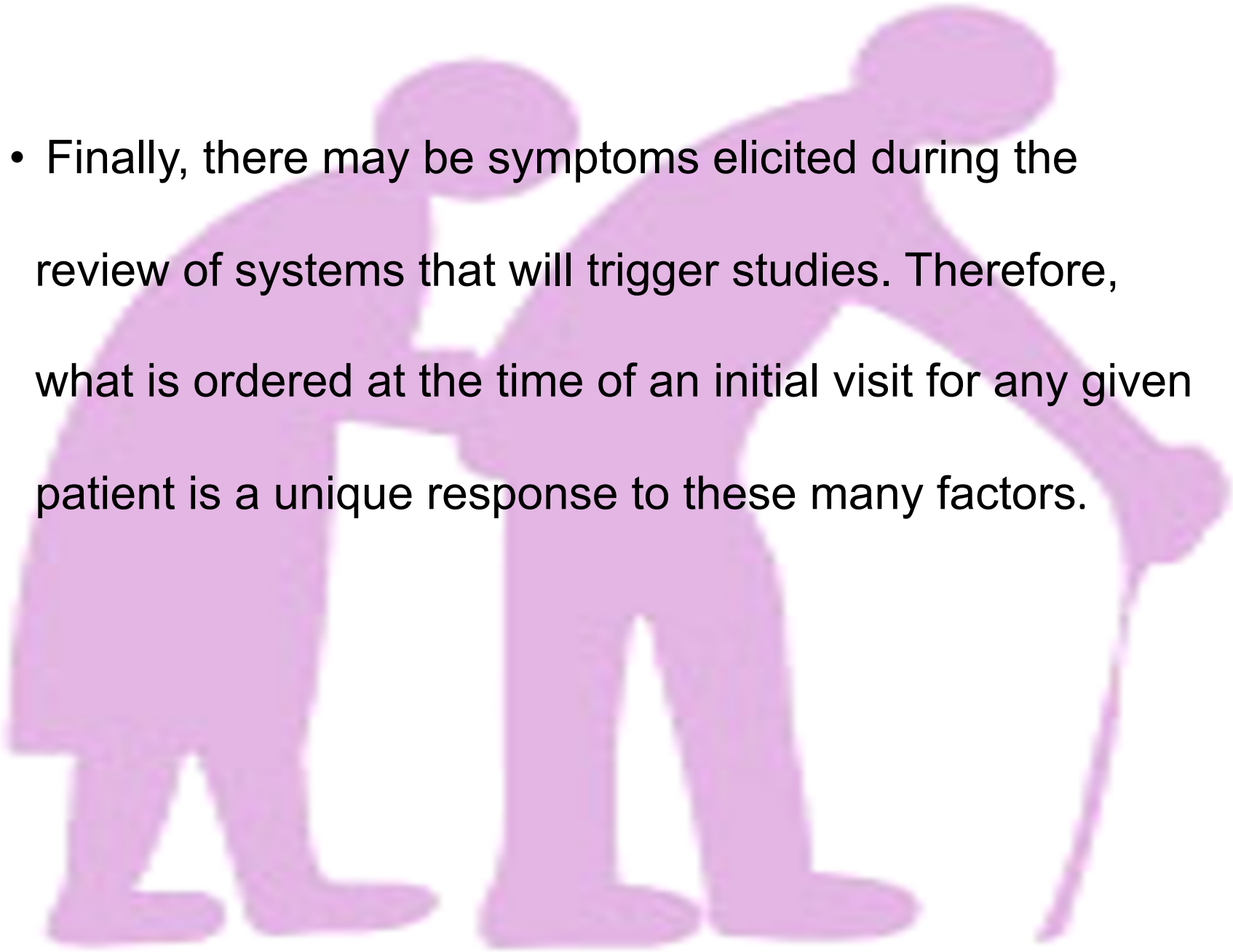
# 10- Genitourinary

- **Incontinence**
- **Sexuality**
- **Nocturia**

# ORDERING LABORATORY WORK:

- There are no evidence-based protocols for deciding appropriate laboratory studies in older patients.

- What each individual patient requires will depend to a great extent on the laboratory history included in prior medical records and the comorbid conditions that accompany each patient. There are, however, well-described, disease-specific laboratory tests.



- Finally, there may be symptoms elicited during the review of systems that will trigger studies. Therefore, what is ordered at the time of an initial visit for any given patient is a unique response to these many factors.

# ATTENTION TO THE CAREGIVER

- Older patients often require the assistance of a caregiver, and that person will often attend clinic visits with your patient. In most cases this is a welcome and important circumstance.

- Caregivers can often provide important clues to subtle changes or problems with medications.

- In patients with cognitive impairment, the caregiver is often the source of the most reliable information regarding how well the patient is doing.

- It is important in these situations to ask the caregiver if they have any questions or concerns.

- In these situations, the astute clinician will realize the importance of the caregiver to the well-being of the patient and will assess the level of stress and difficulty experienced.

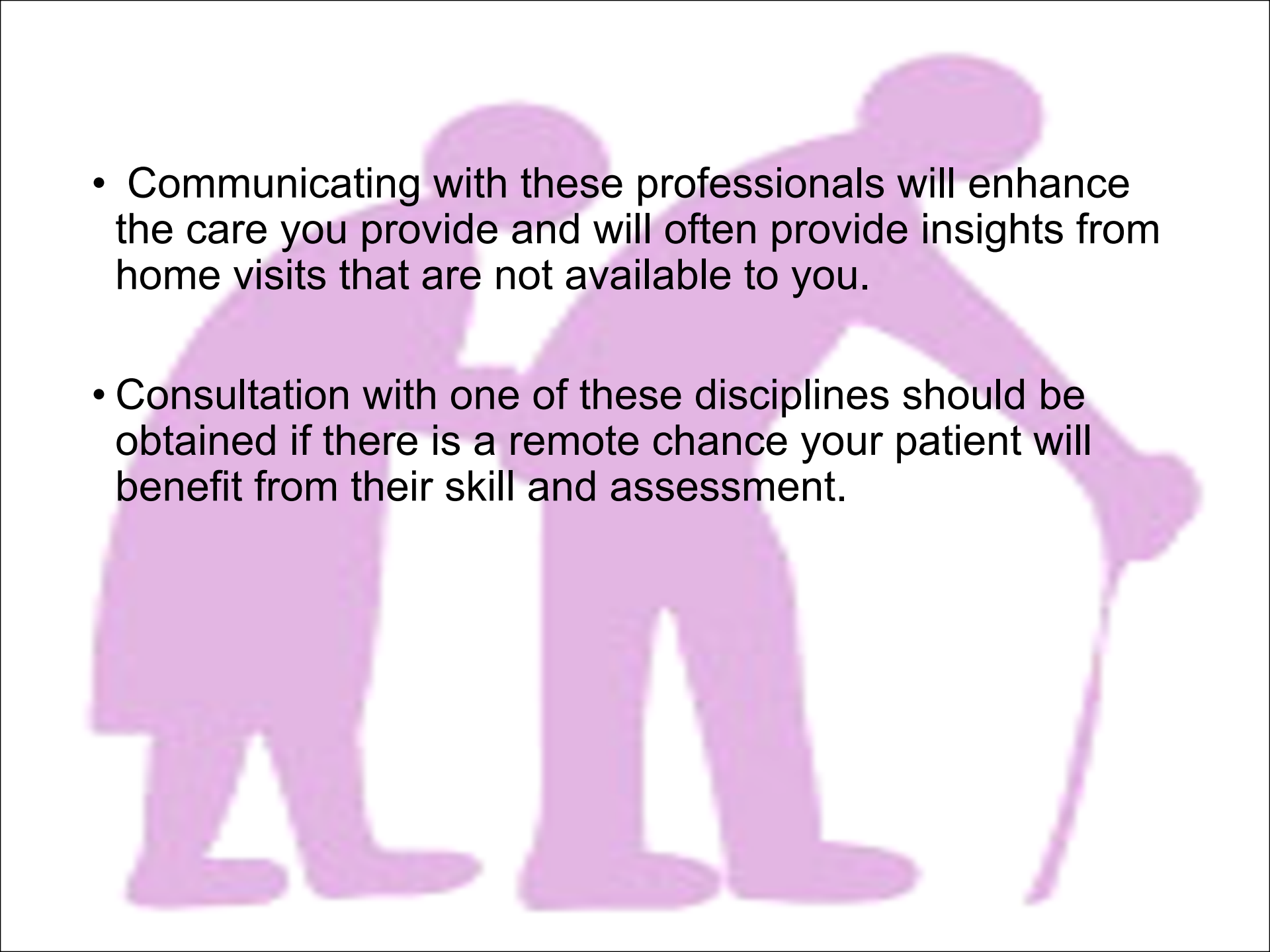
- Maintaining caregiver health, therefore, is important to the stability of the care setting in preventing institutionalization. The assessment of the patient, therefore, extends in many cases to the caregiver.

# USE OF THE HEALTH CARE TEAM

- Geriatrics by its very nature is multidisciplinary, and good geriatric care is team care. Your clinic nursing staff will play a critical role in collecting and assessing patients and their caregivers.

- Indeed, your office staff will often be the first to alert you to a change in a patient.

- Other important team members include home health nurses, physical and occupational therapists, and hospice personnel.



- Communicating with these professionals will enhance the care you provide and will often provide insights from home visits that are not available to you.

- Consultation with one of these disciplines should be obtained if there is a remote chance your patient will benefit from their skill and assessment.

# SUBSEQUENT OFFICE VISITS

• It is rare that a new older patient with their multiple medical problems and medication issues will not need some kind of follow-up soon after their first visit to establish care.

•EMRs (Electronic medical records) excel in this regard for a number of reasons. Every prescription ever written can be easily tracked. Problem lists and medication lists can be added to each clinical encounter. Relevant past medical and social history can be reviewed and added at a click of a button.

# TRANSITIONAL CARE USE BY OLDER PATIENTS

- Transitional care is defined “as a set of actions designed to ensure the coordination and continuity of health care as patients transfer between locations or different levels of care within the same location.”

- examples:-

1)assisted-living facilities

2) nursing homes

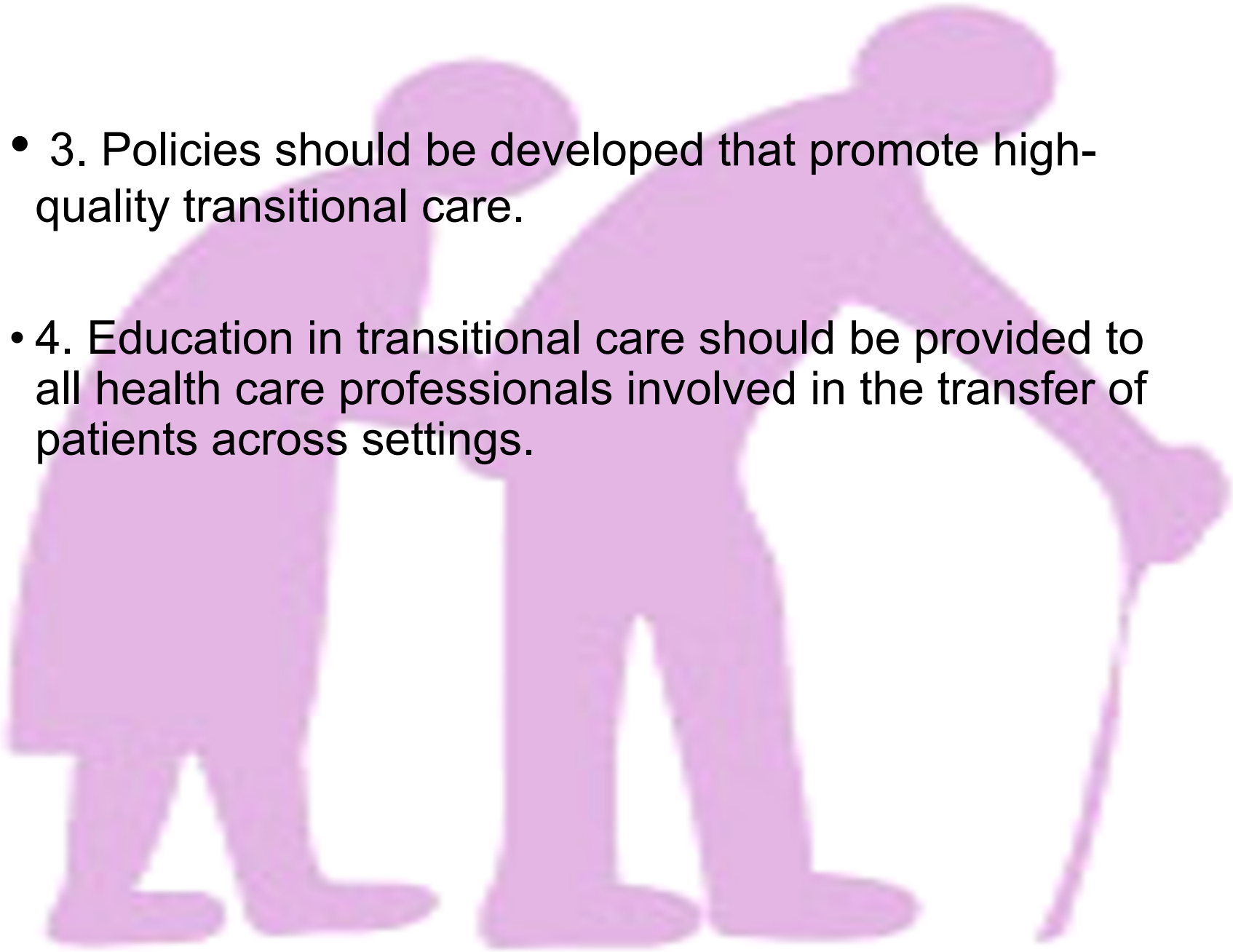
3) inpatient rehabilitation centers

4) Home health

# Recommendations to improve the quality of transitional care

- 1. Clinical professionals must prepare patients and their caregivers to receive care in the next setting and actively involve them in decisions related to the formulation and execution of the transitional care plan.

- 2. Bidirectional communication between clinical professionals is essential to ensuring high-quality transitional care.



- 3. Policies should be developed that promote high-quality transitional care.

- 4. Education in transitional care should be provided to all health care professionals involved in the transfer of patients across settings.

# ASSESSMENT IN THE HOME, HOSPITAL, AND NURSING HOME

- A comprehensive assessment involving the five domains is again essential: mental health, physical health, functional abilities, social supports, and economic resources.

- While patients seen in the hospital, nursing home, or at home have unique care settings with very different characteristics, assessment of the same five domains of care is required.

- Unlike hospitals and nursing homes, which tend to have standardized staff and procedures, home care is always unique.

- Often the patient is surrounded by concerned and attentive family, and home is the environment that the patient prefers.

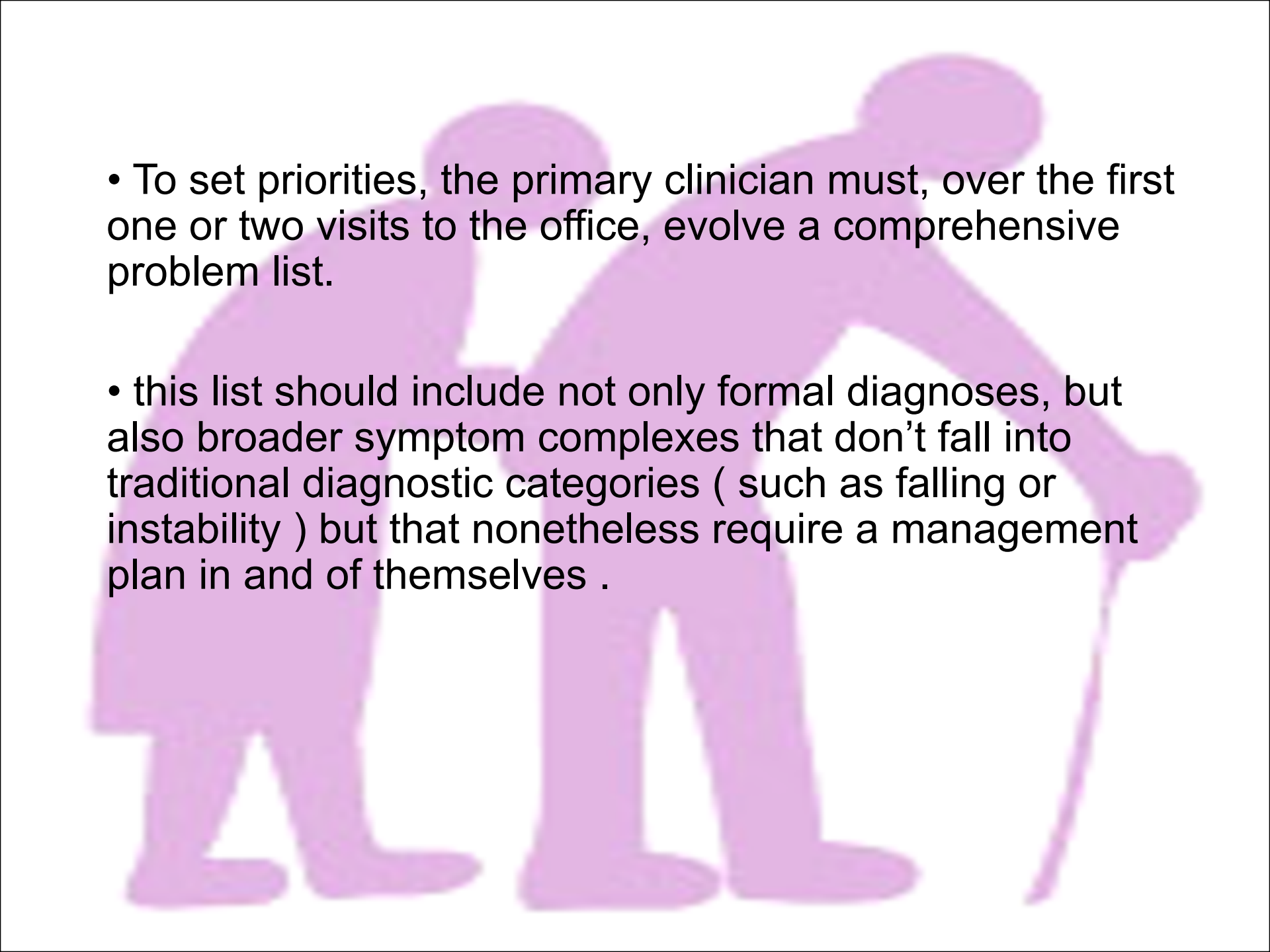
- But in addition to careful coordination with home health care professionals, the primary care provider needs to instruct and encourage the family caregivers.

- Careful adaptation of treatment decisions to the care environment and optimization of care is different in each setting.

# Multiplicity of Problems

• Frequently an older individual's management is complicated by several ongoing chronic condition and their medical treatment , together with superimposed acute illness or illnesses .

• The primary care clinician should be ideally positioned to be the coordinator when multiple systems are impaired; this may involve coordinating the efforts of several organ specialist, often on an ongoing basis.



• To set priorities, the primary clinician must, over the first one or two visits to the office, evolve a comprehensive problem list.

• this list should include not only formal diagnoses, but also broader symptom complexes that don’t fall into traditional diagnostic categories ( such as falling or instability ) but that nonetheless require a management plan in and of themselves .

• The problem list must also include contributory psychosocial features (e.g., recent bereavement),factors in the living circumstances (e.g., lives alone) , and any special characteristics that may be crucial to the patient and his or her illness management .

• A well- organized, current problem list can ensure a coordinated approach. Such a problem list also aids communication at times of transition from one clinic site to another . And provide customized care for each patient . And could be you used for research and analysis purposes .

## Box 3–5 Contents of Problem List for Elderly Patient

- Formal diagnoses with an indication of functional severity if appropriate (e.g., generalized osteoarthritis, painful but ambulatory)
- Syndromic problems that require a specific therapeutic plan (e.g., falling or instability)
- Contributory life events (e.g., recent bereavement with date)
- Living circumstances (e.g., "lives alone")
- Any history of continuing significance (e.g., suicide attempt, hysterectomy)
- Certain medications (e.g., anticoagulants)
- Numerically measurable items, when available (e.g., ejection fraction of less than 15%, Mini-Mental Status Examination score of 12/30)
- Family history of alcoholism, depression, or suicide.

*"bored," but sh*
*right arm has*
*pain. She has*
*and neck pain,*
*multiple joints.*
*cally. Ms. Trav*
*glaucoma and*
*see well enough*
*has a long-stan*
*cian for acetam*
*which she takes*
*a diuretic (hydr*
*days for her swo*
*nitroglycerine*
*ago for the ant*
*aged prescriptio*
*to "not need."*

# Problem List

**Diabetes with neurological manifestations, type II**

-- Diabetes since 1973 (age 40)
-- blool glucose poorly controlled from 2004 to 2006 with several hospitalizations
-- good control since then
-- walks 1-2 miles per day
-- weight still an issue
-- significant diabetic retinopathy with best vision 20/70 range, stable, actively followed by Dr. Kreshall
-- significant peripheral neuropathy

**Hypertension**

-- for > 20 yrs
-- initially well contrtolled on HCTZuntil approx 2005
-- lisinopril added at that time
-- BP usually 140/80 range
-- main issue is that pt forgets to take meds

**Myocardial Infarction**

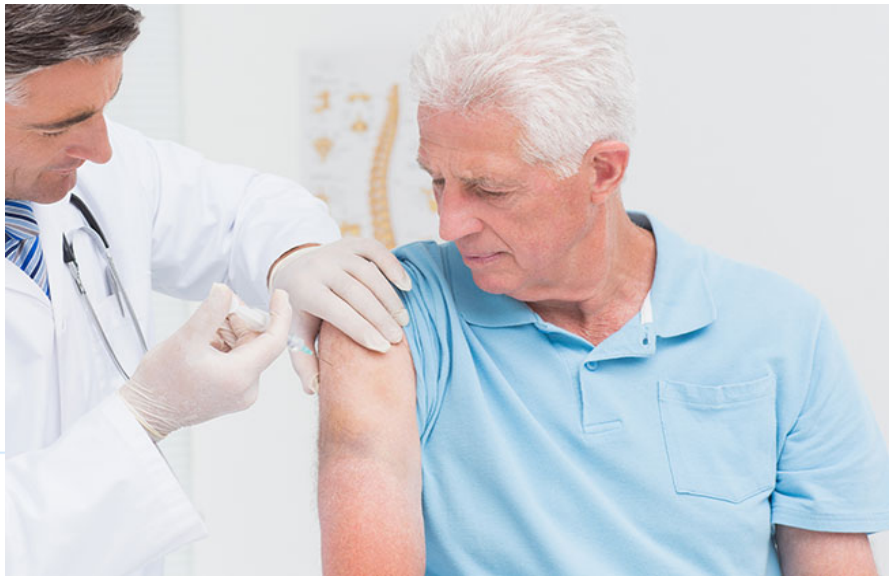
-- silent IMI
--mild, with EF post-MI 45%
-- no angina since CABGx4 2008

**TIA**

-- several episodes of R-sided weakness and slurred speech 2007

# Preventive-medicine measures

## Cancer screening and Vaccination



# Preventive-medicine measures- Geriatric screening tests

The decision to screen older patients for diseases depends on comorbidities, functional status, and life expectancy.

Discuss the potential benefits and harms of screening with individual patients.

Patients do not demonstrate a survival benefit from cancer screening unless life expectancy exceeds five years.

## Life expectancy by age

| | Ages in years | | | | | |
|---|---|---|---|---|---|---|
| | 70 | 75 | 80 | 85 | 90 | 95 |
| **Women - Years of expected life** | | | | | | |
| Top 25th percentile | 21.3 | 17 | 13 | 9.6 | 6.8 | 4.8 |
| 50th percentile | 15.7 | 11.9 | 8.6 | 5.9 | 3.9 | 2.7 |
| Lowest 25th percentile | 9.5 | 6.8 | 4.6 | 2.9 | 1.8 | 1.1 |
| **Men - Years of expected life** | | | | | | |
| Top 25th percentile | 18 | 14.2 | 10.8 | 7.9 | 5.8 | 4.3 |
| 50th percentile | 12.4 | 9.3 | 6.7 | 4.7 | 3.2 | 2.3 |
| Lowest 25th percentile | 6.7 | 4.9 | 3.3 | 2.2 | 1.5 | 1 |

*Data from: Walter LC, Covinsky KE. Cancer screening in elderly patients: a framework for individualized decision making. JAMA 2001; 285:2750.*

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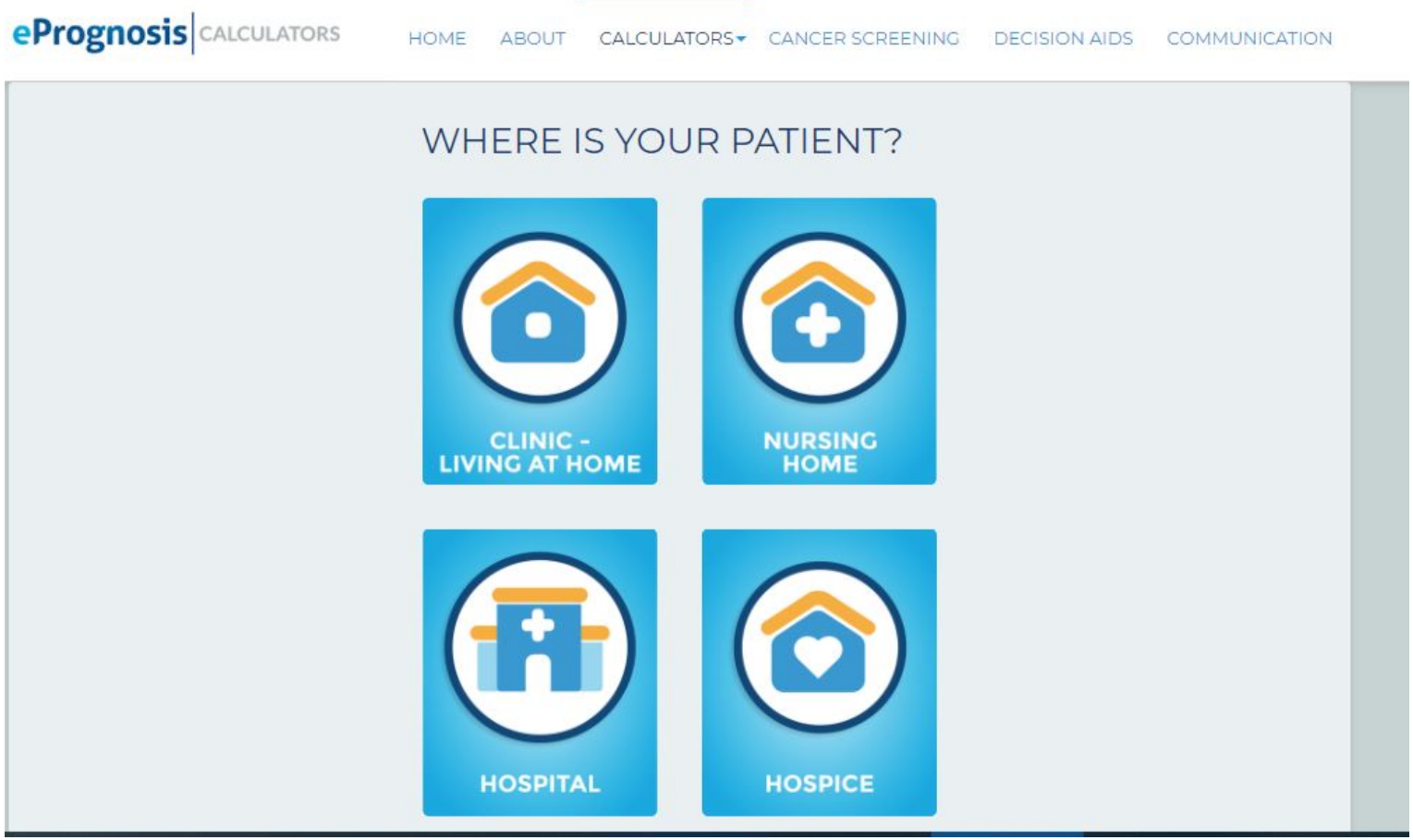
# Follow the USPST guidelines for screening

- Choose wisely/ see point no 7:
- https://www.choosingwisely.org/wp-content/uploads/2015/02/AGS-Choosing-Wisely-List.pdf

# https://eprognosis.ucsf.edu/

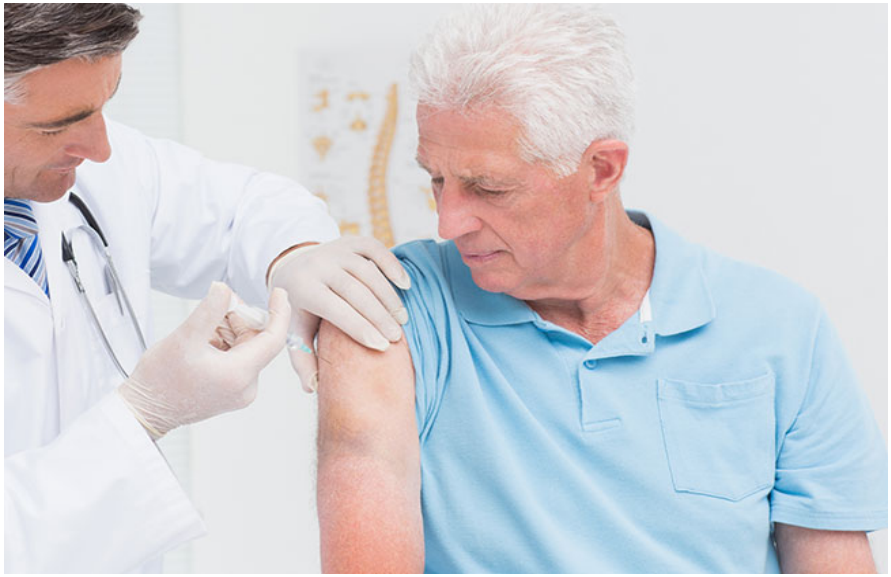


# Preventive-medicine measures

- Vaccines:

Immunosenescence contributes to increased incidence and severity of infections in the elderly.

Vaccination recommendations in most countries include specific guidelines for the elderly.



## Vaccines Available for Elderly Patients

| Vaccine | When to Receive | Frequency | Contraindications |
|---|---|---|---|
| Pneumococcal | On/after 65th birthday[a] | Max twice in lifetime | Prior *severe* immediate hypersensitivity reaction |
| Influenza | Beginning around September | Yearly | Egg allergy; history of GBS |
| Herpes zoster | On/after 60th birthday | Once | Severe reaction to gelatin or neomycin; pregnancy; immunocompromised state |
| Tetanus and diphtheria | When needed | Every 10 years | Prior *severe* immediate hypersensitivity reaction |

[a] *If vaccine received previously, 5 or more years should elapse before revaccination.*

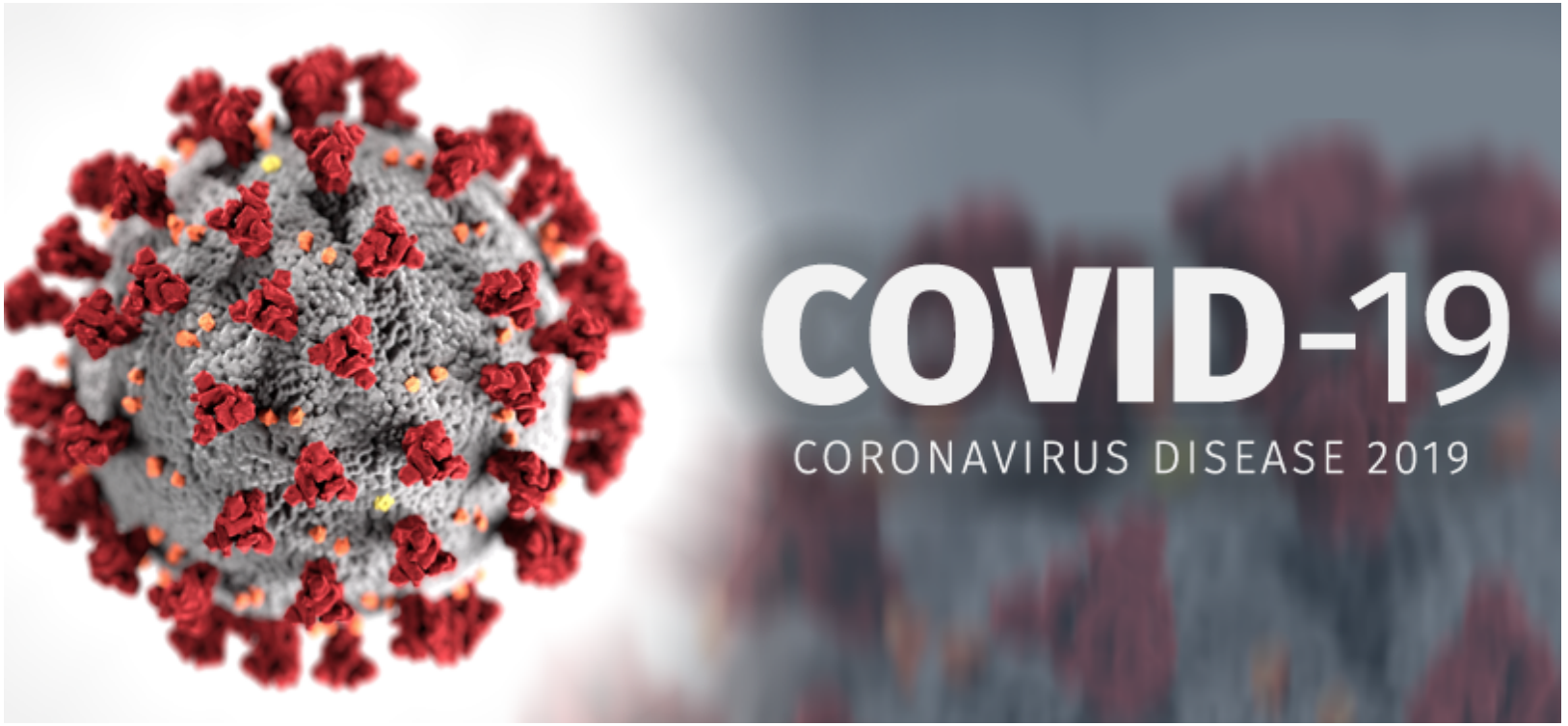
*GBS: Guillain-Barré syndrome; max: maximum.*

# Pneumococcal vaccines

1. Pneumococcal conjugate vaccine
2. Pneumococcal polysaccharide vaccine

- Each has a separate indication and dose (and $$$$!)
- You should be familiar with these issues before you council your older patient.

# COVID-19 vaccine



THANK YOU