

Geriatrics

Maximum HR $220 - \text{Age}$

- HR decreases with Age → this is not pathological
- O₂ sat/ PaO₂ decreases with age → & this is not pathological

Senescence VS Aging

what is senescence?

1. Occurs at a cellular level
 2. Cells cannot **divide**
- Normal **encoding**, prolonged **retrieval** → Aging
i.e. "you have the information but takes you longer to remember", slightly forgetful → I know you and I know your name but takes me time to remember it

VS

- Abnormal both encoding & retrieval → senescence [pathological dementia] "abnormal forgetfulness"
- Senescence is the **negative** aspect of aging

Aging → is a **phenotype**

Example: a 40 yo patient looks as if he's 70

why?

due to senescence → cells do not have the ability to divide →

loss of function leading to incompatibility

Biological Age Vs chronological Age

Biological Age → "how much my phenotype says my age" → determined by **senescence**

Chronological Age → "number" "how many candles on ur bd cake"

Purpose of Geriatrics → To enhance the biological age

Aging → Is a **process** of **gradual** and **spontaneous** change resulting in maturity thro childhood, adulthood and climb thro adulthood stage

[Gradual = takes time; not in days], [Spontaneous = you don't induce it]

Senescence → The capacity of cell to grow, divide is lost overtime leading to incompatibility with life "negative counterpart"

Aging = تقدم العمر

Senescence = الشيخوخة

so you can control senescence but not aging

Functional Ability

Being free of disease is not required for functional ability assessment

Having a Disease doesn't negate being healthy

5 key domains:

1. Meet basic needs
2. Learn, grow, and make decisions
3. Be mobile
4. Build and maintain relationships
5. Contribute to society

i.e we ask "do you use a cellphone" "do you go to the market & do groceries" etc "بتطبخي" "بتخدمي حالك؟"

Homeostenosis

→ stenosis of physiologic reserves that allow us to maintain/restore homeostasis in the presence of env, emotional or physiological stress

so what? , what happens then?

Results in Decompensation, Disease or Death

→ Aging leads to Homeostenosis; why?

Physiological changes decline as we age, this results in inability to cope with stress i.e decreased HR → if pt gets fever → pt won't be able to increase HR [reflexive tachy] to maintain tissue perfusion → hence fever may result in ischemia " just from the insufficient response" due to impaired physiological changes & senescence

→

Post-op we look for tachycardia [which is an indication of bleeding] in a young patient, 100 may be tachy but in older patient 70 might be tachy

In older adults, physiologic reserve is diminished due to age-related changes. As a result, energy (ATP) is consumed merely to maintain baseline function. This leaves little capacity to handle additional stressors.

Clinically, it is often said that elderly patients are 'walking on water' any minor disturbance* (such as ischemia, fever, or diarrhea) can easily destabilize them, unlike younger adults who are 'walking on solid ground' and can withstand such challenges."

*disturbance? ischemia, fever, diarrhea and so on

Old patient with diarrhea may result in depletion of Intravascular volume → inability to compensate → reduced renal perfusion → AKI → SIADH and so on → might lead to anoxic brain injury

ANY stress in an elderly patient will get him off the cleft

Physiologic Theories

Structural and functional changes of aging

- 1- Target theory of genetic damage
- 2- Mitochondrial DNA damage theory [Risky]
- 3- Free radical theory [i.e DM, **unhealthy lifestyles "high fat not enough exercise"**]
- 4- Telomere theory
- 5- Transposable element activation
- 6- Epigenetic theory

Added Sugars → Accelerates Aging in a very pathological manner → Denatured enzymes

Alzheimer's disease aka Type 3 DM

:eat antioxidants; avoid carbs & sugars; do exercise; good sleep

Healthy diet & Exercise & Sleep → 3 majors

Challenge your brain → improves memory

Main 2 categories; modifiable and non-modifiable

non-modifiable include genetics, modifiable includes epigenetics

Control any known medical diseases

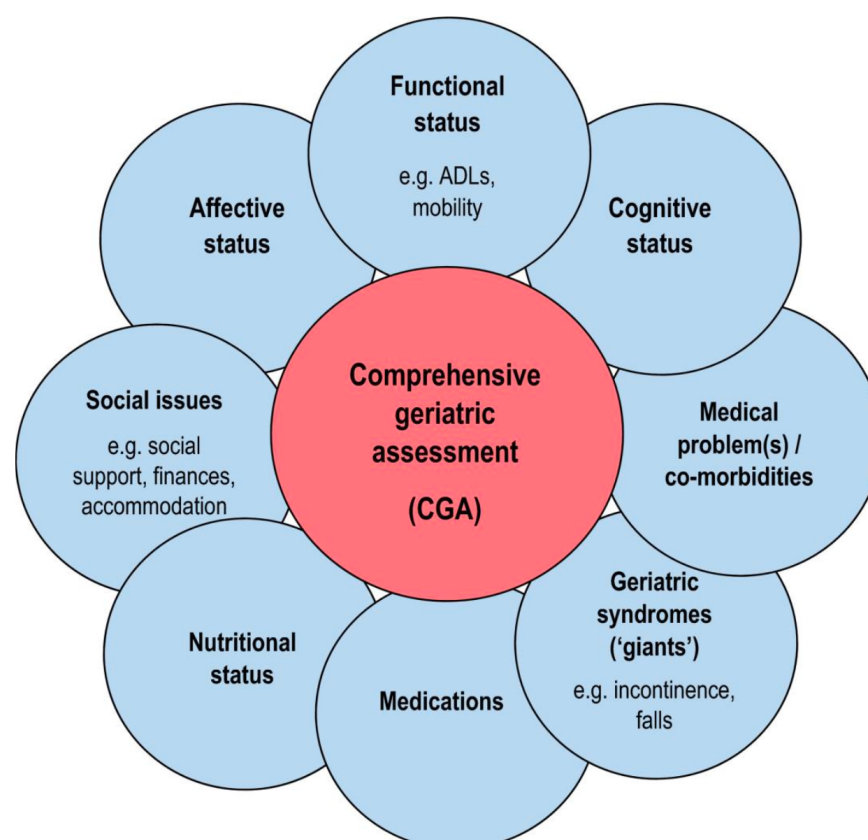
Comprehensive Geriatric Assessment

Diagnostic and therapeutic → You end up with list of issues rather than one diagnosis [it includes diagnosis and management plan]

[CGA .pdf](#)

DOMAINS

do not forget to ask about mood & cognition



You must ask your patient to bring all the medications; as some patients misleadingly take 2 medications of the same family i.e patient presents with dizziness & takes both metoprolol and bisoprolol; fatigued patient taking both simvastatin and atorvastatin; Diabetic taking 2 types of sulfonylureas

"Brown Bag Method" in medicine refers to a medication review practice where patients bring all their medications, supplements, and over-the-counter (OTC) drugs to a healthcare visit to be reviewed by a professional.

& ASK about **medication understanding** → if the patient knows why he takes each medication; if he takes them correctly; if he complains of any adverse effects from any of them if he is compliant

& You must ask "WHO gives you the medications" → first thing to be disrupted is his intake of the medications



Memory problem → Always ask the caregiver to take over his medications

Nutritional Assessment → ***Appetite & weight***

[take weight on every visit along with vitals]

Weight tracking is very important in elderly; as it consists of protein wasting rather than fat → hence keeping record of the weight is very valuable → evidenced by “**Sarcopenia**”:

Sarcopenia is a **progressive muscle disease characterized by the loss of skeletal muscle mass, strength, and function, primarily associated with aging, but also occurring due to immobility, poor nutrition, or chronic illnesses**

& this is also important as sarcopenia predicts falls

you must do falls risk assessment with medical assessment

Psychological Assessment

Mood and Memory

Mini-cog test:

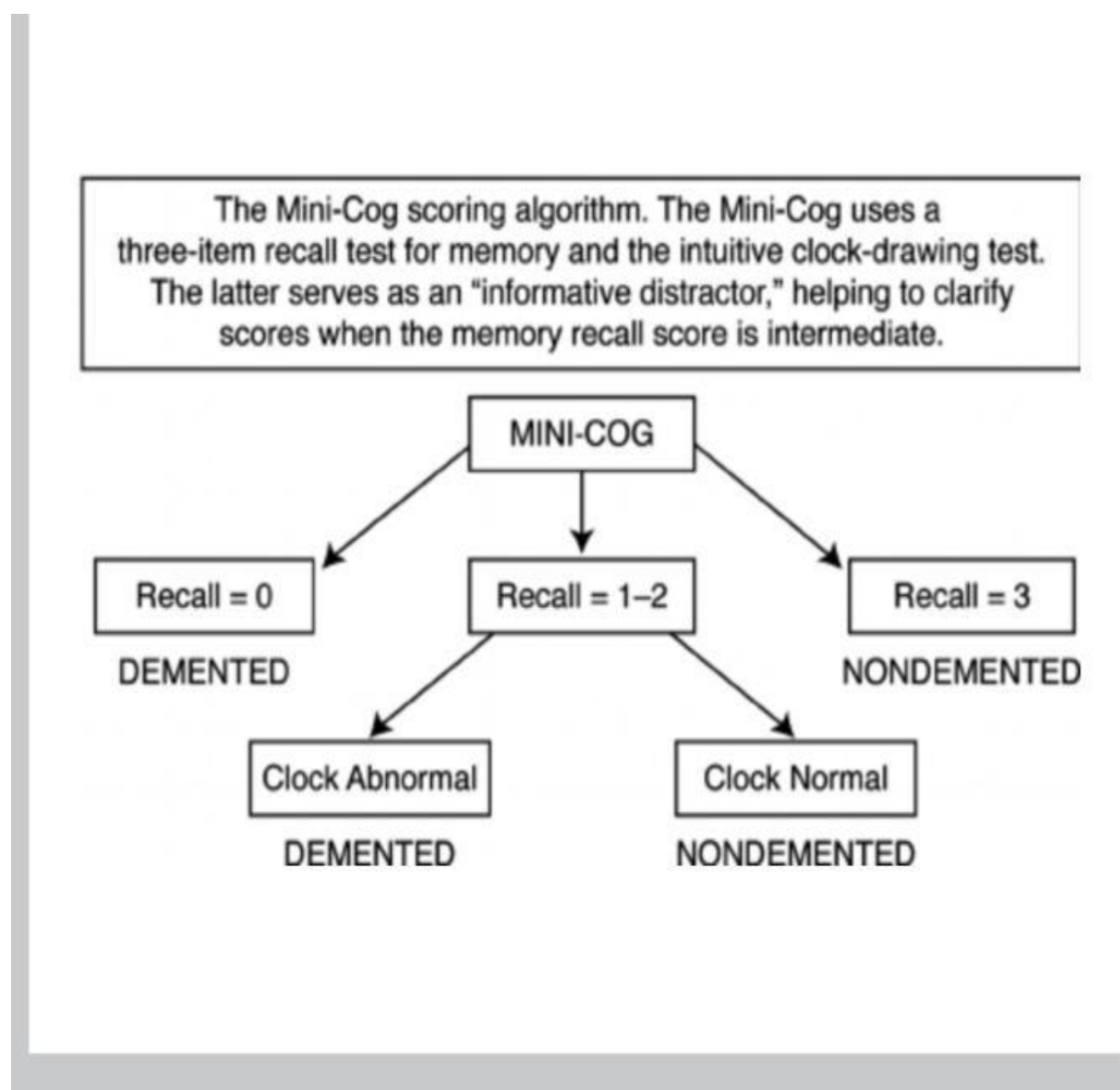
start with general open-ended question “ كيف ذاكرتك؟ ”

screen Mini-cog test even in the absence of concern [Per new guidelines]

- Step 1: Three-word registration "CRAD list"
- Step 2: Clock drawing “ draw 11:10”
- Step 3: ask the patient to recall the 3 words you said in step 1

<3 points need screening for dementia

^ this test retrieval & encoding



CLOCK → IS VERY SENSITIVE “ and not just any shape: why?

1. **visuospatial function**
2. **executive function**

Mood Assessment

There are 2 screening questions for depression before you do the PHQ9:

1. loss of interest during the past month

2. feeling down, **depressed, OR hopeless** during the past month
do not confuse depression with mood; everyone is angry not everyone is depressed

Functional Assessment

3 major sections "ADLs"

1. Basic Activities of Daily Living
2. Instrumental Activities of Daily Living
3. Advanced Activities of Daily Living

Basic Activities of Daily Living:

assessed via **KATZ ADL [very high yield]**

1. Bathing
2. Dressing
3. Toileting " they urinate everywhere"
4. Transferring [sitting to standing; do you need help?
5. Feeding " you ask them to chew, to swallow"
6. **CONTINENCE**

In history " a 67 yo **INDEPENDENT** male"

Instrumental Activities of Daily Living

"**LAWTON SCALE**"

MOST IMPORTANT →

1. **Do you take meds alone?**
2. **Do you know what each medicine is for?**
3. **Any previous medication error?**
→ **best indicator for functional impairment**

&&&&&

1. Ask do you have a smartphone ?
2. do you use it and know how to use it?
3. do you have whatsapp and can use it well?
4. do you have facebook, do you know how to post?

&&&&&

Groceries; when was the last time?

Cooking

→ if husband says " she now cooks 6 cups of rice like she used to before the kids left" → this is a red flag

→ puts salt twice, doesn't know how to cook → is very sensitive as its a complex procedure



Ask does she know how to do it and you're spoiling her, or are you doing it because she cant do it?

Cleaning → puts a black shirt in a white laundry → red flag

Maid; do you have? if yes do you rely on her to do everything; what if she's gone are you able to take over the work?

Transport? how did you come to clinic?

Do you drive a car? have you ever taken a ticket, have you ever had an accident? more frequently hitting the curb?

Finances? not very reflective in functional assessment



Assess the fitness to drive

For MMSE ≤ 24 **plus clinical concerns**, consider:

- A **referral for functional driving assessment** (e.g., occupational therapy or specialist).
- **Communicating with licensing/transport authorities**, as required by local laws.

Forgetting how to go home; → red flag

ask her son/daughter : do you feel safe when your kids go on a drive with her or not

Pillbox for patients medications

▼ Pillbox



taking away patients' independency especially asking the patient not to drive is frustrating;
keep this in mind

if a patient gave her kids 50s for eid instead of 5s thats a veeeeryyyy huge red flag

Assess Financial capacity → & send to bank to freeze her accounts

BADLs & IADL → mainly affected by comorbidities

AADLS

Ability to develop multiple **social** connections and roles & maintain **mental** health and good quality of life & **hobbies**

if cognitive disability → isolation → no longer wants to have tea with neighbors

& no longer wants to buy newspaper to solve crossword

AADLs first loss then IADLs then BADLs

Which function is lost first in BADLs?

- Bathing

goes in throws shampoo and comes out; never actually taking a shower

Prayer ⇒ no longer does wudoo', mixed up soneh with fard "بطل يعرف يميّز بين الصلوات ولا يعرف" يتوضّى

Note → forgot to take medication once and on antibiotics that's fine; but multiple times forgot his diabetes medications which resulted in hypoglycemia and ataxia, fracture etc

Inability to walk → wheelchair → neuropathy → suspected DM vs B12 → HbA1c normal → B12 <60 → B12 injections → walking restored.

IF Function altered → always look for an underlying pathology

Dementia is no longer used, now its "major cognitive disorder"

"Use older adult & not elderly & not senior" → as the latter terms can be stigmatizing.

SOB → Is it part of deconditioning "ما في لياقة" or PE ? → that's why you should refer to physiological aging when you assess.

Geriatric Syndromes (giants)

Multiple health conditions that interfere with one another

Syndromes that impact the functional ability

Frailty is one of the syndromes [veryimp]

What differs geriatric syndromes from down syndrome?

Down syndrome → known (one) pathology w/multiple phenotypes

Geriatric syndrome (Giants) → multiple pathologies resulted in one outcome : i.e Urinary incont, dementia, depression → **functional decline**

Falls ← Urinary incont. → UTI → Urosepsis/hospitalization → Delirium [acute confusional state]

Urinary incont. → Depression → social compromise → more depression → depression can cause memory loss → delirium → increase hosp admission → ADRs → polypharmacy → worsen delirium → polypharmacy → functional decline

social decline can result in functional decline[as patient avoids socialization and so stays in and loses function] → dizziness, insomnia, appetite, weight loss → sarcopenia [loss of muscles] → uncontrolled pain → worsen depression → dizziness and so on

"How to deal with all this & How to Manage Geriatric syndromes?"

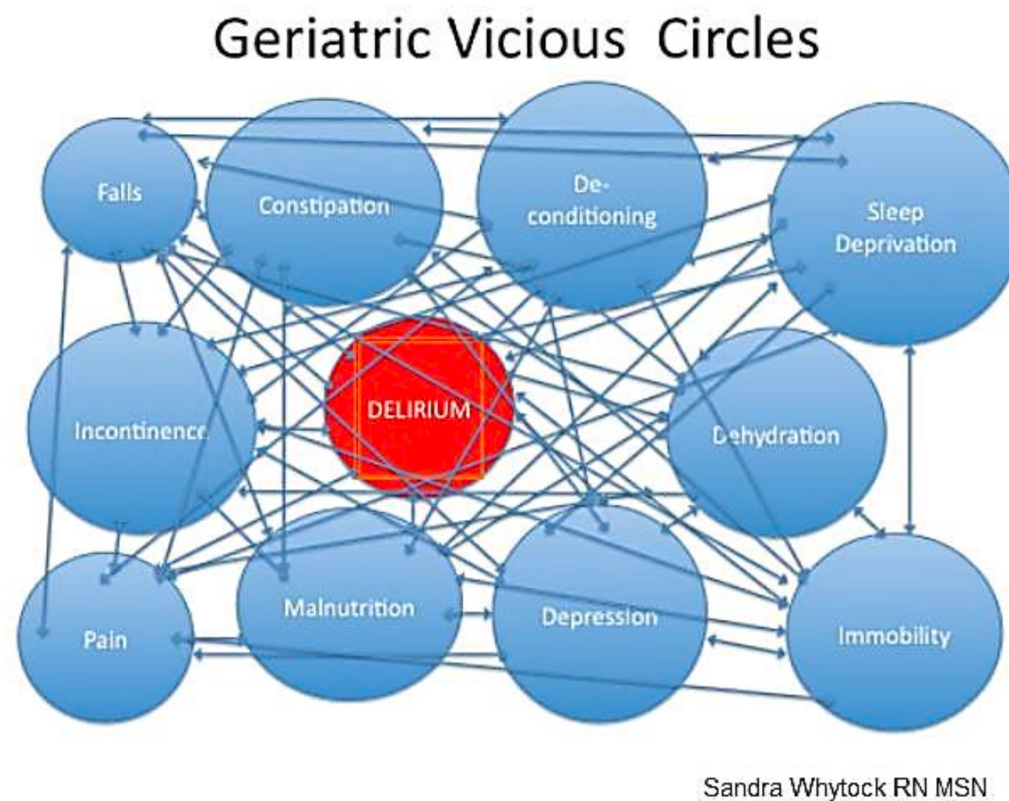


Ask the patient → which symptom is bothering you the most?

→ she might say "pain"

PAIN IS THE 5TH VITAL SIGN; YOU MUST ASK EVERY SINGLE PATIENT

Pethidine → does constipation, delirium, falls and so on → so you should prioritize accordingly



LIST 9 GERIATRIC SYNDROMES

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

Comorbidity vs Multimorbidity

Comorbidity ? huge morbidity "main morbidity" Aktar marad affecting his function & impacting functional decline
i.e metastatic prostatic cancer is the main morbidity in bg we have DM and arthritis but not major as prostatic CA

Multimorbidity → polyps removed, patient has CKD, Leg swelling , DM and so on

Comorbidity = Internal medicine

Multimorbidity = Family medicine

Screening in Geriatrics?

Life expectancy less than 5 years → DONOT screen

Summary of screening, prevention, and counseling recommendations for adults age ≥65 years

Priority problem	Brief recommendation
Historical information and counseling	
Exercise	Moderate to vigorous aerobic activity 3 to 5 times per week Weight training or resistance exercises to maintain strength Flexibility activities to maintain range of motion Balance training to improve stability and prevent falls
Alcohol use	CAGE questionnaire Counseling to stop drinking
Tobacco use	Ongoing regular counseling to stop smoking Consideration of pharmacotherapy
Medication use	Regular review of medication list for: - Completeness, accuracy, adherence, and affordability - Drug-drug, drug-disease interactions - Careful attention to use of specific drug types/classes including warfarin, digoxin, antidiabetic, analgesic, antihypertensive, psychotropic, and anticholinergic drugs
Urinary incontinence	Inquire about presence and severity biannually Presence of urinary incontinence should trigger medication review, GU examination, appropriate blood and urine tests
Driving	Consideration of driving problems in those with problems with vision, mobility, or cognition For patients with dementia, recommend stop driving or refer for detailed driving assessment
Social support	Regular screening for financial and social support
Elder mistreatment	Routine direct questioning about problems with abuse or neglect
Advance directives	Discussion and documentation of preferences with living will and designation of health care power of attorney
Physical examination and testing	
Blood pressure	Measure annually If treatment initiated, monitor orthostatic blood pressure, renal function, and electrolytes
Weight	Weight loss of 10% or more per year triggers assessment of undernutrition, possible medical or medication-related causes, dental status, food security, food-related functional status, appetite and intake, swallow ability, and previous dietary restrictions
Hearing and vision	Annual screening for hearing loss with patient inquiry and examination (whisper test or handheld audiometry) Vision assessment as part of the routine workup for older adults with cognitive decline, functional impairment, or falls
Cognition	Targeted screening in patients with memory complaints or new functional impairment with MMSE, Mini-Cog, Clock Drawing Test, Memory Impairment Screen, SLUMS, or MoCA
Mood	Screen all older adults for depression with two questions: During the last month: 1. Have you been bothered by feeling down, depressed, or hopeless? 2. Have you often been bothered by having little interest or pleasure in doing things?
Gait and balance	Get Up and Go Test
Lipids	Screen and treat older adults with CAD risk exceeding 10% over 10 years
Bone density	Screening densitometry for osteoporosis for women at age 65
Abdominal aortic aneurysm	One-time screening ultrasound in men aged 65 to 75 with any history of smoking or family history of abdominal aortic aneurysm requiring repair
Diabetes	Screen adults (to age 70) with BMI ≥25 kg/m ² , hypertension, or hyperlipidemia
Cancer screening	
Cancer screening	Consider screening for breast, prostate, colorectal, cervical, and lung cancer. Key considerations in older adults: - Life expectancy: Will this patient live long enough to benefit? - Potential harms: Procedural complications, anxiety, cost, and overdiagnosis - Individual patient preference
Immunization	
Tetanus-diphtheria vaccine	Booster every 10 years in patients who have received primary series (alternative: booster once after age 50); Tdap once
Influenza vaccine	Annual vaccination
Pneumococcal vaccine	One-time vaccination at age 65
Herpes zoster vaccine	One-time vaccination after age 50
Other	
Calcium and vitamin D	1200 mg of elemental calcium (diet and/or supplement) and at least 800 international units of vitamin D

CAGE: Cut down, Annoyed, Guilty, Eye-opener; GU: genitourinary; MMSE: Mini Mental State Examination; SLUMS: St. Louis University Mental Status Test; MoCA: Montreal Cognitive Assessment; BMI: body mass index; CAD: coronary artery disease.

UpToDate®

What factors should be evaluated before recommending screening in an older adult?

1. **Life Expectancy**

2. **Function Status**

→ refer to this link:

<https://eprognosis.ucsf.edu/>

which aspect are we assessing when we ask this question?

Because of a health problem, does this person have any difficulty pushing or pulling large objects like a living room chair?

Yes

No

^ Assessing Sarcopenia which is a **MAJOR** determinant in Frailty (a geriatric syndrome)

Time-to-benefit medication is assessed using the life expectancy



statins needs years to work, yet statins are still recommended in diabetics even if life expectancy is less than 5 years

Nada Ahmad Al-Awamleh