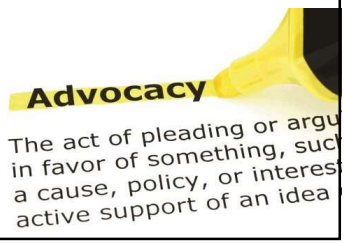
Other Points of Discussion

- Remind patients attending rehab after stroke, injury or surgery
  -they need to show progress in the 2 weeks assigned or they will be designated "palliative care" (i.e. don't waste resources, no improvement expected)
- Patients should be aware of the procedures & consequences of certain screenings and treatments (& possible alternatives)
- Patients should be aware of their right of refusal but also consequences of refusal or non-compliance with recommended treatment, referral, followup.
- Patients should be aware of non-covered charges or expected cost to them ("No Surprise Billing")

264

- Also suggest to patients that they should strongly consider taking an advocate with them (esp their medical POA) to health related appointments.
- This is very critical when decisions are being made about acute or potentially life-threatening issues.
- Examples…



265

Compensating for hearing deficits

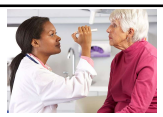
- About one quarter of people age 65 - 75, and half of those over 75 have disabling hearing loss.
- Make sure your patient can hear you. Ask if the patient has a working hearing aid. Look at the auditory canal for the presence of excess earwax.
- If the patient exhibits hearing difficulty, examine and/or refer for assessment
- Offer a captioning device so patient can read the doctor's spoken words
- Talk slowly and clearly in a normal tone. Shouting or speaking in a raised voice distorts language sounds
- Avoid using a high-pitched voice or using high pitched alert sounds
- Face the person directly, at eye level, so that he or she can lip-read or pick up visual clues.
- Keep your hands away from your face & avoid wearing a mask while talking, as this can hinder lip-reading ability.
- Background noises, such as office equipment, music or voices can interfere
- If your patient has difficulty with letters and numbers, give a context for them. For instance, say, "'*m*' *as in Mary,* "'*two*' *as in twins,*" or "'*b*' *as in boy.*" Say each number separately (for example, "*five, six*" instead of "*fifty-six*"). Be especially careful with letters that sound alike (for example, *m* and *n*, and *b*, *c*, *d*, *e*, *t*, and *v*).
- Keep a notepad handy so you can write what you are saying. Write out diagnoses and important terms.
- Tell your patient when you are changing the subject. Give clues, such as pausing briefly, speaking a bit more loudly, gesturing toward what will be discussed, gently touching the patient, or asking a question such as "before we move on, do you have any more questions about this?" .

266

And with hearing impaired patients remember to ask about falls (see prior presentation)

267

Compensating for visual deficits



- Make sure there is adequate lighting, including sufficient light on YOUR face. Minimize glare. Also avoid light directly into patient's eyes. The doctor should never be backlit.
- Ask about any vision problems or procedures (past or pending)
- Check if your patient needs eyeglasses or contacts and if so, is wearing them.
- Be aware that cataract surgery will significantly alter a person's vision. Ask about near, intermediate & distance vision esp related to critical activities (night driving)
- Make sure that written instructions are printed clearly.
- If your patient has trouble reading, consider alternatives such as recording instructions, providing large pictures or diagrams, or using aids
- When using printed materials, make sure the type is large enough and the typeface is easy to read. Print size 14 pt sans serif is often a good choice. Underline/highlight critical info
- Be aware that a patient may use "vision problems" as an excuse for illiteracy.
- Consider conversation with patient re: blue light, poor light, UV, sun or reflected light and accommodation changes from distance to close vision (esp. with driving)

268

If talking about sensitive topics…

- Try to take a universal, non-threatening approach. Start by saying, "You are not alone, many people experience..." or "Some people with this problem have trouble with..." or "Some of these questions might seem silly, but they are important."
- Tell anecdotes about people in similar circumstances
- Keep informative brochures and materials readily available in the waiting and treatment rooms.

https://www.nia.nih.gov/health/talking-older-patients-about-sensitive-topics

269

- Consider having a support person there
- Avoid cold clinical reports
- Prepare for a spectrum of responses
- Even if patient will be referred, offer your availability for consultation
- Offer differential diagnoses if uncertain, and the reason for further tests or referral
- Offer treatment options and explanations & your willingness to work with other providers for the best treatment plan for THAT patient
- Be prepared for "what would you do, Doc?"

270

A few specific topics…

271

Driving

- Driving is associated with independence and identity, and making the decision not to drive is very hard.
- Frame it as a common concern of many patients.
- Point out that certain health conditions can lead to slowed reaction times and impaired vision. Joint pain and stiffness may limit head movement or the ability to turn the steering wheel or brake effectively.
- Medications may make them sleepy or impair judgment. Also, a device such as an automatic defibrillator or pacemaker might cause irregular heartbeats or dizziness that can make driving dangerous.
- Past accidents or new illness may be indication for discussion and/or evaluation
- May need to involve family, referral for further evaluation
- Have resource suggestions handy

272

Driving

- **AAA Senior Driving**
  202-638-5944
  publicaffairs@national.aaa.com
  https://exchange.aaa.com/safety/senior-driver-safety-mobility/
- **AARP**
  888-687-2277
  877-342-2277 (español)
  877-434-7598 (TTY)
  member@aarp.org
  www.aarp.org/home-garden/transportation/driver_safety

273

Incontinence

- **More than half of women and more than one quarter of men age 65 and older experience urinary leakage**
- **Childbirth, infection, certain medications, weight gain and some illnesses**
- **Fecal incontinence is also more frequent in older adults**
- **Muscle damage or weakness, nerve damage, loss of stretch in the rectum, hemorrhoids, rectal prolapse**
- ***"Some people have a bowel or bladder problem when they cough or sneeze. Have you ever had this problem?"***
- **Bladder or bowel training, pelvic floor exercises and biofeedback, changes in diet and nutrition, wt loss, possible medication and surgery**
- **Reassurance, referral PRN**

274

Incontinence

- **National Association for Continence** https://nafc.org/
- https://medlineplus.gov/ency/article/003978.htm

Fecal (bowel) incontinence:
- International Foundation for Functional Gastrointestinal Disorders -- aboutincontinence.org/
- National Institute of Diabetes and Digestive and Kidney Diseases -- www.niddk.nih.gov/health-information/digestive-diseases/bowel-control-problems-fecal-incontinence
- The Simon Foundation for Continence -- simonfoundation.org/fecal-bowel-incontinence/

Urinary incontinence:
- National Institute of Diabetes and Digestive and Kidney Diseases -- www.niddk.nih.gov/health-information/urologic-diseases/bladder-control-problems
- The Simon Foundation for Continence -- simonfoundation.org/category/types-of-incontinence/
- Urology Care Foundation -- www.urologyhealth.org/urology-a-z/u/urinary-incontinence

275

Sexuality & Sexual Health

Research has found that a majority of older Americans are sexually active and view intimacy as an important part of life.

There are many social, physical & emotional changes in later life (good & bad)

- Be aware that many aging patients were sexually active before present awareness of HIV, herpes and other STDs and may have chronic symptoms
- Don't assume an older patient's gender identity, that they are no longer sexually active, or do not care about sex or some form of intimacy.
- Direct ?: Are you satisfied with your sex life?
- Indirect ?: "Have you had any problems since "X" ?"
- Anecdotes: "Some people taking "Y" have side effects like ED"

https://www.nia.nih.gov/health/sexuality-and-intimacy-older-adults

276

Sexuality & Sexual Health

- **HIV*Info***
  800-448-0440 (weekdays, 1-4 p.m. ET)
  888-480-3739 (TTY)
  HIVinfo@NIH.gov
  www.hivinfo.gov
- **Centers for Disease Control and Prevention**
  800-232-4636
  888-232-6348 (TTY)
  NPIN-info@cdc.gov
  www.cdc.gov/hiv/risk/age/olderamericans
  http://npin.cdc.gov
- **Mayo Foundation for Medical Education and Research**
  www.mayoclinic.org/healthy-lifestyle/sexual-health/basics/sexual-health-basics/hlv-20049432
- **National Institute of Allergy and Infectious Diseases**
  866-284-4107
  800-877-8339 (TTY)
  ocpostoffice@niaid.nih.gov
  www.niaid.nih.gov
- **Services & Advocacy for Gay, Lesbian, Bisexual & Transgender Elders**
  212-741-2247
  info@sageusa.org
  www.sageusa.org
- **Sexuality Information and Education Council of the United States**
  202-265-2405
  admin@siecus.org
  www.siecus.org
- https://www.prn.org/index.php/complications/article/neurologic_complications_hiv_antiretroviral_therapy_75

277

Alcohol Use & Substance Abuse

AKA Substance Use Disorders (SUD)

- Now aging Baby Boomers have a higher rate of lifetime substance abuse than their parents (2.8 mil 2006, 5.7 mil 2020)
- Age 50-80 67% drink alcohol (10% w other drugs)
- Use alcohol or drugs to counteract negative mental or physical feelings
- Some medical conditions can become more complicated as a result of alcohol and other drug use.
- Side effects or interaction with medication including decreasing effect or affecting dosage requirements
- Interaction with supplements, herbs, cannabinoids

278

Other Stuff

- Nicotine is leading cause of premature death in aged
  >16% 45-64, >8% 65+
- Cannabis => dec short term memory, inc bp & ht/resp rate
  - 4x inc risk of ht attack after 1st hr of smoking
  - inc use esp 65 yrs + (2006-2014 inc 71%)
  -may be Rx or OTO, dif strengths, dif forms
- Other drugs: forget Rx med dose (take extra)
  overdose deaths inc from 3/100K to 12/100K
- Falls, self care neglect, confusion, adverse reaction to Rx, mood swings, malnutrition

ALWAYS ASK what is their goal from substance use?

279

MAST-G https://docs.clinicaltools.com/pdf/sbirt/MAST-G.pdf

Description:

The MAST-G (Michigan Alcoholism Screening Test-Geriatric Version) varies from the MAST in that the questions highlight the special employment and social situations of someone who is retired and how that can relate to alcohol abuse. The tool consists of 24 questions.

Sensitivity and Specificity:

- According to one study, the MAST-G has a sensitivity of 93% and a specificity of 65% (Joseph et al, 1995)

Scoring:

- A score of 5 or more "yes" responses is indicative of a potential alcohol problem and suggests the need for further assessment.

280

MAST-G

- After drinking, have you ever noticed an increase in your heart rate or beating in your chest?
- When talking with others, do you ever underestimate how much you actually drink?
- Does alcohol make you sleepy so that you often fall asleep in your chair?
- After a few drinks, have you sometimes not eaten or been able to skip a meal?
- Does having a few drinks help decrease your shakiness or tremors?
- Does alcohol sometimes make it hard for you to remember parts of the day or night?
- Do you have rules for yourself that you won't drink before a certain time of the day?
- Have you lost interest in hobbies or activities you used to enjoy?

281

MAST-G (cont)

- When you wake up in the morning, do you have trouble remembering the night before?
- Does having a drink, help you sleep?
- Do you hide your alcohol bottles from family members?
- After a social gathering, have you ever felt embarrassed because you drank too much?
- Have you ever been concerned that drinking might be harmful to your health?
- Do you like to end an evening with. a nightcap?
- Did you find your drinking increased after someone dose to you died?
- In general, would you prefer to have a few drinks at home rather than go out to social events?

282

MAST-G (cont)

- Are you drinking more now than in the past?
- Do you usually take a drink to relax or calm your nerves?
- Do you drink to take your mind off your problems?
- Have you ever increased your drinking after experiencing a loss in your life?
- Do you sometimes drive when you have had too much to drink?
- Has a doctor or nurse ever said they were worried or concerned about your drinking?
- Have you ever made rules to manage your drinking?
- When you feel lonely does having a drink help?

283

Other SUD Screens

- **CAGE-AID**
- **AUDIT**

https://www.hiv.uw.edu/page/substance-use/cage-aid

284

CAGE

The CAGE Adapted to Include Drugs (CAGE-AID) Questionnaire is an adaptation of the CAGE for the purpose of conjointly screening for alcohol and drug problems. The CAGE-AIDS focuses on lifetime use.

When thinking about drug use, include illegal drug use and the use of prescription drug use other than prescribed.

Interpretation:

One or more "yes" responses is regarded as a positive screening test, indication possible substance use and need for further evaluation.

Questions Points

- C: Have you ever felt that you ought to cut down on your drinking or drug use? Yes+1 No+0
- A: Have people annoyed you by criticizing your drinking or drug use? Yes+1 No+0
- G: Have you ever felt bad or guilty about your drinking or drug use? Yes+1 No+0
- E: Have you ever had a drink or used drugs first thing in the morning to steady your nerves or to get rid of a hangover (eye opener)? Yes+1 No+0

285

Alcohol Use Disorders Identification Test (AUDIT-C)

Questions Points

- How often do you have a drink containing alcohol?
  Never +0 Monthly or less +1 2-4 times a month +2 2-3 times a week +3 4 or more times a week +4
- How many drinks containing alcohol do you have on a typical day when you are drinking?
  1 or 2 +0 3 or 4 +1 5 or 6 +2 7 to 9 +3 10 or more +4
- How often do you have six or more drinks on one occasion?
  Never +0 Less than monthly +1 Monthly +2 Weekly +3 Daily or almost daily +4
- AUDIT-C score = _____

Interpretation:

- Men, a score of 4 or more is considered positive, optimal for identifying hazardous drinking or active alcohol use disorders.
- Women, a score of 3 or more is considered positive, optimal for identifying hazardous drinking or active alcohol use disorders.
- NOTE: If all points are from Question 1, assume the patient is drinking below recommended limits and the medical provider should review the patient's alcohol intake during the past few months.

286

Alcohol Use & Substance Abuse

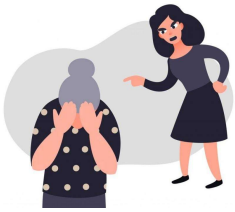
- **National Institute on Alcohol Abuse and Alcoholism**
  888-696-4222
  niaaaweb-r@exchange.nih.gov
  www.niaaa.nih.gov
- **National Institute on Drug Abuse**
  301-443-1124
  www.drugabuse.gov/about-nida/contact-nida (email form)
  www.drugabuse.gov
- **Substance Abuse and Mental Health Services Administration**
  877-726-4727
  800-487-4889 (TTY)
  webmaster@samhsa.hhs.gov
  www.samhsa.gov
  www.findtreatment.samhsa.gov

287

288

Elder Abuse

- 1 in 10 Americans over 60 have been abused = 5 million (NCOA)
- Many are relatives, often caregiver
- Often totally dependent
- Physical, sexual, psychological, financial, pharmaceutical
- Many never reported
  (fear, physically or mentally unable to complain)
- Caregiver may also report a family abuse situation



289

Elder Abuse

- Poorly explained, repeated, varying age cuts, bruises, burns, tender/sore areas, bed sores, other injuries
- Obvious fear of caregiver, complete deference
- Caregiver dominating conversation, belittling, unwilling to leave patient alone with doctor
- Comments to doctor contradicting observed patient behavior
- Trauma to genitals, anus, perineum
- Symptoms of poor nutrition (weight loss, dehydration, anemia, etc)
- Symptoms of physical neglect (unbathed, soiled clothes, open sores)
- Lack of items of daily living (glasses, cane, etc. = dependence)

290

Elder Abuse

- Misappropriation of medication (by caregiver or family for sale or personal use)
- Overmedication (to increase control)
- Misappropriation of finances (for personal "loans" or patient needs which are never given
- Patient: Self deprecation of physical or mental status

291

Elder Abuse Screening

- **Asking indirectly:**
- Do you feel safe where you live?
- Who prepares your food?
- Does someone help you with your medication?
- Who takes care of your checkbook?
- **Asking directly:**
- Does anyone at home hurt you?
- Do they scold or threaten you?
- Touch you without your consent?
- Make you do things you don't want to do?
- Take anything that's yours without asking?
- Had you sign documents that you did not understand?
- Are you afraid of anyone at home?
- Are you alone a lot?
- Has anyone ever failed to help you take care of yourself when you needed help?

- Adapted from Anetzl, P. & Bendman, K. (1998). Elder mistreatment: guidelines for health care professionals: Detection, assessment, and intervention. New York: Mount Sinai/Victim Services Agency
- https://elderabuse.stanford.edu/screening/how_screen.html

292

Elder Abuse Reporting

Mandated Reporters include: physicians, healthcare professionals, social workers, law enforcement

Mandated reporters are required by law to report suspected or observed abuse, neglect, or exploitation of endangered or impaired adults.

Mandated Reporters who fail to notify the Hotline of suspected abuse or neglect may be charged with a misdemeanor in criminal court or sued in civil court. Mandated reporters who have a license may lose that license to practice their professions.

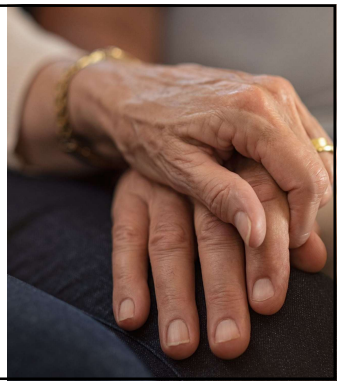
1-800-482-8049 – Adult Maltreatment Hotline

- **National Center on Elder Abuse**
  855-500-3537
  ncea@aoa.hhs.gov
  www.ncea.aoa.gov
- **National Elder Fraud Hotline**
  833-FRAUD-11 or 833-372-8311
  https://stopelderfraud.ovc.ojp.gov
- **U.S. Department of Justice**
  202-514-2000
  elder.justice@usdoj.gov
  www.justice.gov/elderjustice
- **State Department of Human Services**
- **Local Police**
- **National Adult Protective Services Association**
  https://www.napsa-now.org/help-in-your-area/

293

A Moment for …Caregivers

- Often a family member, possibly a spouse of similar age
- If so, often 24/7 (esp after COVID)
- Often neglect their own needs
  physical, emotional & social
- Stress hormones extreme
- May feel Isolated, abandoned, abused
- Esp. if person in care has dementia, is abusive or is self-absorbed



294

By 2034, people > 65 will outnumber children <18 for the first time in US history

295

- Many younger caregivers still work outside caregiving
- 80% of caregivers use out-of-pocket pay to help caregiving

  => work part-time
  => turn down promotions
  => quit saving
  => inc debt

296

Caregiver Stress Syndrome

= Px & emotional stress from constant responsibility

- headaches or body aches
- Constant fatigue
- Sleeping ↓ or ↑
- Rapid ↓ or ↑ weight
- Substance abuse
- Depression, anger, resentment, guilt, grief
- Emotional volatility
- Neglect (health, appearance, diet, exercise, alone time, business, finances, family, friends, home)

https://www.weightdigest.org/resources/techniques-to-relieve-caregiver-stress

297

The Guilt of Resentment

- Esp. if no positive reinforcement
- Exhausted, overwhelmed, alone
- Guilt over feeling like they want this to end
- Take personal responsibility for everything that goes wrong,
- Unrealistically expect themselves to only have positive feelings.
- Nearly one-quarter of adult children who are caring for an aging loved one grapple with guilt multiple times a day.

https://blog.highgateseniorliving.com/why-caregivers-feel-guilty

298

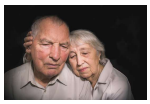
The Grief of Realization

- Realizing the inevitable
- It will never be the same again

299

- Older caregivers have a 63% higher mortality rate than non-caregivers
- 30% of caregivers die before those they are caring for.

You may be seeing more than one patient



https://www.agingcare.com/discussions/thirty-percent-of-caregivers-die-before-the-people-they-care-for-do-97626.htm
https://www.brmmlaw.com/blog/2014/september/70-of-all-caregivers-over-the-age-of-70-die-firs.

300

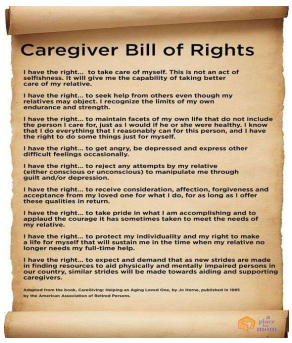
Remind Caregivers…

Just because your loved one has cancer, it doesn't mean your hangnail hurts any less.

(and this is not a trite statement)

Sometimes, the focus needs to shift, and it's ok.

301



302

- **Hospice Respite Care allows families & caregivers 5 days rest**

https://www.hospicehomecare.com/services/respite-care **Medicare covered**

303

304

Attitudes & Fear of Pain

Elderly individuals might be reserved in discussing their pain, because

- **of stoicism in their attitude toward pain,**
- **they do not want to be a complainer (self-ageism),**
- **they assume pain is a normal part of aging**
- **they have other challenges to which they give priority in their contacts with healthcare professionals,**
- **their cognitive issues make it difficult to express,**
- **they have concerns regarding side effects of pain meds**

https://www.futuremedicine.com/doi/full/10.2217/pmt-2019-0023#:

305

If pain becomes chronic, new memories, associations & behavior form.

Kinesiophobia Algophobia Algiophobia

To the patient

Movement & pain = damage

In reality in patients with chronic pain

usually no correlation of pain with tissue integrity

AND

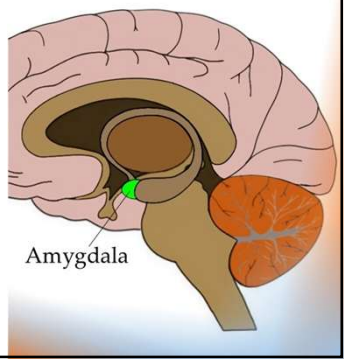
movement/exercise often helpful

https://www.physio-pedia.com/Considering_the_Stress_Pain_Cycle_in_Assessment

306

The Amygdala

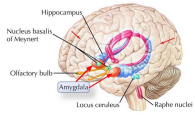
- The amygdala is primarily involved in the processing of emotions and memories associated with fear.
- The amygdala is also involved in tying emotional meaning to our memories. reward processing, and decision-making.



307

Chronic stress or pain

=> Dec size of amygdala



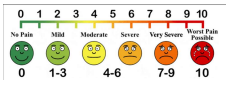
After hip surgery & elimination of pain

=> Inc size of amygdala

308

Objective Assessment

- Stress assessment tools
  - eg. Perceived Stress Scale PSS
- Physiologic measures of stress
  - eg. Cortisol, bp
- Measures of pain
  - eg Visual Analog Scale VAS



309

Pain & Stress

Biopsychosocial model = Patient active part of plan
- neg. emotions delay recovery from pain

Chronic pain affects 1 in 5 adults
- mobility, function, relationships, work, $, isolation

50 million

310

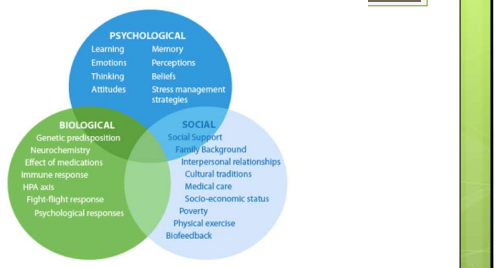
In the Biopsychosocial approach to pain:

Patients are the key players
Need to include pts social & psych experiences in assessment
i.e. Not just pain level, movement, ROM
BUT also behaviors & beliefs

Pts attitude toward their acute pain may => chronic

Observe body language, reaction to Dr's words
Determine what they "know" & from where

311



Biopsychosocial model of pain
Championed by Butler and Moseley and others. 2000

312

Model	Biomedical	Biopsychosocial
Pain/disease	physiologic cause	physio + lifestyle/beliefs
Focus	disease/pathology	pt experience/function
Responsibility	health professionals	pt empowered/team
Assessment	disease focus/Px exam	psychosocial & ADL
Rx goals	E/N clinical findings	pt's needs/desires
Education	report Px findings	explain need to move, etc
Skills	interpret lab, image	empathy, patience, adapt
Outcome eval	clinical findings	clinical + pt questionaire

https://www.physio-pedia.com/Considering_the_Stress_Pain_Cycle_in_Assessment

313

This means rethinking
- Time spent with pt
- Who does oral history
- "Homework" given
- Interprofessional referral
- Privacy
- Not one fits all

314

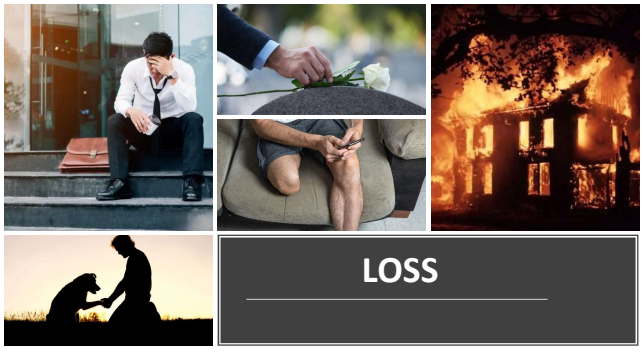
And at some point, we will all experience

315

Grief

- Loss of a loved person (death, divorce, betrayal)
- Loss of a loved animal
- Loss of an ability, skill, body part or function
- Loss of job, home, group, position, opportunity, "dream"
- Loss of meaningful place or item

316



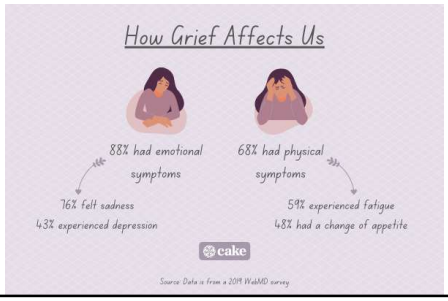
317

Stages of Grief

- Denial, anger, bargaining, depression and acceptance –
- Some rapid, some prolonged
- What we mourn or how we mourn is unique to each of us

318

Manifestations of Grief

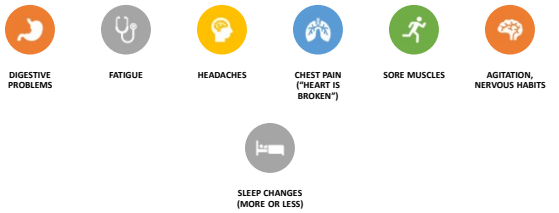


319

Emotional Symptoms of Grieving

320

Physical Symptoms of Grieving



321

Prolonged or Complicated Grief Disorder

Same type of emotional pain months after an event as the day the trauma occurred.

According to the Mayo Clinic, suicidal thoughts, depression or difficulty completing daily tasks, nicotine and drug use may also be signs of a grief management problem.

322

Grief

- There will be different dynamics if the patient was a caregiver of the deceased OR if the deceased was the caregiver
- That dynamic is especially important in the patient's healthcare
- Emptiness, loss of purpose (loss of patient)
- Loneliness or fear or loss of support may affect attitude (loss of caregiver)
- New barriers
- Your office may provide security or social interaction
- Be alert to changes in patient's health esp. signs of self-neglect
- Offer suggestions on grief counseling

323

324

Let's be In<u>FORM</u>ed

325

Disability

- **Usually for handicapped parking**
- **Dx, reason, length**

JESSIE WHITE
Secretary of State - State of Illinois

SIDE A
(To be completed by physician)

Persons with Disabilities Certification for Plates or Parking Placard

DIRECTIONS: Both sides of this document must be signed and completed. Side A must be completed by the physician. Side B must be completed by the applicant.

DEFINITION: "PERSONS WITH DISABILITIES" (625 ILCS 5/1-159.1)
"A natural person who, as determined by a licensed physician: (1) cannot walk without the use of, or assistance from, a brace, cane, crutch, another person, prosthetic device, wheelchair, or other assistive device; (2) is restricted by lung disease to such an extent that his or her forced (respiratory) expiratory volume for one second, when measured by spirometry, is less than one liter; (3) uses portable oxygen; (4) has a cardiac condition to the extent that the person's functional limitations are classified in severity as Class III or Class IV, according to standards set by the American Heart Association; (5) is severely limited in the person's ability to walk due to an arthritic, neurological, or orthopedic condition; (6) cannot walk 200 feet without stopping to rest because of one of the above 5 conditions."

(Please fill in the name of the person with the disability, state the diagnosis, and indicate the impairments below.)

Name of Person with Disabilities _____

Diagnosis _____

_____

********NOTE: "Cannot walk 200 feet without stopping to rest" is no longer a qualifying disability unless it is related to one of the following conditions below.********

___ is restricted by lung disease to such a degree that the person's forced (respiratory) expiratory volume (FEV) in one second, when measured by spirometry, is less than one liter.
___ Uses portable oxygen.
___ Has a cardiac condition to the cardiac condition according to the standards set by the American Heart Association.
___ Cannot walk without the assistance of another person, prosthetic device, wheelchair, or other assistive device.
___ Is severely limited in the person's ability to walk due to an arthritic, neurological, or orthopedic condition.

LENGTH OF DISABILITY: Check one

_____ Disability is permanent _____ Disability is temporary - **must state duration** (maximum 6 months) _____

I hereby certify that the physical condition of the person with disabilities listed herewith constitutes him/her as a person with disabilities as described under 625 ILCS 5/1-159.1. **WARNING: Any person who knowingly misuses or makes a false or misleading statement on an application can be fined up to $1,000. PHYSICIANS: Do not sign this form if the named patient does not meet the above definition. (NOTE: If certification form is signed by a Licensed Physician Assistant or Advance Practice Nurse, the name and license number of the Supervising Physician is required).**

_____ _____
Physician's signature Physician's license number

_____ _____
Supervising Physician's name License number

PLEASE PRINT OR TYPE BELOW:

Physician's Name _____

Address _____

City _____ State _____ ZIP _____

Telephone ( ) _____

Please mail all required documentation to Secretary of State, Persons with Disabilities License Plate/Placard Unit, 501 South 2nd St., Room 541, Springfield, IL 62756.

VSD 42.19

326

HIPAA Authorization Form

- The Health Information Portability and Accountability Act (HIPAA) provides legal standards for keeping a person's health information and records private. This means it is illegal for medical professionals to share any details about the patient's health unless they gave their written consent.
- HIPAA authorization is a simple yet important document for family caregivers. It authorizes the doctor to keep approved family members and other health providers in the loop regarding a loved one's medical status and billing information. This form only takes a moment to complete, and every doctor's office should have blank ones on hand for patients. Esp. important if a caregiver is involved or if you are detecting physical or mental changes

327

Medical Power of Attorney (POA)

- Also known as a health care proxy or power of attorney for health care, this legal document enables a person (called the "principal") to appoint a trusted relative or friend (called the "agent") to handle specific health care decisions on their behalf.
- HIPAA authorization only grants a caregiver access to information, but a medical POA grants this as well as the ability to make medical decisions on behalf of a care recipient in the event they become incapacitated. There is a catch, though. This document must be prepared while a principal still has the mental capacity to give an agent these powers.
- Both medical and financial power of attorney documents are crucial for long term care planning. Realistic future planning, including preparing for the possibility of dementia and other medical emergencies is the most proactive way to ensure medical decisions are communicated to the right people.
- It is important for the principal to trust that their agent understands their health care goals, their preferences for type and place of care, and that they will act in their best interests. This is where the third legal document, an advance directive, comes into play.

328

CRITICAL!

- Advanced care directives, POA, DNR, POLST, etc. should only be completed after unhurried & serious discussion with the patient about the meaning of their directives.
- They should understand that any of these can be immediately revoked by the patient.
- The patient should be encouraged to discuss their wishes in detail with their POA and any other close person to avoid misunderstanding or emotional decisions during crisis.
- Also the patient and POA should understand that resuscitation from cardiac/respiratory arrest will return the patient to no better than the health status pre-arrest (usually worse)
- Many assisted living or nursing facilities require ACDs and DNRs

329

Advance Care Directives

- Advance directives go by many different names, but a ***living will*** tends to be the most well known.
- Generally, these documents allow a person to record their wishes for emergency and/or end-of-life care *before* a medical crisis strikes. With a living will, an elder's loved ones don't have to agonize over difficult medical decisions.
- This document essentially spells out instructions for a medical POA to follow when managing their care. A living will typically indicates specific treatments, such as CPR or life support, that a person does or does not want to receive under certain circumstances.

330

Advanced Care & End of Life Directives

- **Aging with Dignity**
  888-594-7437
  fivewishes@agingwithdignity.org
  www.agingwithdignity.org
- **Education in Palliative and End-of-life Care**
  Northwestern University Feinberg School of Medicine
  312-503-3732
  info@epec.net
  www.epec.net
- **National Hospice and Palliative Care Organization**
  703-837-1500
  nhpco_info@nhpco.org
  www.nhpco.org
- NHPCO offers educational resources, tools, and webinars for health care professionals on palliative care, including the Journal of Pain and Symptom Management.
- **NHPCO's CaringInfo**
  800-658-8898
  caringinfo@nhpco.org
  www.caringinfo.org

331

- **Getting Your Affairs in Order Checklist: Documents to Prepare for the Future** NIH National Institute on Aging

www.nia.nih.gov/health/getting-your-affairs-order-checklist-documents-prepare-future

Alzheimers.gov

- https://www.alzheimers.gov/life-with-dementia/planning-for-future

332

Do Not Resusitate Order (DNR)

- "No Code or DNR" means a written instruction or order to withhold cardiopulmonary resuscitation (cardiac compression, endotracheal intubation and other advanced airway management, artificial ventilation, defibrillation, administration of cardiac resuscitation medications, and related procedures) from the patient in the event of the patient's cardiac or respiratory arrest.
- A bracelet and/or valid form must be presented to emergency personnel

333

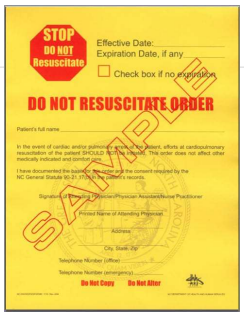
Do Not Resusitate Order (DNR)

The following requirements and provisions shall apply to any EMS/DNR Order Form:

1. Content of the Form - A valid EMS/DNR Order Form shall include the words "DNR"or "No Code," or similar language, and the physician's signature and the date.
2. Copies of the EMS/DNR Order Form may be given to other providers or persons for information.
3. Revocation of an EMS/DNR Order - An EMS/DNR Order may be revoked at any time or in any manner by the named patient or patient's attending physician.
4. Distribution of EMS/DNR Order Forms - EMS/DNR Forms approved by the Board,with instructions, shall be available to physicians through local Health Department offices, local hospitals, ambulance services, and to private physicians, on request. Other distribution points may be approved by the Director to meet identified needs.

334

DNR FORM



335

POLST (MOST)

- POLST stands for Physician Orders for Life-Sustaining Treatment.
  (MOST = NC= Medical Order for Scope of Treatment)
- POLST is a physician's order that documents and directs a patient's medical treatment preferences when faced with life-limiting illnesses and irreversible conditions.
- POLST is not for everyone. POLST is helpful if you or a loved one is seriously ill, frail and has trouble performing routine daily activities or is receiving hospice services
- High-quality and personalized end-of-life care continue to be a significant challenge in America. The current standard of care during an emergency is for emergency medical services (EMS) to attempt everything possible to attempt to save a life. However, not everyone wants every available treatment. Having a discussion with a physician and completing a POLST form is one way to ensure that an individual's preferences are respected, recorded, and followed.

336

POLST (MOST)

- Health care professionals should ask their patients for a copy of their advance directives prior to completing a POLST form and review to ensure the documents are complementary to avoid confusion.

1. Advance Directive: This document is called different things in different states (e.g., living will, health care power of attorney) but, regardless of the term, is a legal document used to provide guidance about what types of treatments a patient may want to receive in case of a future, unknown medical emergency; it is also where patients designate a surrogate. All adults should have an advance directive.
2. POLST Form: This is also called different things in different states) but, regardless of the term, the POLST form is a portable medical order for specific medical treatments the patient would want (based on his/her diagnosis, prognosis and goals of care). POLST forms are appropriate for individuals with a serious illness or frailty near the end-of-life.

337

POLST What Patients Should Know

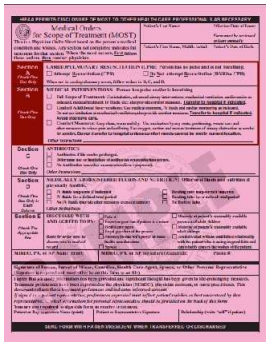
Make Your Wishes Known: Choices to Discuss with Your Physician and Your Family

- A POLST form is completed following a discussion with your physician regarding your medical illness and your preferences for medical care. POLST form provides an opportunity to educate yourself by talking with your doctor about your options, and then discuss your choices with your family. How much do you want to know about your illness and how much does your family know about your priorities and wishes? What are your goals in the next year or two? These are all issues to be considered as you determine your treatment preferences. You can also state any personal, cultural, or spiritual practices related to your care. Discussing and documenting your preferences in AR POLST form gives you greater control over your health care and ensures that your wishes are easily accessed and followed through by all individuals involved in your health care.

How is a POLST Different from an Advance Directive?

- A POLST complements an Advance Directive and does not replace it. All adults need to have an advance directive regardless of their health status. POLST is appropriate for individuals with serious illness or frailty. An Advance Directive is a legal document, while a POLST is an actionable medical order which will be followed in all care settings.

338



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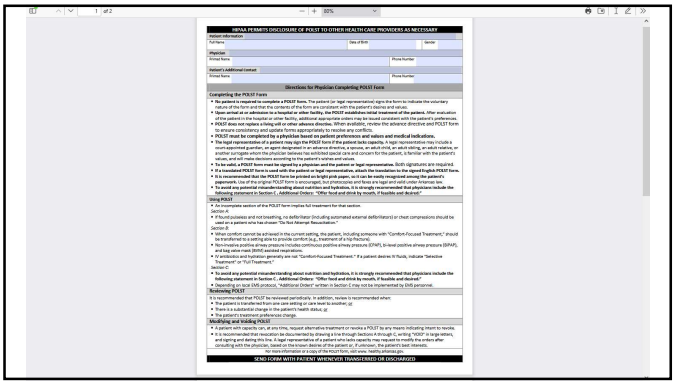


340

A  at North Carolina Stats

341

North Carolina's leading causes of death include heart disease, cancer, stroke, and unintentional injuries, with life expectancy decreased to 74.9 years in 2021. (76.1 in 2020)

The state also has high rates of drug overdose deaths and firearm injury deaths.

In 2023, unintentional falls caused 1,727 deaths in North Carolina for individuals aged 65 and older, with falls being the leading cause of injury in this demographic.

https://www.americashealthrankings.org/learn/reports/2025-senior-report/state-summaries-north-carolina

https://www.ncdhhs.gov/

342

Unintentional Falls:

- In 2023, falls resulted in 1,727 deaths, 21,695 hospitalizations, and 138,296 emergency department visits among older adults in North Carolina.

Cost of Falls:

- The average hospitalization cost for an unintentional fall in 2023 was nearly $71,000 per person.

343

STRENGTHS

- Low prevalence of excessive drinking
- Low prevalence of avoiding care due to cost
- High pneumonia vaccination rate

CHALLENGES

- High prevalence of smoking
- Low prevalence of exercise
- Low percentage of four- or five-star rated nursing home beds

KEY FINDINGS

- Drug deaths increased 116% from 4.4 to 9.5 deaths per 100,000 adults age 65 and older between 2013-2015 and 2021-2023.
- High-speed internet access increased 34% from 63.7% to 85.4% of households with adults age 65 and older between 2015 and 2023.
- Geriatric clinicians increased 32% from 31.6 to 41.7 per 100,000 adults age 65 and older between September 2020 and September 2024.

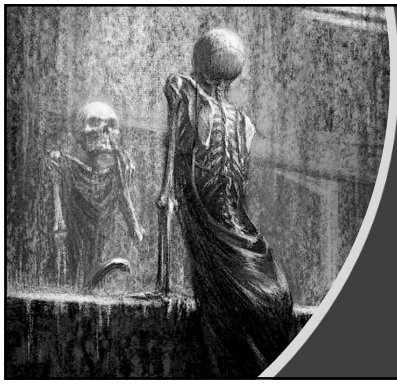
344

DISPARITIES

- Frequent physical distress was 8.8 times higher among adults age 65 and older who have independent living difficulty (50.8%) than those without a disability (5.8%) in 2023.
- Suicide deaths per 100,000 adults age 65 and older were 6.2 times higher among men (34.1) than women (5.5) in 2021-2023.

345

346



After Those Morbid Thoughts

Let's discuss…

347

Comorbidity

- Comorbidity = concurrence of 2 or more clinical conditions in a single person.
- Improvements in healthcare and the diagnosis, treatment, and/or management of disease => inc life expectancy
- As a result of an increase in life expectancy, several issues related to longevity and health arise including chronic disease & comorbidity.
- May be result of or related to another disease or independent.
- 80% of adults 65 and older have at least one condition
- The likelihood of possessing two or more significant conditions is approximated to be 60% by the ages of 75 and 79 years and exceeds 75% between the ages of 85 and 89 years.

- https://www.news-medical.net/health/Comorbidities-in-Older-Adults
- https://www.ncoa.org/article/the-top-10-most-common-chronic-conditions-in-older-adults

348

Comorbidity

- Age, family genetics, and birth gender are immutable
- Some factors are imposed (early life experience, past disease/injury, socioeconomic)
- Others are choices (lifestyle, diet, exercise, sleep, habits)
- https://www.ncoa.org/article/the-top-10-most-common-chronic-conditions-in-older-adults

349

The most common comorbid conditions that occur in elderly people:

- heart disease including arrhythmia,
- hypertension,
- respiratory disease,
- cerebrovascular disease,
- diabetes,
- joint disease,
- sensory impairment,
- mental health problems.

- https://www.news-medical.net/health/Comorbidities-in-Older-Adults

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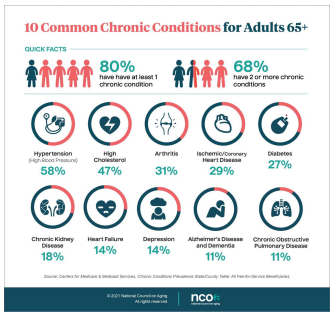


351

Polypharmacy

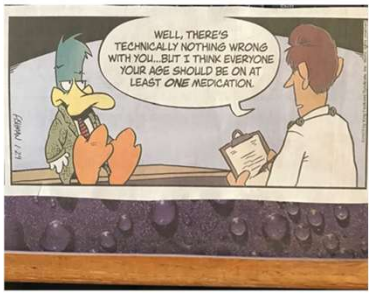
- Comorbidities => Polypharmacy
- Polypharmacy = the simultaneous use of several drugs to treat a single or several conditions.
- Often associated with adverse outcomes which include mortality, adverse drug reactions, increased length of stay in the hospital, readmission to the hospital after discharge, and increased frequency of falls.

352

Part of the AWV

Check on medications & supplements.

- Possible duplication
- Possible side effects
- Possible negative interaction
- Possibly unnecessary



353

Most Prescribed Medications for the Elderly

Hydrocodone: often blended with acetaminophen (Lorcet, Vicodin) Opioid	Pain
Simvastatin, Atorvastatin, Losartin (Zocor) Statin	Cholesterol
Lisinopril: (Obrelis, Zestril) ACE inhibitor	HBP & CHF Relaxes blood vessels
Levothyroxine: (Synthroid) Manufactured Hormone	Hypothyroidism
Amlodipine Besylate: (Norvasc) Ca++ Channel Blocker	Slows heart-beat & inc. strength
Omeprazole: (Prilosec OTC, Zegrid) Protein pump inhibitor	GERD, heartburn, ulcers
Azithromycin: (AzaSite, Zithromax, Z-pak) Antibiotic	Bacterial infections
Metformin: (Glucophage, Fortamet)	Diabetes management
Hydrochlorothiazide (HCL-TZ, Microzide) Diuretic	HBP Stimulates urine production
Albuterol	Asthma, relaxes airway muscles
Antihistamines (Benadryl)	Allergies, (off-use sleep aid)
Gabapentin (Neurontin)	Seizures, Nerve pain

https://www.makatimed.net.ph/blogs/10-most-prescribed-medicines/
https://www.uewhealth.com/10-prescribed-medications-elderly/

354

For info including drug interactions

- MedTap App is a drug reference tool for patients, physicians, medical students, nurses and other healthcare professionals.
- https://www.drugs.com online and App
- https://medlineplus.gov/ information on prescription, OTC, supplements, herbs
- Micromedex currently has a stand-alone drug interaction checker available on the iOS and Android devices based upon their Micromedex 2.0 system
- Lexi-Interact, Micromedex Drug Interactions, iFacts, Medscape, and Epocrates

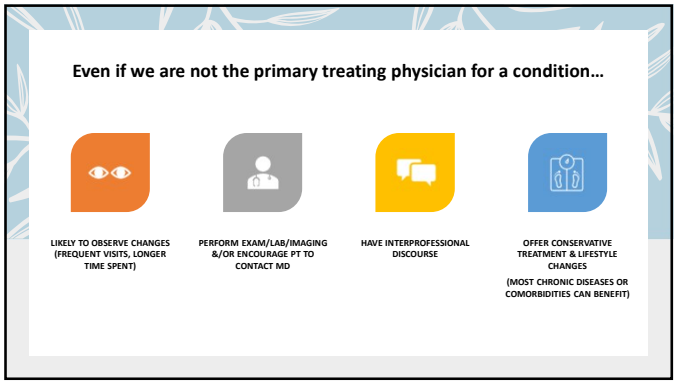
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5084483/

355

As Chiropractic Physicians

- Be aware of possible comorbidities
- Be alert to polypharmacy & side effects of medications
- Be knowledgeable re most common comorbidities (S&S, Px, tests, Rx)
- Musculoskeletal implications
- Effects to or from your care
- Treat or co-manage, level of involvement
- Referral or interprofessional communication, shared files
- Provide patient information

356



357

358

With Medicare inclusion, Regardless of your personal practice focus & choice of therapies, be especially diligent in having evidence-based/informed research to support your recommendations for care.

This is especially important if you are using conservative approaches (nutrition, manipulation, etc) as a replacement for or delaying medical or pharmaceutical intervention.

Never remove a patient from prescribed medication without consulting the prescribing physician. Advise patients the same.

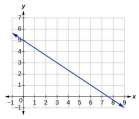
Remember that geriatric patients may have a very volatile physiology relative to their medications, even minor alterations in dose may precipitate major reactions.

359

Word to Remember

Homeostenosis: the decreasing amount of physiological reserves a person has to recover or maintain homeostasis, usually due to aging.

physiologic reserves

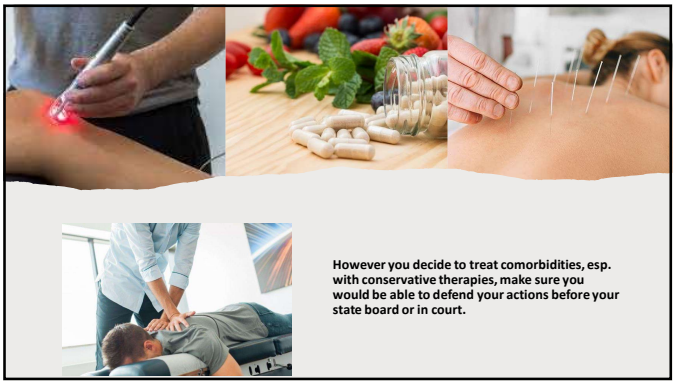


=

homeostasis

increasing age

360

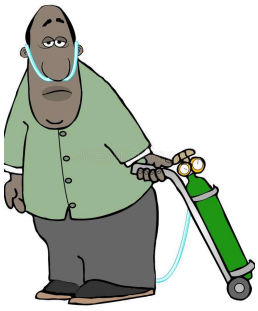


However you decide to treat comorbidities, esp. with conservative therapies, make sure you would be able to defend your actions before your state board or in court.

361

#10: Chronic obstructive pulmonary disease (COPD)

- 11% of older adults
- 2 main conditions—emphysema and chronic bronchitis.
- Shortness of breath, coughing, and chest tightness.
- To prevent—or slow progression—quit or avoid smoking, secondhand smoke, chemical fumes, and dust, pollen or other respiratory irritants.
- Continue to remain active.



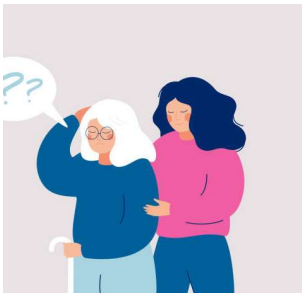
362

9: Alzheimer's disease Dementia

- 11% of older adults on Medicare
- Alzheimer's Disease = specific type of dementia—a condition that causes memory loss and difficulty thinking or problem-solving to the point that it interferes with everyday activities.
- Dementia is not a normal part of aging and is caused by changes in the brain over time.
- The biggest risk factors: age, family history, and genetics
- "Sundowning" common

Incorporating the following habits into your lifestyle could slow or prevent onset.

- Exercise. Staying active isn't just good for your heart; it's also great for your brain.
- Sleep. at least 7 hours of deep sleep a night is crucial.
- Diet. Brain healthy foods



363

- Globally, dementia represented the 6th leading cause of death in 2023.
- Patients with dementia have a high disease burden which involves both cognitive symptoms caused by dementia & poor quality of life
- More likely to suffer from five or more physical comorbid conditions and polypharmacy relative to those that do not suffer from dementia.
- Hypertension (34.5 %), diabetes (16.3 %), and cardiac arrhythmia (7.3 %) & other cardiometabolic diseases
- Early detection important

IF PATIENT HAS SYMPTOMS OF DEMENTIA…CHECK FOR A-FIB
(may be getting microemboli to the brain from A-fib)

- https://www.news-medical.net/health/Comorbidities-in-Older-Adults
- https://www.alz.org/

364

Dementia

A large new study has found that **atrial fibrillation (afib),** the most common type of irregular heartbeat, significantly **elevates the odds of future dementia** in people diagnosed before age 70. For middle-aged adults, afib also raises the risk of early-onset dementia.

- Atrial fibrillation (afib) diagnosed before age 70 was tied to a 21% increased risk of future dementia
- Afib also raised the risk of future early-onset dementia (affecting those between ages 45 and 65) by 36 %.

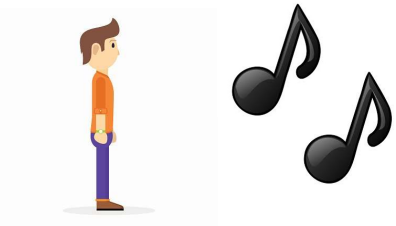
Probably the effect of microemboli.

Patients with either condition should be evaluated for the other.

https://www.everydayhealth.com/heart-health/atrial-fibrillation-may-raise-dementia-risk
https://www.ahajournals.org/doi/10.1161/CIRCULATIONAHA.121.055018

365

SIDE NOTES…



366

Dementia

About 1 in 3 Americans will get shingles, CDC data says.

Researchers with Stanford University and Austria's Vienna University evaluated the health records of 280,000 older adults aged 71 to 88 in Wales who didn't have dementia when the study was initiated.

7 years later, people who received the shingles vaccine were 20% less likely to develop dementia than those who didn't get the vaccine.

…regardless of your personal & professional stance on vaccines, DCs should be attentive to widely published articles on issues patients may wish to discuss and refer them appropriately

https://jamanetwork.com/journals/jama/article-abstract/2833659
https://med.stanford.edu/news/all-news/2025/03/shingles-vaccination-dementia.html
https://www.nature.com/articles/s41586-025-08800-x

367

- There is strong evidence that homocysteine is a risk factor not only for cerebrovascular diseases but also for degenerative dementias.

https://www.mdpi.com/2227-9059/10/11/2741

- Elevated plasma homocysteine levels have been associated with poor cognition and dementia. E/N = 5-15 mcmol/L https://www.nejm.org/doi/full/10.1056/nejmoa011613
- B12, B6, Folate supplements can break down homocysteine
- When it interacts with the B vitamins, homocysteine converts to two substances:

Methionine, an essential amino acid and antioxidant that synthesizes proteins.

Cysteine, a nonessential amino acid synthesized from methionine that reduces inflammation, increases communication between immune cells and increases liver health.

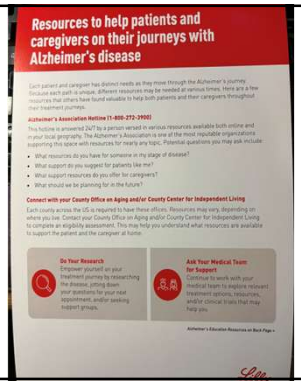
https://my.clevelandclinic.org/health/articles/21527-homocysteine

368

New Research

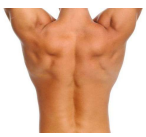
- Dementia due to inc amyloid plaques in the brain, 15-20 yrs to form
- Monoclonal antibodies dissolve plaques = arrested decline
- Medicare now reimburses 80% of monoclonal antibody Rx
- Other new Rx may arrest decline = inc quality of life

369



370

BACK TO OUR TOPIC…



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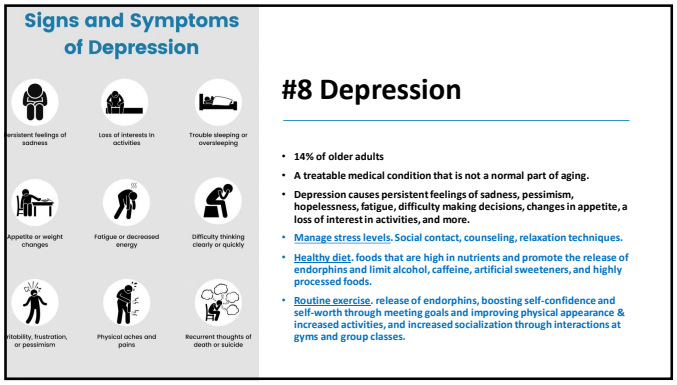


#8 Depression

- 14% of older adults
- A treatable medical condition that is not a normal part of aging.
- Depression causes persistent feelings of sadness, pessimism, hopelessness, fatigue, difficulty making decisions, changes in appetite, a loss of interest in activities, and more.
- Manage stress levels. Social contact, counseling, relaxation techniques.
- Healthy diet. foods that are high in nutrients and promote the release of endorphins and limit alcohol, caffeine, artificial sweeteners, and highly processed foods.
- Routine exercise. release of endorphins, boosting self-confidence and self-worth through meeting goals and improving physical appearance & increased activities, and increased socialization through interactions at gyms and group classes.

372

DIAL 988
SUICIDE PREVENTION

- If you're in emotional distress or suicidal crisis, call 988
- If it's an emergency, call 911. You can also go to your nearest emergency room. A medical professional can give information about your particular circumstances.
- If you believe that someone else is in danger of suicide and you have their contact information, contact your local law enforcement for immediate help. You can also encourage the person to contact 988

373

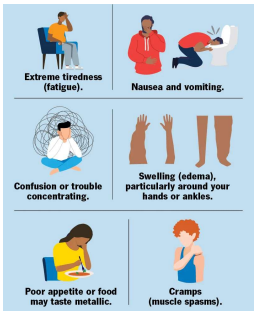
7: Heart failure

- 14% of older adults
- Heart cannot adequately supply blood and oxygen to vital organs.
- Often product of fluid retention, venous stasis, edema esp LE
- The heart might become enlarged, develop more muscle mass, or pump faster in order to meet the body's needs
- Feel tired, light headed, nauseous, confused, or lack appetite.
- Prevention: decrease risk for coronary heart disease and hypertension, address dependent edema

374

6:Chronic kidney disease

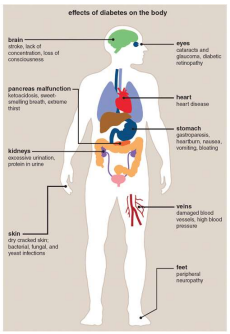
- 18% of older adults
- A slow loss in kidney function over time.
- CKD patients have an increased risk for developing heart disease or kidney failure.
- Diabetes and high blood pressure are the greatest risk factors
- Early detection & treatment. Regular assessment/screenings.
- Hydration, lemon juice, avoid oxalates



375

#5 Diabetes

- 27% percent of older adults
- Likelihood of diabetes increases after age 45.
- Body is resistant to, or doesn't produce enough insulin => high blood glucose,
- 70% AR diabetics are > A1C goal
- Complications: kidney disease, heart disease, or blindness.
- Diet including monitoring carbohydrate, calorie and alcohol intake,
- Exercising 30 minutes five times a week = control blood glucose & weight
- Safely losing 5-7% of body weight if diagnosed with pre-diabetes.



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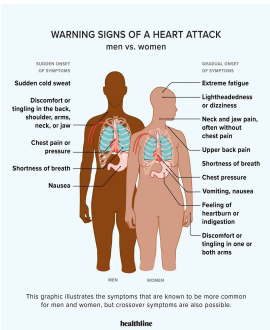


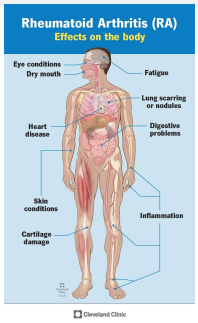
#4 Ischemic Heart Disease (coronary heart disease)

- 29% of older adults
- Caused by a build-up of plaque narrowing the arteries leading to the heart thus decreasing the amount of oxygen-rich blood delivered to the heart.
- Complications: blood clots, angina, or a heart attack.
- Refrain from saturated and trans fats, limit sugar and salt intake
- 7-8 hours of sleep each night
- Control stress
- Regular cardio exercises
- Abstain from smoking
- Assess and address major risk factors, including high cholesterol and high blood pressure

377

#3 Arthritis

- 31% of older adults were treated for arthritis
- Inflammation of joints, pain and stiffness, more common in women.
- Exercise 30 minutes 5 times per week, to improve function and decrease pain. Include a mixture of aerobic, strength-building, and stretching movements.
- Recommended weight for height—losing one pound can remove four pounds of pressure on one's knees.
- Proper posture & ergonomics
- Do not smoke.



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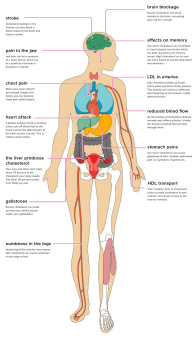


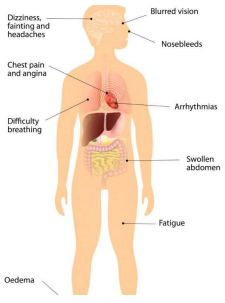
#2 High Cholesterol

- 47% of older adults
- May be genetic or lifestyle
- Excess of bad fats (or lipids), affecting arteries and heart
- Abstaining from smoking, decrease alcohol consumption
- Being active each day
- Managing weight
- Minimizing saturated fats and trans fats in your diet
- Soluble fiber (oats, bran, psyllium)
- Omega 3 FA, tree nuts, avocados

379

#1: Hypertension (high blood pressure)

- 58% of older adults
- Volume of blood pumped & arterial resistance to the blood flow. (narrow blood vessels & inc volume)
- Can => stroke and myocardial infarction.
- Maintaining a healthy weight. Losing just 10 pounds can reduce blood pressure
- Regulate stress levels
- Limit salt and alcohol consumption
- Exercise daily, including a combination of moderate to vigorous-intensity aerobic activities, flexibility and stretching, and muscle strengthening
- Check blood pressure regularly—especially to detect pre-hypertension



380

- https://www.clinicalpainadvisor.com/back-spine-pain/increased-comorbidity-associated-with-more-back-pain-disability-in-older-adults/
- https://chiro.org/Conditions/The_Relationship_Between_Spinal_Pain.shtml

Older adults presenting at primary care physicians for back-related disability have a favorable clinical trajectory, but increased comorbidity count and burden are associated with increased back-related disability levels, according to study results published in *Pain*.

381

- **452 Patients aged 55 + who sought care for back-related disability at a general practitioner, physiotherapist, or chiropractor were evaluated by the Roland-Morris Disability Questionnaire (RMDQ) every 3 months for a year.**
- Back Complaints in the Elderly-Norway (BACE-N) study (ClinicalTrials.gov Identifier: NCT04261309) (2015-2020)

- **The most common comorbidities were hypertension (35.3%), osteoarthritis (30.6%), heart disease (15.4%), depression (7.6%), diabetes (6.9%), osteoporosis (6.7%), and lung disease (5.8%).**

- **An increase in the number of comorbidities by 1 was associated with a 0.75-point higher RMDQ score.**

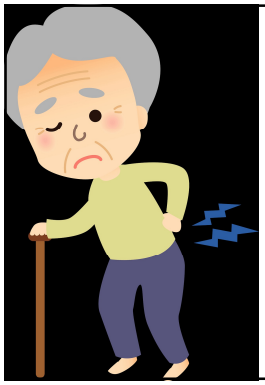
- https://www.clinicalpainadvisor.com/back-spine-pain/increased-comorbidity-associated-with-more-back-pain-disability-in-older-adults/

382

"The clinical course of back-related disability in older adults is generally favorable, which is important for clinicians when providing prognostic information in their clinical encounters. Our confirmatory prognostic factor analyses emphasize the importance for clinicians to assess and address comorbidities in older adults with back pain, and for stakeholders to develop integrated care pathways to improve outcomes."

- https://www.clinicalpainadvisor.com/back-spine-pain/increased-comorbidity-associated-with-more-back-pain-disability-in-older-adults/

383



In Other Words

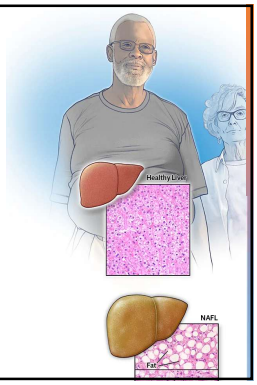
The outcome for back pain patients is usually better if comorbidities are addressed along with the back treatment

384

A Rising Co-Morbidity NAFLD (non-alcoholic fatty liver disease)

- The accumulation of liver fat in people who drink little or no alcohol.
- The cause of **non-alcoholic fatty liver disease (NAFLD)** is unknown. Risk factors include obesity, gastric bypass surgery, high cholesterol, high blood pressure and type 2 diabetes.
- Most people have **no symptoms**. In rare cases, people may experience fatigue, liver pain, or weight loss. Over time, inflammation and scarring of the liver (cirrhosis) can occur with jaundice. **Usually discovered by blood work up based on risk**.
- No standard treatment exists. Instead, doctors will treat the underlying condition, such as obesity with diet & exercise.
- > 3 million US cases/year (very common) 35% > age 65

https://www.mayoclinic.org/diseases-conditions/nonalcoholic-fatty-liver-disease/symptoms-causes/syc-20354567



385

Drop these facts at Thanksgiving Dinner…

- Some people with **NAFLD** can get **nonalcoholic steatohepatitis**, also called **NASH.** NASH is a serious form of fatty liver disease that causes the liver to swell and become damaged due to the fat deposits in the liver. NASH may get worse and may lead to serious liver scarring, called cirrhosis, and even liver cancer. This damage is like the damage caused by heavy alcohol use.
- A move is currently underway to change the name nonalcoholic fatty liver disease to **metabolic dysfunction-associated steatotic liver disease (MASLD)**. Experts also have recommended changing the name nonalcoholic steatohepatitis to **metabolic dysfunction-associated steatohepatitis (MASH).**

386

Speaking of Thanksgiving Dinner…

- Swallowing difficulty or choking or constant throat clearing or sore throat > 4 wks
- Hx: What are they eating?
  - What chokes them?
  - How often do they eat?
  - What is the consistency of usual & choking foods?
  - Where does it feel the food sticks? (neck or chest often esoph)
  - Have they lost weight?
  - Have they aspirated, had pneumonia or COPD?
  - Do they wear dentures to eat?
  - In what position do they eat & drink? (kitchen chair, bed, couch, recliner)

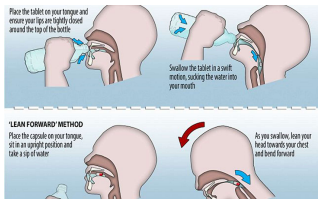
387

Swallowing

- Co-morbidities Diabetes, Parkinsons*, CVA, Reflux, Polypharmacy
- Can order swallowing test & therapy
- Proper swallowing position esp. for fluids or pills

=>

* Main cause of death is aspiration pneumonia (often "silent")



388

Since we now have skin in the game…

While we're examining or treating … NOTICE…

Older adults have a greater likelihood of dermatologic issues.

Many are benign & asymptomatic and may self resolve or are responsive to conservative care.

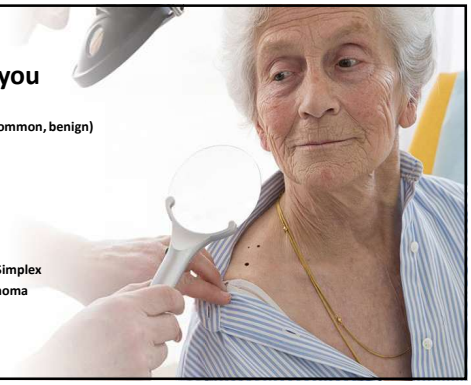
Some are benign but affect quality of life & may become malignant, infected or increase morbidity.

Some are already malignant.

And some need closer assessment for correct diagnosis

389

A Refresher for you



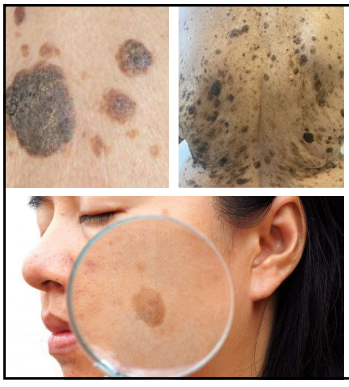
- Seborrheic keratosis (most common, benign)
- Epidermal inclusion cyst
- Verruca (warts)
- Onychomycosis (nail fungus)
- Dermatitis
- Rosacea
- Morbilliform drug eruption
- Herpes Zoster (shingles), H. Simplex
- Basal & Squamous cell carcinoma
- Melanoma

390

- If there is any change in a skin lesion (size/color/sensation),
- If it is shiny/weeping/raw,
- If it is multi-colored or has indistinct edges
- If you have any concern

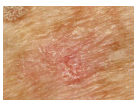
•Refer for assessment

391



Seborrheic Keratosis

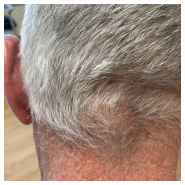
- Benign
- Can itch
- Tan -> black
- Usually untreated
- One or multiple
- Often genetic & with sun exposure
- R/O actinic keratosis (pre-CA)

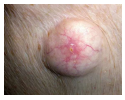


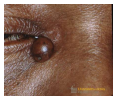
392

Epidermal Inclusion Cyst (Sebaceous Cyst)

- Not sebaceous in origin
- Benign (rarely become malignant)
- Esp. in sun damaged skin
- Easily palpable & MOBILE
- Usually left untreated
- Excised or drained if open or for comfort or cosmetic reasons

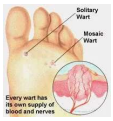






393

Verruca (Warts)



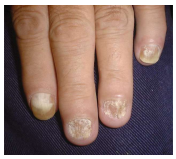
- Verruca usually means plantar warts
  - -painful, can bleed profusely when removed
- Other warts usually not painful but can be irritated or cosmetically undesirable
- Warts are caused by human papillomavirus (HPV). There are about 130 known types of human papillomaviruses.
  - -sex, skin contact, towels thru breaks in skin
- Avoid contact, even with your own warts
- Duct tape -> Homeopathic -> surgical treatment
- https://www.mayoclinic.org/diseases-conditions/common-warts/symptoms-causes/syc-20371125

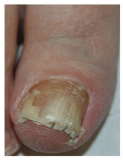
394

Onychomycosis (Nail Fungus)

- Esp. with diabetes and immune deficiency
- Carpets, showers, pool decks
- Nail thick, detached, distorted
- OTC -> Oral, systemic & topical Rx -> debridement
- Screen for alcohol abuse & hepatitis
- Rx may have neg. interaction w other medications

https://www.ncbi.nlm.nih.gov/books/NBK441853/#:~:text=Onychomycosis



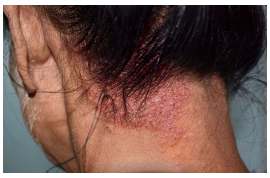


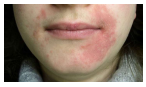
395

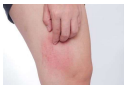
Dermatitis

- Itchy dry inflamed rash
- May blister or flake
- Eczema, seborrheic, contact
- Allergic reaction, stress
- Non contagious
- Moisturizer, medicated cream, shampoo
- Avoid soaking in water

https://www.mayoclinic.org/diseases-conditions/dermatitis-eczema/symptoms-causes/syc-20352380#:~:text





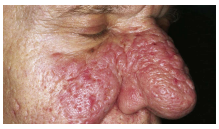


396

Rosacea

- Prolonged inflam
- Red rash on cheeks & nose
- Long term -> thickened skin (esp nose)
- Can cause eye irritation
- May be intermittent
- Inc w sun, stress & alcohol
- Avoid triggers
- Creams, oral Rx, laser

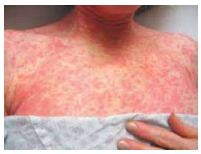
https://www.niams.nih.gov/health-topics/rosacea#:~:text=Rosacea

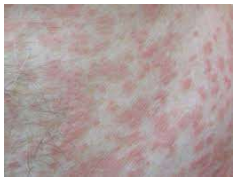


397

Morbilliform Drug Eruption

- After new or increased medication (OTC or Rx)
- Contact prescribing doctor
- Check for other allergic symptoms esp. potential life threats (throat swelling, wheezing)
- Check mouth for redness, swelling
- Note any sloughing or open wounds





398

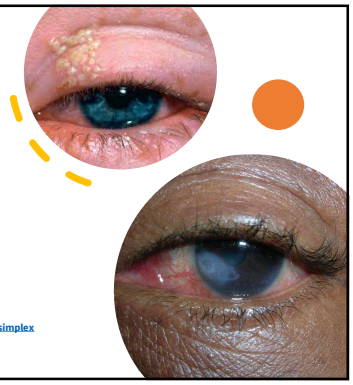
Herpes Simplex HSV-1, HSV-2

- Contagious virus
- Lifelong infection (treatment, no cure) Intermittent
- Painful/itchy cold sores, blisters may feel before seen
- Muscle ache, fever, lymph node swelling
- Duration: first outbreak: weeks, subsequent: shorter/less severe
- Herpes simplex 1 (HSV-1, commonly known as oral herpes) tends to affect your mouth or face. It causes cold sores. HSV-1 spreads through contact with saliva.
- Herpes simplex 2 (HSV-2, commonly known as genital herpes) is a **sexually transmitted infection** (STI). It causes sores on skin that comes in contact with the genitals of an infected person.
- Can affect eyes or other parts of **skin**.
- Esp.: female (AFAB), early &/or multiple sex partners, weak immune, sex without barriers
- Can be spread by symptomless person (Asymptomatic Viral Shedding)

https://my.clevelandclinic.org/health/diseases/22855-herpes-simplex

399

Herpes Simplex Opthalmic



- Dormant in nerve cells forever
- Triggers: STRESS, fever, menstruation, sun
- May reactivate in the eye (in or around)
- Dx: appearance, lab
- Rx: oral or topical, sooner the better
- OTC: L-lysine, benzocaine (Orajel™) or docosanol (Abreva®), NSAIDs
- Ice packs over blisters
- Often depression

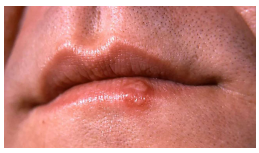
https://my.clevelandclinic.org/health/diseases/22855-herpes-simplex

400

HSV-1

- Most contracted during childhood (adult kissing child)
- 80% of Americans by age 50
- Kissing, touching near lips, oral sex => genitals
- Sharing razor, lip balm, food utensils

** DC Alert
Be careful of touching pt's face
Extra caution cleaning table facepiece



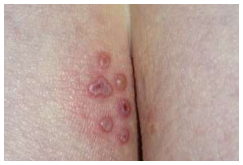
https://my.clevelandclinic.org/health/diseases/22855-herpes-simplex

401

HSV-2

- 15% of Americans by age 50 (almost ½ black females (AFAB))
- Contact: oral, anal, vaginal, penile, sex toys
- Transmission during childbirth
- Inc risk of HIV w open sores

** DC Alert
Avoid contact during treatment
Extra caution cleaning table

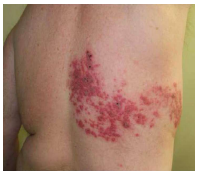


https://my.clevelandclinic.org/health/diseases/22855-herpes-simplex

402

Herpes Zoster (Shingles)

- Reactivation of varicella zoster virus (VZV) (chicken pox)
- After initial infection… dormant in Dorsal Root Ganglia
- Maculopapular/vesicular rash painful/itchy (even before visible)
- Unilateral dermatomes, torso/face
- Headache, photophobia, malaise
- 2-4 wks, permanent scars
- Can spread to persons who never had VZV
  (contact or breathing vesicular fluid)
  (cover, avoid contact until dry)

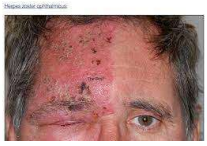


403

Herpes Zoster (Shingles)

- 99.5% persons born in US before 1980 were infected w wild VZV
- 1/3 US citizens will develop shingles
- One or recurrent
- Transplant, CA, HIV, steroids for autoimmune, immune compromised
- Age >50, women, white
- A double dose vaccine exists

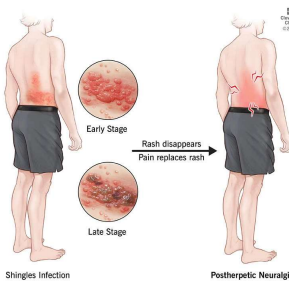
- HZ Opthalmaticus = Cranial N. = 5 trigeminal



404

Post-Herpetic Neuralgia (PHN)

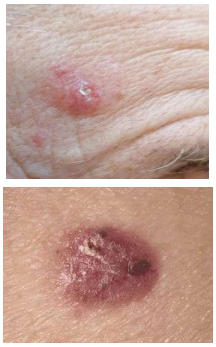
- 10-18% pts w shingles
- Pain > 90 days (can be years)
- Esp. age > 40 yrs
- Rx = lidocaine or capsaicin skin patch/cream
  antidepressants, opioids, steroids



405

Basal Cell Carcinoma

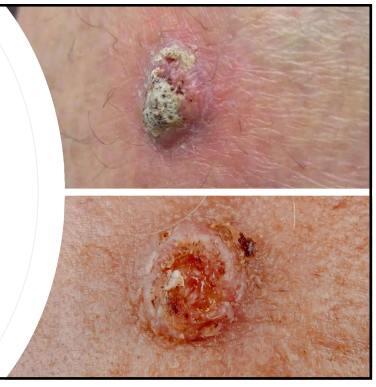
- Most common skin CA, most common CA
- Slow growth, good success if Rxd early (surgery, chemo, rad)
- UV damage to epidermis => uncontrolled growth of basal cells
- Open sores, red patches, pink/brown growths, shiny bumps, scars, uneven edges
- Growths with slightly elevated, rolled edges and/or a central indentation.
- May ooze, crust, itch or bleed.



406

Squamous Cell Carcinoma

- 2nd most common skin CA, success if Rxd early
- Middle & outer layers of skin, usually exposed area
- Thick, rough, scaly patches, may crust or bleed or wartlike (horn)
- Non healing open sore, uneven edges
- Maybe raised edges with raw center



407

Melanoma “ABCDE”

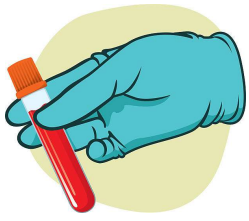
Plus “Evolving”…changes in appearance or feel of mole

https://www.cancer.net/cancer-types/melanoma/symptoms-and-signs

408

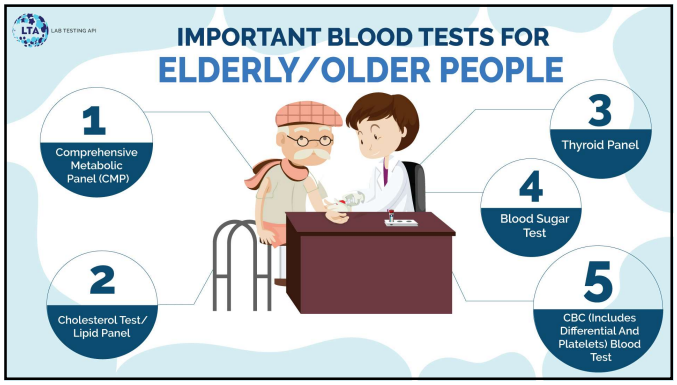
409

It’s in the Blood



https://betterhealthwhileaging.net/understanding-10-common-blood-tests-in-aging/

410



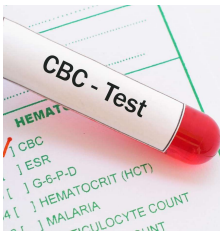
411

Common Lab Tests for Seniors

Complete Blood Count (CBC)

What it measures: A CBC is a collection of tests related to the cells in your blood. It usually includes the following results:

- **White blood cell count** (WBCs): the number of white blood cells per microliter of blood
- **Red blood cell count** (RBCs): the number of red blood cells per microliter of blood
- **Hemoglobin** (Hgb): how many grams of this oxygen-carrying protein per deciliter of blood
- **Hematocrit** (Hct): the fraction of blood that is made up of red blood cells
- **Mean corpuscular volume** (MCV): the average size of red blood cells
- **Platelet count** (Plts): how many platelets (a smaller cell involved in clotting blood) per microliter of blood
- The CBC can also be ordered "with differential." This means that the white blood cells are classified into their subtypes.



412

What's normal:

Red blood cells: 3.93 to 5.69 million per cubic millimeter (million/mm3)
White blood cells: 4.5 to 11.1 thousand per cubic millimeter (thousand/mm3)
Hematocrit:
- Men: 36% to 52%
- Women: 34% to 46%

Hemoglobin:
- Men: 13.2 to 17.3 grams per deciliter (g/dL)
- Women: 11.7 to 16.1 g/dL

Platelets: 150 to 450 thousand/mm3

413

What the CBC is often used for:

- **Anemia** may be diagnosed if the red blood cell count, hemoglobin, and hematocrit are lower than normal.
- Increased white blood cell count usually increases with **infection** or **use of corticosteroids**.
- If several types of blood cells (RBCs, WBCs, platelets) are low, possible **bone marrow disease**.
- An older person's platelet count may be higher or lower than normal (This usually requires further evaluation).

414

Common Lab Tests for Seniors

Basic metabolic panel (basic electrolyte panel)

- *What it measures*: Although it's possible to request a measurement of a single electrolyte, it's far more common for electrolytes to be ordered as part of a panel of seven or eight measurements. This is often referred to as a "chem-7," and usually includes:
- **Sodium**
- **Potassium**
- **Chloride**
- **Carbon dioxide (CO2)** (sometimes referred to as "bicarbonate," as this is the chemical form of carbon dioxide which is more common in the bloodstream)
- **Blood urea nitrogen (BUN)**
- **Creatinine** (often accompanied by an estimated "glomerular filtration rate," or "eGFR"result)
- **Glucose**

Basic Metabolic Panel

GLU	Glucose (sugar)	Pancreas/insulin
NA	Sodium	Hydration/Electrolytes
K	Potassium	Heart/Muscle/Hydration/Electrolytes
CL	Chloride	Hydration/Electrolytes
CO2	Carbon Dioxide	Oxygen level/Electrolytes
BUN	Urea Nitrogen	Kidney
CREA	Creatinine	Kidney
CA	Calcium	General Health
AGAP	Anion Gap	Electrolyte Balance

415

What the basic metabolic panel is often used for:

- **Medication side-effects can cause electrolytes such as sodium or potassium to be either too high or too low.**
  - **These electrolytes are often monitored when people take certain types of medications, such as certain blood pressure medications, or diuretics.**
- **Carbon dioxide levels reflect the acidity of the blood.**
  - **This can be affected by kidney function and by lung function. Severe infection can also change acid levels in the blood.**
- **Creatinine and BUN levels are most commonly used to monitor kidney function. Both of these measurements can go up if kidney function is temporarily impaired (e.g. by dehydration or a medication side-effect) or chronically impaired.**
  - **It is common for older adults to have at least mild decreases in kidney function.**
  - **Many medications must be dosed differently, if a person has decreased kidney function.**
  - **Laboratories now routinely use the patient's age and creatinine level to calculate an "estimated glomerular filtration rate," which represents the filtering power of the kidneys. This is considered a better measure of kidney function than simply relying on creatinine and BUN levels.**
- **Glucose levels represent the amount of sugar in the blood.**
  - **If they are higher than normal, this could be due to undiagnosed or inadequately controlled diabetes.**
  - **If the glucose levels are on the low side, this is called hypoglycemia. It is often caused by diabetes medications, and may indicate a need to reduce the dosage of these drugs.**

416

Comprehensive metabolic panel

- *What it measures*: This panel includes the items above in the basic metabolic panel, and then usually includes an additional seven items. For this reason, it's sometimes referred to as a "chem-14" panel. Beyond the seven tests included the basic panel (see above), the comprehensive panel also adds:

- **Calcium**
- **Total protein**
- **Albumin**
- **Bilirubin (total)**
- **Alkaline phosphatase**
- **AST (aspartate aminotransferase)**
- **ALT (alanine aminotransferase)**

Comprehensive Metabolic Panel "CMP"

- ✓ Glucose
- ✓ Calcium
- ✓ Sodium
- ✓ Chloride
- ✓ Potassium
- ✓ CO2
- ✓ BUN
- ✓ Creatinine

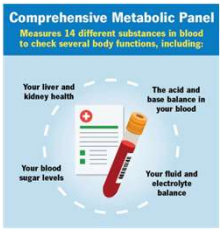
Plus

- ✓ ALP
- ✓ AST
- ✓ ALT
- ✓ Bilirubin
- ✓ Total Protein
- ✓ Albumin
- ✓ Globulin

417

Use of the comprehensive metabolic panel :

- Calcium levels are usually regulated by the kidneys and by certain hormones.
  - Blood calcium levels are NOT usually a good way to assess calcium intake or total calcium stores in the bones and body.
  - High or low blood calcium levels can cause symptoms, including cognitive dysfunction, and usually indicate an underlying health problem. They can also be caused by certain types of medication.
- Albumin is one of the key proteins in the bloodstream. It is synthesized by the liver.
  - Low albumin levels may indicate a problem with the liver or a problem maintaining albumin in the bloodstream.
  - Malnutrition may cause low albumin levels.
- AST and ALT are enzymes contained in liver cells.
  - An elevation in these enzymes often indicates a problem affecting the liver. This can be caused by medications or by a variety of other health conditions.
- Bilirubin is produced by the liver, and usually drains down the bile ducts and into the small intestine. Some bilirubin is also related to the breakdown of red blood cells.
  - An increase in bilirubin can be caused by gallstones or another issue blocking the bile ducts.
- Alkaline phosphatase is found throughout the body, but especially in bile ducts and also in bone.
  - Higher levels are often caused by either a blockage in the liver or by a problem affecting bone metabolism.



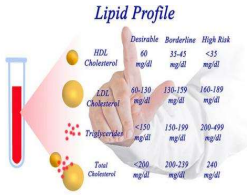
418

Dietary Reference Intakes for Calcium and Vitamin D.
https://www.ncbi.nlm.nih.gov/books/NBK56060/

419

Lipid (cholesterol) panel

- ***What it measures***: These tests measure the different types of cholesterol and related fats in the bloodstream. The panel usually includes:
- Total cholesterol
- High-density lipoprotein (HDL) cholesterol, sometimes known as "good" cholesterol
- Triglycerides
- Low-density lipoprotein (LDL) cholesterol, sometimes known as "bad" cholesterol
  - LDL results are usually calculated, based on the other three results
- People are often asked to fast before having their cholesterol checked. This is because triglycerides can increase after eating, and this can cause a falsely low LDL to be calculated. However, research suggests that in most cases, it's not necessary for people to fast; it's inconvenient and only makes a small difference in test results.
- ***What the lipid panel is often used for***:
- These tests are usually used to evaluate cardiovascular risk in older adults.
- Higher than normal total or LDL cholesterol levels are treated with dietary changes and/or with medication (statin).



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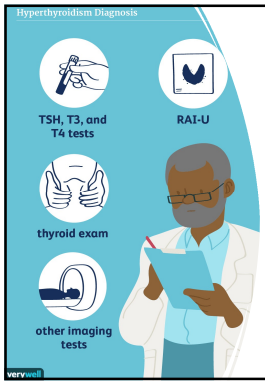


Tests related to thyroid function

- ***What*** these measure: These tests can be used to screen for thyroid disorders, or to help calibrate the dosage of thyroid replacement medications. The most commonly used tests are:
- Thyroid stimulating hormone (TSH)
- Free thyroxine ("free T4" or FT4)
- RAI-U Radioactive Iodine Uptake
- In more complicated situations, other thyroid function tests may also be ordered.
- ***What these tests are often used for***:
- Thyroid problems are common in older adults (especially older women), and are associated with symptoms such as fatigue and cognitive difficulties.
- If an older person is having symptoms that could be related to a thyroid problem, the first step is to check the TSH level.
- TSH usually reflects the body's determination of whether the available thyroid hormone is sufficient or not.
  - If the thyroid gland is not making enough thyroid hormone, TSH should be higher than normal.
- Free T4 is often used to confirm a thyroid hormone problem, if the TSH is abnormal.

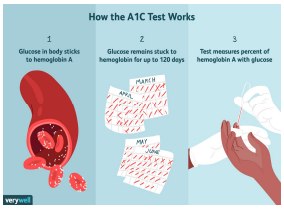
421

Tests related to vitamin B12 levels

- ***What these measure***: These measure the serum levels of vitamin B12 and provide information as to whether the level is adequate for the body's needs. The two tests involved are:
- Vitamin B12
- Methylmalonic acid
- Depending on the situation, if an older adult is found to have low vitamin B12 levels, additional testing may be pursued, to determine the underlying cause of this vitamin deficiency.
- ***What these tests are often used for***:
- Vitamin B12 deficiency is quite common in older adults, and can be related to common problems such as fatigue, memory problems, and walking difficulties.
- Methylmalonic acid levels in the body are related to vitamin B12 levels, and can help confirm a vitamin B12 deficiency.
  - It is especially important to check this, if an older person has vitamin B12 levels that are on the low side of normal.
  - Low vitamin B12 levels are associated with higher-than-normal methylmalonic acid levels

422

Glycated hemoglobin (Hemoglobin A1C)



- *What it measures*: Glycated hemoglobin is formed in the body when blood glucose (blood sugar) attaches to the hemoglobin in red blood cells. It is normal for glucose to do this, but if you have more glucose in the blood than normal, your percentage of glycated hemoglobin will be higher than normal. The higher one's average blood sugar level, the greater percentage of glycated hemoglobin one will have. A result of 6.5% or above is suggestive of diabetes. For more information:
- Hemoglobin A1C test
- *What this test is usually used for*:
- This test is most often ordered to monitor the blood sugar control of people with diabetes.
  - Whereas a blood glucose level (which can be checked by fingerstick or as part of a basic metabolic panel) reports the blood glucose level at a specific moment in time, a hemoglobin A1C reflects how high a person's blood sugar has been, on average, over the prior three months.
- A hemoglobin A1C test can also be used as part of an evaluation for possible diabetes or pre-diabetes.
- Older adults should work with their doctors to determine what A1C goal is right for them. It is often appropriate to aim for a slightly higher goal in older adults than in younger adults.

423

Prothrombin time (PT) and International Normalized Ratio (INR)

- *What it measures*: These two tests are used as a measure of how quickly a person's blood clots. People taking the blood-thinner warfarin (brand name Coumadin) must have this regularly monitored. For more information:
- Prothrombin time (PT)
- *What this test is usually used for*:
- The INR is calculated by the laboratory, based on the prothrombin time. In people taking warfarin, the usual goal is for the INR to be between 2.0 and 3.0.
  - The most common reason older adults take warfarin is to prevent strokes related to atrial fibrillation.
  - Warfarin may also be prescribed after a person has experienced a blood clot in the legs, lungs, or elsewhere.
- The prothrombin time is also sometimes checked if there are concerns about unexplained bleeding, severe infection, or the ability of the liver to synthesize clotting factors.

424

Brain Natriuretic Peptide (BNP) Test

- *What it measures*: Despite the name, BNP levels are mainly checked because they relate to heart function (not brain function!). BNP levels go up when a person's heart cannot pump blood as effectively as it should, a problem known as "heart failure." For more information on this test:
- Brain natriuretic peptide (BNP) test
- A related, but less commonly used, test is the "N-terminal pro-B-type natriuretic peptide" (NT-proBNP) test.
- *What this test is used for*:
- Checking a BNP level is mainly used to evaluate for new or worsening heart failure. This is a common chronic condition among older adults, which can occasionally get worse.
- The BNP test can be especially useful in evaluating a person who is complaining of shortness of breath.
  - Shortness of breath can be caused by several different problems, including pneumonia, chronic obstructive pulmonary disease, pulmonary edema, angina, and much more.
  - A low BNP level means that at that moment, the shortness of breath is unlikely to be due to heart failure.
- Checking BNP levels over time is also sometimes used to monitor a person's heart failure and response to treatment.

425

Ferritin

- *What it measures:* The body's serum ferritin level is related to iron stores in the body. For more about this test:
- Ferritin
- Depending on the situation, if an older person's iron levels need further evaluation, additional tests can be ordered.
- *What this test is used for:*
- Ferritin levels are most commonly used as part of an evaluation for anemia (low red blood cell count). A low ferritin level is suggestive of iron-deficiency, which is a common cause of anemia.
  - Studies estimate that only a third of anemias in older adults are due to deficiencies in iron or other essential elements.
  - It's important to confirm iron deficiency by checking ferritin or other tests, before relying on iron to treat an older person's anemia.
- Ferritin levels are also influenced by inflammation, which tends to make ferritin levels rise.
- If the ferritin levels are borderline, or if there are other reasons to be concerned about an older person's ability to manage iron, additional blood tests related to iron may be ordered.

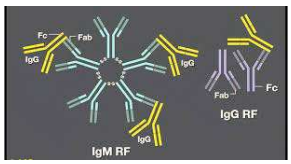
426

- https://www.webmd.com/osteoarthritis/blood-tests

427

Rheumatoid factor

- What it measures: Rheumatoid factor is a group of proteins your body makes when your immune system attacks healthy tissue.
- What's normal: 0-20 u/mL (units per milliliter of blood)
- What's high: 20 u/mL or higher
- What it means: About 70% to 90% of people with a high reading have RA. But people without RA can still have rheumatoid factor. In general, if you have RA but don't have high RF, your disease will be less severe. RF levels may stay high even if you go into remission.
- Other conditions you might have include:
- A long-term infection, Bacterial endocarditis
- Cancer, Diabetes, Lupus, Dermatomyositis, Infectious mononucleosis
- Leukemia, Scleroderma, Sjögren's syndrome



428

Anti-cyclic citrullinated peptide (anti-CCP)

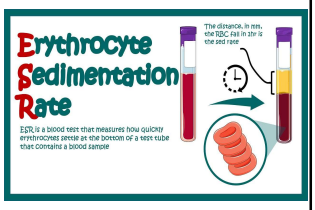
- **What it measures:** Proteins your body makes when there is inflammation. You'll probably have it done along with the RF test.
- **What's normal:** 20 u/mL or less
- **What it means:** This test offers a way to catch RA in its early stages. Levels are high in people who have RA or those who are about to get it. A positive test means there's a 97% chance you have RA. If you have anti-CCP antibodies, your rheumatoid arthritis might be more severe.
- **Other conditions you might have:** None.
- **This test is used only to look for RA**

429

Erythrocyte sedimentation rate (ESR, Sed Rate)

What it measures: The speed at which your red blood cells clump and fall together to the bottom of a glass tube within an hour. What's normal:

- **Men younger than 50: 0-15 mm/h (millimeters per hour)**
- **Men older than 50: 0-20 mm/h**
- **Women younger than 50: 0-20 mm/h**
- **Women older than 50: 0-30 mm/h**
- **What it means: In healthy people, the ESR is low. Inflammation makes cells heavier, so they fall faster. Higher levels tend to happen along with active disease, though not exactly.**
- **Other conditions you might have: A high ESR rate doesn't point to any particular disease, but it's a general sign of how much inflammation is in your body. It could be tied to disease activity if you have:**
- **Polymyalgia rheumatica, Systemic vasculitis, Temporal arteritis**

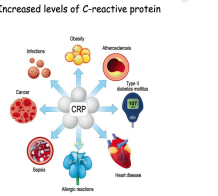


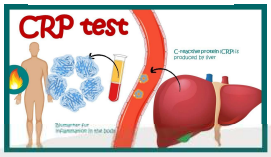
430

C-reactive protein (CRP)

- **What it is: A protein your liver makes when inflammation is present**
- **What's normal: Generally, < 10 milligrams per liter, but results vary from person to person and from lab to lab**
- **What it means: CRP levels often go up before you have symptoms, so this test helps doctors find the disease early. A high level suggests significant inflammation or injury in your body. Doctors also use this test after you're diagnosed to monitor disease activity and to understand how well your treatment is working.**
- **Other conditions you might have:**
- **Autoimmune disease, Heart attack *, Infection**

* Test Result	Risk of Heart Attack
< 1.0 mg	Low
1.0-2.9 mg	Intermediate
> 3.0 mg	High

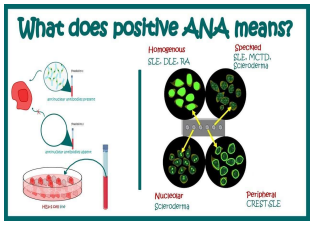




431

Antinuclear antibody (ANA)

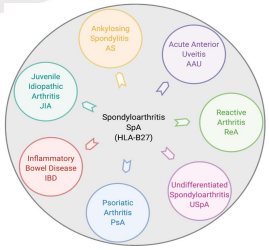
- **What it measures:** This series of tests measures the presence of certain unusual antibodies in your blood.
- **What's normal:** These tests are measured in titer, a ratio for the lowest mix of a solution and a substance at which a reaction takes place. A value of 1:40 dilution (or 1 part antibodies to 40 parts solution) is negative.
- If the ANA is positive, you may have an autoimmune disorder, but the test alone can't make a reliable diagnosis. If the ANA is negative, it is likely that you don't have one.
- **Other conditions you might have:** The profile helps your doctor look for diseases such as:
- Lupus
- Scleroderma
- Sjögren's syndrome



432

HLA-B27

- **What it measures:** A protein on the surface of white blood cells
- It is not an abnormal finding: 8%-10% of white people may have it, though most do not have a disease.
- **What it means:** HLA-B27 is a gene that's linked to a group of conditions (you might hear it called a genetic marker) known as spondyloarthropathies. They involve joints and the places where ligaments and tendons attach to your bones.
- **Other conditions you might have:**
- Ankylosing spondylitis
- Juvenile arthritis
- Psoriatic arthritis
- Reiter's syndrome (reactive arthritis)

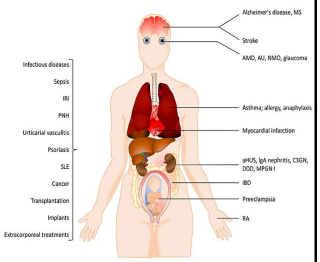


433

Complement

The serum complement system is **a series of dissolved proteins that protect against a variety of pathogens**. The activity of complement in serum can be determined by its ability to lyse red blood cells in vitro.

- **What it measures:** More than 30 blood proteins that work together in your immune system during an **inflammatory response**. Complement proteins can get used up during this process.
- **What's normal:**
- **Serum CH50:** 30-75 u/mL (units per milliliter)
- **Serum C3:**
  - Men: 88-252 mg/dL (milligrams per deciliter)
  - Women: 88-206 mg/dL
- **Serum C4:**
  - Men: 12-72 mg/dL
  - Women: 13-75 mg/dL
- **What it means: Lower levels of all three components may signal lupus and vasculitis, or inflamed blood vessels.** If you have lupus with kidney disease, your doctor may continue to give you this test because levels rise and fall along with disease activity.
- **Other conditions you might have:**
- Infection, Kidney disease, Liver disease



434

Creatine Kinase (CK)

- **What it measures:** Levels of the muscle enzyme creatine phosphokinase (CPK)
- **What's normal:** Levels vary by age, gender, and race. Your doctor will tell you what your results mean.
- **What it means:** You might have an inflammatory muscle disease. Higher levels of CPK can also show up after trauma, injections into a muscle, muscle disease due to an underactive thyroid, and **while taking certain medications such as cholesterol-lowering drugs called statins.**
- **Other conditions you might have:**
- Lupus, Heart attack, Muscular dystrophy, Early pregnancy

Causes of an Elevated Creatine Kinase

Cause	Explanation
Non-Caucasian ethnicity	CK values are typically higher in patients of Afro-Carribbean ethnicity and muscular build
Recent exercise	Serum CK levels may increase to as much as 30 times the upper limit of normal within 24 hours of strenuous physical activity or manual labour. Rises are greatest in untrained individuals
Endocrine Disorders	Hypothyroidism, acromegaly, Cushing's syndrome, hyperparathyroidism. Some rare instances of hyperthyroidism.
Electrolyte Imbalances	Low sodium, potassium or phosphate
Drugs	Statins, fibrates, anti-retrovirals, beta blockers, clozapine, angiotensin II receptor blockers, hydroxychloroquine, isotrentoin, colchicine
Muscular disorders	Inflammatory myopathies, motor neurone disease, sarcoid myopathy, compartment syndrome, congenital or chromosomal syndromes with muscular involvement, muscular dystrophies, metabolic myopathies, Pompe Disease
Miscellaneous non-muscular causes	Denervation, seizures, malignancy, surgery, pregnancy, viral illness, coeliac disease, connective tissue disease, cardiac or renal disease, rare forms of CK

Symptomatic Patients with suspected myocardial infarction, rhabdomyolysis, grossly elevated CK or acute kidney injury (AKI) should be referred to AMU without delay

435

Muscle Toxicity of Drugs:
When Drugs Turn Physiology into Pathophysiology
Lando Janssen, Neeltje A. E. Allard, Christiaan G. J. Saris, Jaap Keijer, Maria T. E. Hopman, and Silvie Timmers
04 Feb 2020 https://doi.org/10.1152/physrev.00002.2019

https://journals.physiology.org/doi/full/10.1152/physrev.00002.2019

It is important to be aware that if a patient **without a known muscle disease manifests myopathic symptoms** (e.g., muscle weakness, fatigue, myalgia, CK elevation, or myoglobinuria) when exposed to therapeutic doses of certain drugs, a **drug-induced or toxic myopathy** should be considered.

As drug-induced muscle disorders are **potentially reversible**, prompt recognition and withdrawal of the offending agent may reduce muscle damage, prevent fatal outcomes, and improve the patients' quality of life.

436

Confusing Diseases in Baby Boomers

Masquerading as Primary Musculo-skeletal Disease

437

Adverse Drug Reactions

- Even noted by Hippocrates 400BC
- Not until thalidomide disaster in early 1960s that worldwide drug safety legislation was developed
- Risks in the present: increasing lifespan, polypharmacy, new classes of meds
- Because of repeated patient contact & m/s complaints, DCs may be first to detect

Muscle Toxicity of Drugs: When Drugs Turn Physiology into Pathophysiology
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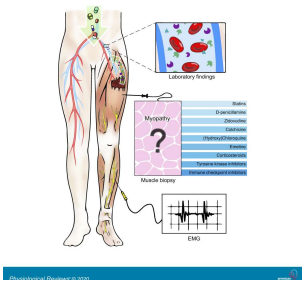
438

- Skeletal muscle: large part of body mass, rich blood supply, high metabolic rate = high exposure to circulating drugs
- Myotoxicity:
  -cause changes in cells, antigens, electrolytes
  -stimulate/reveal existing myopathy

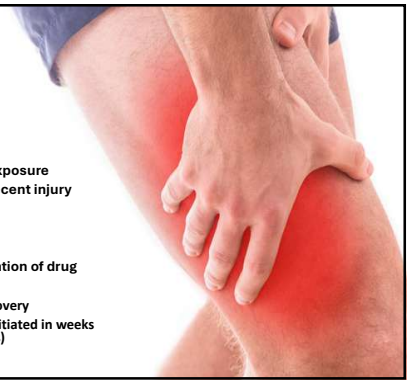


439

Drug Induced/ Toxic Myopathy

= Myopathic symptoms after drug exposure in patients w/o muscle disease or recent injury

- M weakness, cramp, inc CK
- Usually resolves after discontinuation of drug
- Often Dx of elimination
- Timely Dx is critical for relief and recovery
- Question if new drugs or inc doses initiated in weeks or mths before symptoms (eg statins)



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Drug Induced/Toxic Myopathy

= Myopathic symptoms in patients w/o muscle disease after drug exposure
- Usually resolves after discontinuation of drug
- Often Dx of elimination

- Myopathy
  - m. weakness, fatigue, myalgia, cramps, creatine kinase CK, myoglobulinuria
  - esp proximal limb m, nocturnal, increased by exercise

- Myalgia = myopathy = myopathy w/o CK elevation
- Myositis = myopathy w CK elevation (inflammation)
- Rhabdomyolysis = acute, pot fatal, myoglobulin into circ, dark urine, inc CK renal failure, arrhythmia, hypocalcemia

441

Be alert to

- Onset of myopathy, fatigue, weakness, dark urine or inc of previous m/s issue
- Usually proximal limb muscles, symmetric
- Question new drugs or inc doses esp first weeks or mths before m symptoms
- CK may be elevated
- EMG, MRI, US, biopsy, exercise testing may be abnormal
- Inc age, female, multisystem dis, abnormal metab, drug Rxn, polypharm, substance use (coffee, alcohol)
- Timely Dx is critical for relief and recovery

442

Statins

Statin Medications

Atorvastatin (Lipitor)
Simvastatin (Zocor)
Rosuvastatin (Crestor)
Fluvastatin (Lescol)
Lovastatin (Altoprev)
Pravastatin (Pravachol)
Pitavastatin (Livalo)

- Fungus derived
- Dec cholesterol synthesis (30% dec CV events)
- Statin-Associated Muscle Symptoms (SAMS)
- Myopathic symptoms usually w/in 4-6 wks of drug
- Inc w exercise, rest, recumbency, cold, other new drug
- Usually no inc CK
- May dec dose or use dif statin
- Vit D ?, CoQ10, red yeast rice has statinlike chem structure (not rec)

443

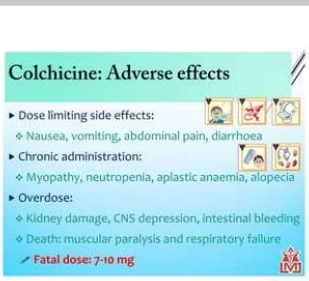
Hydroxychloroquine

- COVID, malaria, RA, scleroderma, SLE, autoimmune dis
- Slow progressive weakness prox limb m
- Initially mild, increase & spread to arms/face
- Esp if other drugs (prednisone)
- CK E/N or min inc
- Reversable in ~ 6 mths

444

Colchicine

- Gout, pulmonary fibrosis, cirrhosis, psoriatic arthritis, scleroderma
- Esp w renal issues or –mycin meds
- Prox m weakness, dec sensory perception distally w/o distal weakness
- CK elev
- Symptoms dec & lab E/N, inc prox m strength w/in weeks of discont.



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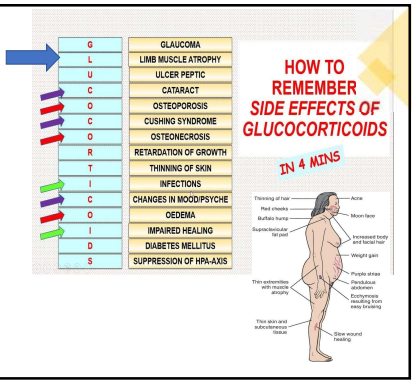
Corticosteroids

- Slow, mild over wks or mths
- Prox m weakness/atrophy, dif rising (chair, bed)
- Symmetrical, painless, no neuro signs, CK E/N, EMG E/N, fragile skin, "Cushings"
- Usually w higher doses
- 65% asthma pts w daily steroids for 1 year = LE weakness
- 60% CA pts in 1st 2 weeks of Rx = prox m weakness
- Hypokalemia, osteoporosis, fracture
- Often improved w Px activity
- Also severe acute form => ICU



446

Remember: Consider Myotoxicity if patient…

- Has no known m disease
- Myopathic symptoms (weak, fatigue, myalgia, inc CK, dark urine)
- Recent medication initiation or inc dose (esp of known myotoxic meds)

- Most reversible
- Prompt recognition = dec m damage, inc quality of life, prevent death

447

Prevention

- Avoid combo of drugs that have myotoxic potential (statins/steroids)
- Avoid potentially myotoxic drugs w hepatic or renal disease
- Educate pts re myotoxicity symptoms
- Consider CK test if myotoxic drug initiated in high risk pt
- Monitor elderly (polypharm, dec LV & KI fxn, dec m mass & activity)

448

Management

- Good Hx, Px to R/O other myopathic causes
- Alert prescribing physician of any suspicion of myotoxicity!
- If steroid induced => Px activity, exercise
- Supplements: Vit C & E (AZT myotoxicity), CoQ10 (statin)
- Close eval of present & recent past meds & symptom onset

449

Some more terms & concepts with which to impress your friends…

450

Beers Criteria 🐻🐻 not 🍻

The Beers Criteria are a list of medications that may be inappropriate for older adults, according to the American Geriatrics Society (AGS).

- Medications to avoid for most older adults
- Medications to avoid for older adults with certain health conditions
- Medications to use with caution
- Medication combinations to avoid
- Medications to avoid or dose differently for people with poor kidney function

https://www.healthinaging.org/

American Geriatrics Society 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults https://doi.org/10.1111/jgs.18372

451

Beer's Criteria for Potentially Inappropriate Medication Use in Older Adults

Drug	Indication	Beers recc	Alternatives
Nitrofurantoin	Anti-infective, often used for UTI Gram(+)cocci, incl. Staph, enterococci; Gram(-) bacilli but variable activity (need sensitivity testing) vs Klebsiella, Enterobacter, Proteus	Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCl < 60 mL/min due to inadequate drug concentration in the urine. Moderate quality evidence, strong recommendation to avoid for long-term suppression; avoid in patients with CrCl < 60 mL/min	**Fluoroquinolones** (best penetration into prostate gland) -Levofloxacin*, ciprofloxacin Bactrim (women only) Beta-lactams -Carbenicillin indanyl -3rd/4th gen cephalosporins -Ceftibuten -Cefixime

452

Pharmacogenomics

Pharmacogenomics is the study of how genes affect how a person responds to drugs. It's a field of precision medicine that combines pharmacology and genomics.

- **Pharmacogenomics can help predict which patients will have side effects or which drugs will be effective.**
- It can help clinicians choose the right drugs and dosages for patients.
- It can help improve health by helping patients know which drugs are likely to benefit them.
- Simple saliva swab

https://medlineplus.gov/genetics/understanding/genomicresearch/pharmacogenomics/

https://www.mayo.edu/research/centers-programs/center-individualized-medicine/patient-care/pharmacogenomics

453

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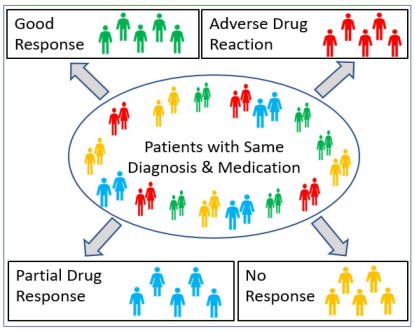

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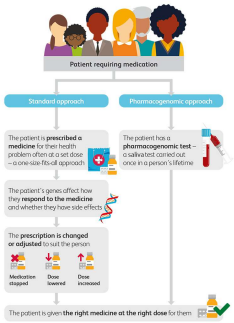

456

Even with the right medication

There can be too much…

457

From 2000-2020 fatal drug overdoses in people over age 65 quadrupled from 3/100K to 12/100K

- **Forget => take extra doses**
- **Still hurting => take extra doses**
- **Polypharmacy (esp from dif providers) => duplicate**

Also drinking alcohol

Self medicate from old Rx or family/friend

www.uclahealth.org

458

Fatal Drug Overdoses in the Elderly

Greater likelihood of overdose if:

- **Person recently relocated to nursing home**
- **Decreased physical or mental health**
- **Recent death of loved one**
- **Recent retirement**
- **Financial trouble**

(in essence, depressed or in pain)

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459

Fatal Drug Overdoses in the Elderly

Common Signs:

- **Decreased memory**
- **Lack of coordination/unsteady gait**
- **Change in appetite**
- **Decreased hygiene**
- **Increased isolation**

Sadly, memory loss, dec coordination & depression are often seen as "normal aging" so are overlooked.

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460

CDC: Overdose mortality among people age 65 and older quadrupled over 20 years from 1060 in 2002 (3 per 100,000 population) to 6,702 (12 per 100,000) in 2021. The highest rates were among Blacks, at 30.9 per 100,000.

Suicides and accidental overdoses

3/4 of the unintended (accidental) fatalities involved illicit drugs such as synthetic opioids like fentanyl, heroin, cocaine, and methamphetamines.

Prescription opioids, antidepressants, benzodiazepines, antiepileptics and sedatives were used in 67% of intentional overdoses (suicides)

- **By 2021, 1 in 370 senior deaths stemmed from overdoses, with 3814 of those (57%) involving opioids, 2587 (39%) from stimulants, and 1204 (18%) a combination of both**
- **About 13% (882) of overdoses in 2021 were intentional, 83% (5,541) were unintentional, and 4% (274) were undetermined, and 5 (0.07%) were homicide**
- **Females accounted for 505 of 882 (57%) of intentional overdoses and 1594 of 5541 (29%) of accidental overdoses**
- **Intentionality differed by race and ethnicity: 31 of 83, or 37%, of overdoses among Asians were intentional, compared to, 805 of 4848 (17%) among whites, and 15 of 1665 (1%) among Blacks**
- **Alcohol poisoning deaths rose from 10 (less than 0.03per 100,000) to 281 (0.5 per 100,000)**

https://www.uclahealth.org/news/drug-overdose-fatalities-among-us-older-adults-have **March 29, 2023 By Enrique Rivero**

461

Running Interference with Elderly

- Encourage discussion with you &/or PCP about …

1. Mental health issues esp. after significant loss (home, body function, person/pet) (esp. if person lost was on pain meds… hoarding of spouse meds)
2. Uncontrolled or improperly controlled pain (see #3)
3. Running out of meds (overdosing or misappropriation by caregiver/family)

- Daily dose prescription boxes
- All medications overseen by one physician and/or pharmacist
- Removing or serious discussion re: alcohol or other meds
- Removal of old prescriptions, discussion with pt & friends re: other meds
- Attention to comments, mood, involvement or physical changes
- Discussion re options: activities, habits, home, exercise, supplements & other non pharmaceutical therapies, spiritual, other medical options

462

Visceral Diseases with Neuromusculoskeletal Symptoms…

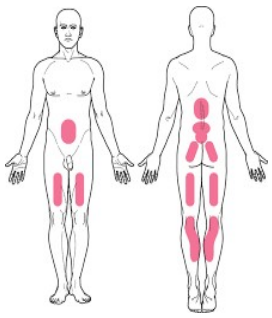
463

Aortic Aneurysm

- Deep ache, back (neck, jaw, shoulder), throb in chest, stomach, SOB, "fullness", swelling
- Tobacco, >65, male, white, fam HX
- Belly pulse,
- Blue or black cold painful toe (blood clot)
- Dissection: sudden severe ripping pain, shock

https://stanfordhealthcare.org/medical-conditions/blood-heart-circulation/abdominal-aortic-aneurysm/symptoms.html

https://www.mayoclinic.org/diseases-conditions/abdominal-aortic-aneurysm/symptoms-causes/syc-20350688



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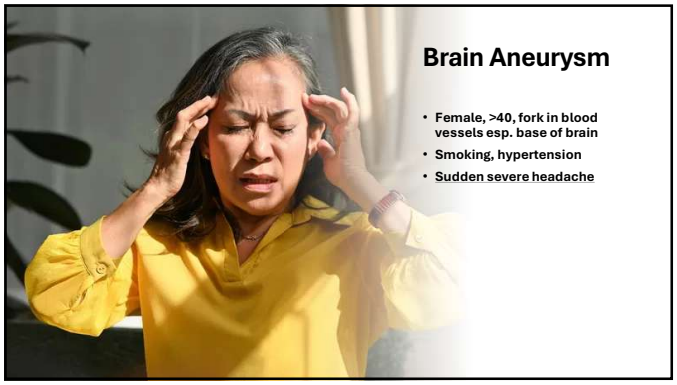


Brain Aneurysm

- Female, >40, fork in blood vessels esp. base of brain
- Smoking, hypertension
- Sudden severe headache

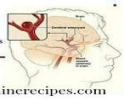
465

Brain Aneurysm Symptoms

RUPTURED ANEURYSM

A sudden severe headache is the key symptom of a ruptured aneurysm. This headache is often described as the "worst headache" ever experienced. Common signs and symptoms of a ruptured aneurysm include:

- Sudden, extremely severe headache
- Nausea and vomiting
- Stiff neck
- Blurred or double vision
- Sensitivity to light
- Seizure
- Confusion
- Loss of consciousness



'LEAKING' ANEURYSM

In some cases, an aneurysm may leak a slight amount of blood. This leaking (sentinel bleed) may only cause a sudden, extremely severe headache. A more severe rupture almost always follows leaking.

UNRUPTURED ANEURYSM

An unruptured brain aneurysm may produce no symptoms, particularly if it's small. However, a large unruptured aneurysm may press on brain tissues and nerves, possibly causing:

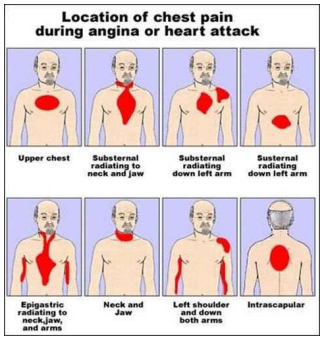
- Peripheral vision deficits
- Thinking or processing problems
- Speech complications
- Perceptual problems
- Sudden changes in behavior
- Loss of balance and coordination
- Decreased concentration
- Short-term memory difficulty
- Fatigue

walkingonsunshinerecipes.com

466

Cardiac

(women may have "atypical" symptoms)



467

Hypothyroid

- Hands & feet always cold
- Swollen feet, tarsal or carpal tunnel syndrome
- Dry, cracked, leathery feet
- Fatigue, poor endurance
- Muscle weakness
- Weight gain
- Fibromyalgia type muscle pain or cramps
- Ache, pain, stiffness in joints
- Insomnia

https://www.theinvisiblehypothyroidism.com/muscle-and-joint-pain-and-hypothyroidism/
https://www.footanklecentermaryland.com/blog/2022/1/13

468

Hyperthyroid

- Weakness of proximal muscles (quads, biceps), proximal myopathy
- Fatigue
- Weight loss
- Hand tremor & muscle wasting
- Rapid heartbeat, palpitations, anxiety
- Insomnia
- Exophthalmos

https://www.reliasmedia.com/articles/79572-geriatric-emergency-medicine-reports-supplement-hypothyroidism-and-hyperthyroidism-in-the-elderly

469

Deep Vein Thrombosis => Pulmonary Embolism

- Especially after bed rest or long seated trip
- Swelling in leg, usually in the calf or thigh
- Pain or tenderness in leg, usually when walking or standing
- Sensation of pulled muscle, tightness, cramping, soreness
- Warmth in the area of leg that's swollen or painful
- Red or discolored skin on leg
- Swollen veins that are hard or sore when touched
- Unexplained shortness of breath
- Pain with deep breathing
- Coughing up blood

https://www.mayoclinic.org/diseases-conditions/deep-vein-thrombosis/symptoms-causes/syc-20352557

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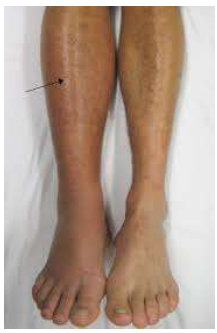

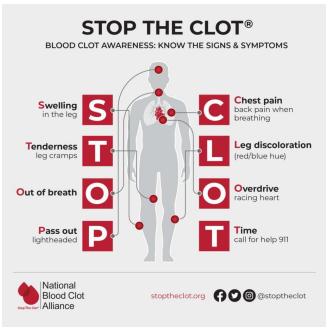

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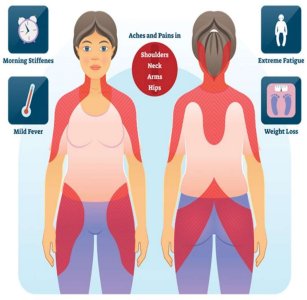
Polymyalgia Rheumatica >age 50

(bilateral proximal muscles)



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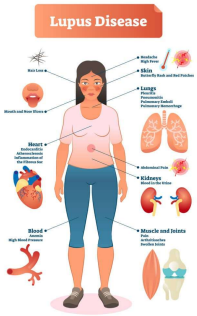

473

We also know that…

- Cancer, gall bladder, diabetes, GI and other diseases also can have musculoskeletal symptoms

474

And lest we forget…

475

STD, STI

- In older adults, musculoskeletal symptoms related to Sexually Transmitted Diseases (STDs) can include pain, stiffness, swelling, and tenderness in joints and muscles, potentially leading to reduced mobility and increased risk of falls.
- Detection can be especially challenging when symptoms mimic other old-age problems. Gonorrhea, for example, can cause arthritis-like symptoms. HIV can cause weakness and fatigue.
- "Syphilis is known as the great imitator, because it can look like anything". "That's what makes it a tough diagnosis. If you don't go looking for it, you won't find it."
- Rates of syphilis, gonorrhea, and chlamydia more than doubled among those 55 or older over the past 10 years. "But for those aged 65 and older, chlamydia cases more than tripled between 2010 and 2023, gonorrhea cases increased sixfold, and syphilis cases soared in numbers nearly tenfold,"

https://www.uhhospitals.org/blog/articles/2023/07/why-stis-are-on-the-rise-in-older-adults

476

Herpes

Age-associated changes in the immune system constitute as one of the pivotal factors affecting how herpes infections show in elderly. The ability to control and suppress herpes outbreaks may decline as people age thus their immune responses become less efficient. As a result, such patients may experience symptoms more often and intensely.

Compared to young people, old people may tend to have frequent recurrences when infected by herpes. These outbreaks can often be quite painful and significantly impact on their overall quality of life. Consequently, health care providers must always be alert to the symptoms and management of herpes in the elderly.

At times, herpes cases in adults might manifest with unique signs. Although most people assume that herpes manifests itself in terms of genital or oral blisters, older people may exhibit headaches, fever, muscle pains, and disorientation. Such non-specific symptoms complicate diagnosis and treatment.

Herpes infections can lead to serious complications, especially in older adults. The virus can spread to other parts of the body, potentially causing conditions like herpes encephalitis (infection of the brain) or herpes zoster (shingles). These complications can be life-threatening and require immediate medical attention.

https://www.stdlabs.com/blog-detail/herpes-and-aging:-understanding-the-impact-on-older-adults

https://jamanetwork.com/journals/jamaneurology/fullarticle/800373#

477

Remember that older patients have lived a long life…

Always consider past…

Military, employment, hobbies, sports, environment, socio-economic, culture, habits, etc.

Toxins, medications/medical treatments/medical history, injuries, abuse, nutrition, recreational drugs, sexual activity

478

Patients in their 70s

- Didn't wear helmets or seatbelts
- Recreational drugs were prolific
- HIV was unknown
- Often played in old buildings, fields, barns
- Military, farmers and industrial workers were exposed to a variety of toxins (inhaled, absorbed, ingested)

479


LYME
DISEASE
REALLY
TICKS ME
OFF
For the
Outdoors
Lovers

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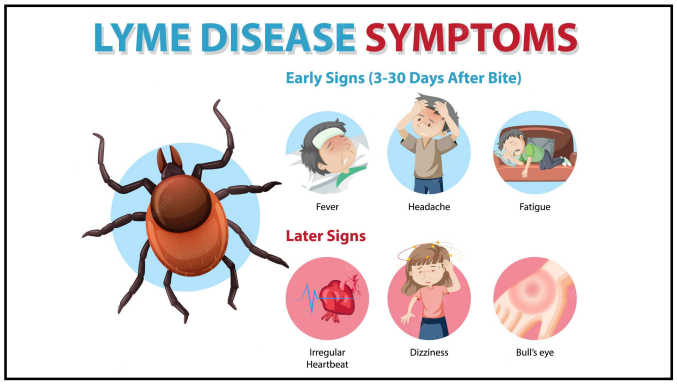
LYME DISEASE SYMPTOMS
Early Signs (3-30 Days After Bite)
Fever
Headache
Fatigue
Later Signs
Irregular Heartbeat
Dizziness
Bull's eye

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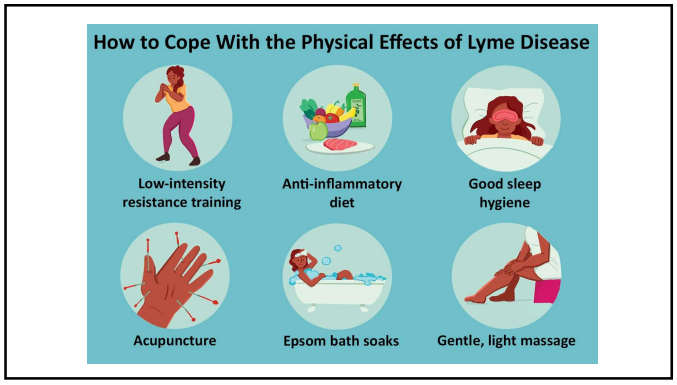
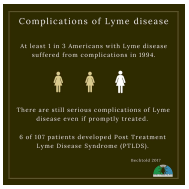

How to Cope With the Physical Effects of Lyme Disease
Low-intensity resistance training
Anti-inflammatory diet
Good sleep hygiene
Acupuncture
Epsom bath soaks
Gentle, light massage

482

Post-Treatment Lyme Disease Syndrome (PTLDS)

- Severe headaches and neck stiffness
- Additional EM rashes on other areas of the body
- Facial palsy (loss of muscle tone or droop on one or both sides of the face)
- Arthritis with severe joint pain and swelling, particularly the knees and other large joints.
- Intermittent pain in tendons, muscles, joints, and bones
- Heart palpitations or an irregular heart beat (Lyme carditis)
- Episodes of dizziness or shortness of breath
- Inflammation of the brain and spinal cord
- Nerve pain
- Shooting pains, numbness, or tingling in the hands or feet
- https://www.cdc.gov/lyme/signs_symptoms/index.html



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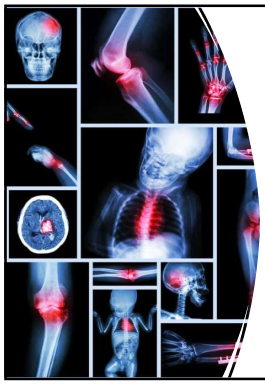


Late Lyme Disease Arthritis & Postinfectious Lyme Disease

Late Lyme Disease Arthritis

- Without treatment, approximately 60% of patients develop late Lyme disease monoarthritis or oligoarthritis. The primary site is the knee, with or without Baker's cyst. Other locations include the shoulders, ankles, elbows, and wrists.
- Treatment of late Lyme disease arthritis is 90% effective; however, 10% of patients develop postinfectious (antibiotic refractory) Lyme arthritis.

Postinfectious (Antibiotic Refractory) Lyme Arthritis

- Postinfectious Lyme arthritis is thought to be caused by immune-mediated processes rather than persistent infection. Treatment is similar to autoimmune inflammatory arthritis[5]:
- Exercise, cognitive behavior therapy, and mind-body medicine may be helpful.
- https://www.rheumatologyadvisor.com/home/topics/lyme-disease/acr-2021-session-rheumatologists-lyme-disease-tick-borne-illnesses/

484

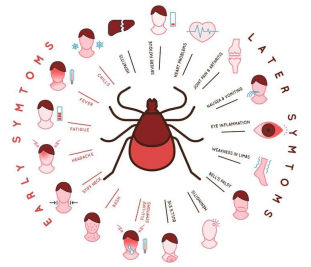
Post Lyme Systemic Autoimmune Diseases

- Autoimmune joint diseases, such as rheumatoid arthritis, psoriatic arthritis, and spondyloarthritis, can emerge after Lyme disease. These conditions are distinguished from late Lyme arthritis by certain factors:
- Clinical features: Systemic autoimmune diseases are characterized by psoriasis, polyarthritis, and axial involvement.
- History: Patients may have a family history of autoimmune disease.
- Laboratory results: Patients with autoimmune diseases will have disease-specific biomarkers, lower antibody titers to *B burgdorferi*, and lower frequency of Lyme disease-associated autoantibodies.

485

Distinguishing characteristics of the spectrum of conditions that can occur after Lyme disease include the following:

- Post-treatment Lyme disease syndrome:
  No overt inflammation
- Postinfectious Lyme arthritis:
  Limited autoimmunity, joint inflammation
- Systemic autoimmune diseases:
  Systemic inflammation, polyarthritis



486

- In most, Lyme arthritis resolves after 30 days of treatment with an oral antibiotic, such as doxycycline or amoxicillin. Individuals with persistent symptoms despite an oral antibiotic usually respond to treatment with an intravenous antibiotic for 30 days. However, about 10% of those with Lyme arthritis fail to respond to antibiotic treatment, for reasons that have long been unclear.

487

- To keep from spilling open, bacteria have rigid cell walls made of a matrix of protein and sugars, called peptidoglycan. Most bacteria recycle their peptidoglycan when they grow and divide, but the peptidoglycan of *B. burgdorferi* has a peculiar structure, and the bacteria is unable to reuse it. Instead, it dumps it into its immediate surroundings, like a microbial litterbug.
- This peptidoglycan collects in the joints where *B. burgdorferi* is found. Almost all patients in the *PNAS* study with Lyme arthritis had peptidoglycan in their joint fluid. Most of them also had specific antibodies to peptidoglycan in the joint fluid, suggesting that the peptidoglycan was driving the inflammatory process. These antibodies were not found in fluid from people with other joint conditions, such as rheumatoid arthritis, osteoarthritis, or gout.
- Patients with Lyme arthritis who did not get better with antibiotics still had peptidoglycan in their joint fluid. However, their joint fluid did not contain detectable *B. burgdorferi* DNA. This suggests that even after the bacteria were killed off, the peptidoglycan stayed behind, and stimulated further inflammation. This may explain why people with Lyme arthritis who do not respond to antibiotics may improve with medications that damp down the immune system, such as methotrexate or TNF inhibitors.

488

Treatment…Where Do We Fit?

PT perspective:

Physical therapy is essential to help Lyme disease patients recuperate from their symptoms. Even with antibiotics, they won't get back to normal without PT, especially exercise. Some physicians even recommend aggressive rehab to help their patients.

There are several modalities of physical therapy that can help with the secondary symptoms of Lyme disease. These include:

- **Manual therapy — Massages, stretching, and joint mobilization will improve alignment, range of motion, and mobility and will also alleviate joint pain.**
- **Mechanical modalities — Electrical stimulation, ultrasound, laser, heat, and ice will decrease pain and inflammation.**
- **Gait and balance training — These will improve movement and reduce stress on joints.**
- **Exercise programs — The exercise component of PT will help stretch and strengthen muscles so they can compensate for weakened surrounding joints.**

https://www.inmotionoc.com/ailments/non-body-part-specific/lyme-disease/

489

And NOW there's…

490

Alpha-Gal

THE GIRL YOU DON'T WANT TO TAKE TO DINNER

491

STARI

- Lone star tick a concern, but not for Lyme disease
- **Patients bitten by lone star ticks may develop a <u>circular rash</u> like the rash of early Lyme disease.**
- **Has been named <u>Southern Tick-Associated Rash Illness (STARI).</u>**
- **Other symptoms: fatigue, headache, fever, and muscle pains.**
- **The rash and accompanying symptoms usually resolved following treatment with an oral antibiotic (doxycycline)**
- **STARI has <u>not been linked to arthritis</u>, neurologic disease, or chronic symptoms.**

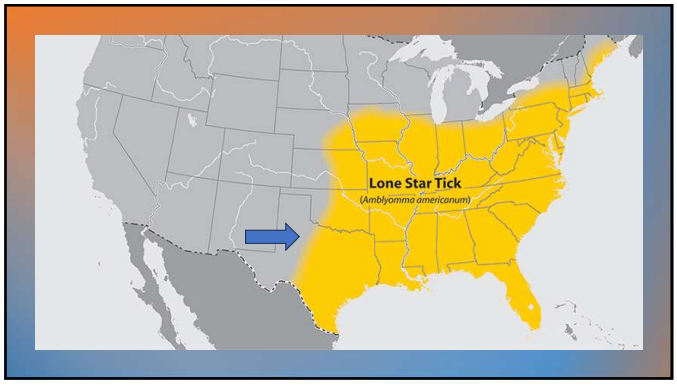
https://www.cdc.gov/stari/disease/index.html

492

Symptoms may abate BUT

The sensitivity and allergic reaction potential is presently considered FOREVER

493



494

BUT STARI => Alpha-gal Syndrome

What is alpha-gal?

- Alpha-gal (galactose-α-1,3-galactose) is a sugar molecule found in most mammals.
- Alpha-gal is not found in fish, reptiles, birds, or people.
- Alpha-gal can be found in meat (pork, beef, rabbit, lamb, venison, etc.) and products made from mammals (including gelatin, cow's milk, and milk products).

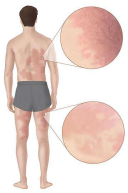
What is alpha-gal syndrome (AGS)?

- Alpha-gal syndrome (AGS) is a serious, potentially life-threatening allergic condition.
- AGS is also called alpha-gal allergy, red meat allergy, or tick bite meat allergy. AGS is not caused by an infection. AGS symptoms occur after people eat red meat or are exposed to other products containing alpha-gal.
- A CDC report showed that between 2010 and 2022, more than 110,000 suspected cases of AGS were identified. However, cases of AGS are not nationally notifiable to CDC, so it is not known how many cases of AGS exist in the United States.
- Most reported cases of AGS in the United States are among people living in the South, East, and Central US.
- While people in all age groups can develop AGS, most cases have been reported in adults.

https://www.cdc.gov/ticks/alpha-gal/index.html

495

What are the symptoms of AGS?



- Hives or itchy rash
- Nausea or vomiting
- Heartburn or indigestion
- Diarrhea
- Cough, shortness of breath, or difficulty breathing
- Drop in blood pressure
- Swelling of the lips, throat, tongue, or eye lids
- Dizziness or faintness
- Severe stomach pain

- Symptoms commonly appear 2-6 hours after eating meat or dairy products, or after exposure to products containing alpha-gal (for example, gelatin-coated medications).
- AGS reactions can be different from person-to-person. They can range from mild to severe or even life-threatening. Anaphylaxis may occur
- People may not have an allergic reaction after every alpha-gal exposure.

https://www.cdc.gov/ticks/alpha-gal/index.html

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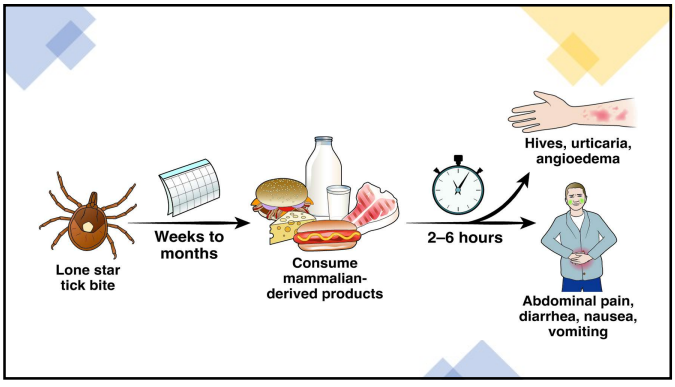


497

AGS Diagnosis

- Detailed patient history,
- Physical examination,
- Blood test for specific antibodies to alpha-gal.

https://www.cdc.gov/ticks/alpha-gal/index.html

498

Dietary Restrictions

- Not all patients with AGS have reactions to every ingredient containing alpha-gal.
- Patients with AGS should eliminate mammalian meat (beef, pork, lamb, venison, rabbit, etc.). (esp. organ meats= very high in alpha-gal)
- Note: Meat broth, bouillon, stock, and gravy contain alpha-gal.
- Be alert to other foods and ingredients which may contain alpha-gal (cow's milk, milk-products, gelatin, lard).
- Charcuterie boards with various meats and cheeses may have residual alpha-gal
- Read food product labels carefully. (e.g. non-vegan refried beans are made with lard)
- In very rare cases, people with severe AGS may react to ingredients in certain vaccines or medications.

https://www.cdc.gov/ticks/alpha-gal/index.html

499

Foods that do NOT contain alpha-gal

- Poultry
- Eggs
- Fish and seafood
- Fruits & vegetables

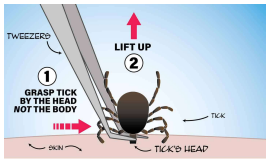
https://www.cdc.gov/ticks/alpha-gal/products.html

500

Prevention

- Preventing tick bites is important
- Before you go outdoors
  - Treat clothing and gear with permethrin or buy pre-treated items.
  - Avoid grassy, brushy, and wooded areas Walk in the center of trails.
  - Use EPA-registered insect repellents.
- After you come indoors
  - Check your clothing, gear & pets for ticks.
  - Shower and perform a thorough tick check.
- Remove an attached tick immediately!

https://www.cdc.gov/ticks/alpha-gal/index.html



Removing a tick with a pair of tweezers

501

Be Aware!

- Some medications and vaccines may contain alpha-gal-containing additives, stabilizers, or coatings. Not all patients with AGS react to these ingredients.
- Lists of additives to specific vaccines (called vaccine excipients) are available through CDC's Pink Book [PDF – 4 pages] and the Institute for Vaccine Safety.
- Ingredients that may contain alpha-gal include, but are not limited to:
  - Gelatin
  - Glycerin
  - Magnesium stearate
  - Bovine extract
- Other medical products, such as heart valves from pigs or cows, monoclonal antibodies, heparin, and certain antivenoms are animal-derived and may contain alpha-gal.

https://www.cdc.gov/ticks/alpha-gal/products.html

502

Patients with AGS should ALWAYS carry an epipen even if their reaction symptoms seem to be mild.

They need it recorded in all medical records & should remind providers when any prescription is issued

503

Alpha-gal What can WE do?

- Alpha-gal is a reportable illness in many states, but not NC (recommend discussion with pts PCP if suspected or verified)
- DCs can refer and order tests
- DCs can educate patients (posters, handouts) about tick avoidance
- DCs can educate patients (posters, handouts) about recognition of AGS
- DCs can ask screening questions during visit (written, verbal)
- DCs can educate patients about future triggers (diet, medication)
- DCs can educate patients about the need to carry and use epipens
- DCs can offer some potential mitigation (acupuncture)

504

Acupuncture for Alpha-gal

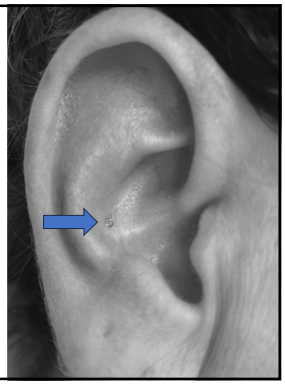
SAAT Soliman Auricular Allergy Treatment

Med Acupunct. 2021 Oct 18;33(5):343–348. doi: 10.1089/acu.2021.0010

Successful Treatment for Alpha Gal Mammal Product Allergy Using Auricular Acupuncture: A Case Series

Mateo Bernal 1, Martin Huecker 2, Jacob Shreffler 2,✉, Olivia Mittel 3, Joseph Mittel 4, Nader Soliman 5

https://pmc.ncbi.nlm.nih.gov/articles/PMC8729907/



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Also new on the scene…

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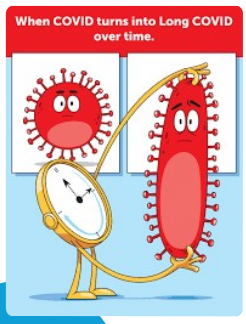


LONG COVID

- People with Long COVID can have a wide variety of symptoms that can range from mild to severe and may be similar to symptoms from other illnesses.
- Symptoms can last weeks, months, or years after COVID-19 illness and can emerge, persist, resolve, and reemerge over different lengths of time
- Fatigue, brain fog, and post-exertional malaise (PEM) are commonly reported symptoms, but more than 200 Long COVID symptoms have been identified.

https://www.cdc.gov/covid/long-term-effects/long-covid-signs-symptoms.html

507

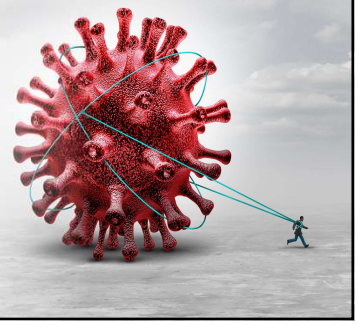
General symptoms
- Tiredness or fatigue that interferes with daily life
- Symptoms that get worse after physical or mental effort
- Fever

Respiratory and heart symptoms
- Difficulty breathing or shortness of breath
- Coughing
- Chest pain
- Fast-beating or pounding heart (also known as heart palpitations)

Neurological symptoms
- Difficulty thinking or concentrating (sometimes referred to as "brain fog")
- Headaches
- Sleep problems
- Dizziness when you stand up (lightheadedness)
- Pins-and-needles feelings
- Change in smell or taste
- Depression or anxiety

Digestive Symptoms
- Diarrhea
- Stomach pain
- Constipation

Other symptoms
- Joint or muscle pain
- Rash
- Changes in menstrual cycles



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LONG COVID

- Some people with Long COVID have symptoms that are hard to explain or difficult to manage.
- There is no laboratory test that can determine if your unexplained symptoms are due to Long COVID.
- People with these unexplained symptoms may sometimes even be misunderstood or experience stigma.
- This can result in a delay in diagnosis and receiving the appropriate care or treatment.
- Long COVID treatment is focused on managing symptoms, reducing their impact on daily activities, and improving your quality of life.

509

LONG COVID SEVERE COMPLICATIONS

Some people, especially those who had severe COVID-19, may experience multi-organ effects or autoimmune conditions lasting weeks, months, or even years after COVID-19 illness.

Multi-organ effects can involve many body systems, including the heart, lungs, kidneys, skin, and brain.

People who have had COVID-19 may be more likely to develop new or worsening of health conditions such as:

- Diabetes
- Heart conditions
- Blood clots
- Neurological conditions

510

LONG COVID PICS

People experiencing any severe illness or hospitalization may develop problems such as post-intensive care syndrome (PICS). While PICS is not specific to infection with SARS-CoV-2, the virus that causes COVID-19, it may occur and contribute to the person's experience of Long COVID. Health effects from PICS may begin when a person is in an intensive care unit (ICU), and can include:

- Muscle weakness
- Problems with thinking and judgment
- Symptoms of post-traumatic stress disorder (PTSD)

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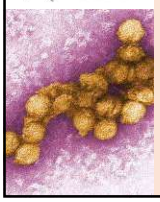
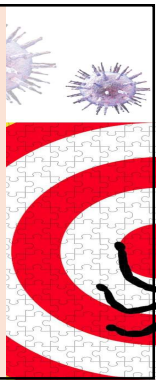


Chronic Symptoms After Other Infections

Some disease agents that have been linked to chronic symptoms

(In alphabetical order)

- *Borrelia burgdorferi* (bacteria causing Lyme disease)
- Campylobacter
- Chikungunya virus
- *Coxiella burnetii* (bacteria causing Q fever)
- Dengue virus
- Ebola virus
- Epstein Barr virus
- Enterovirus
- Poliovirus
- SARS-CoV-2 (COVID-19)
- West Nile virus



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Chronic Symptoms After Other Infections

General symptoms can include:

- Tiredness or fatigue that interferes with daily life
- "Flu-like" symptoms including, muscle pain, headache, sweating, irritability, and general feelings of sickness
- Symptoms that get worse after physical or mental effort (also known as "post-exertional malaise")(PEM)
- Difficulty thinking or concentrating ("brain fog"), trouble finding words
- Chronic or recurrent joint pain
- Sleep problems

https://www.cdc.gov/chronic-symptoms-following-infections/about/?CDC_AAref_Val=https://www.cdc.gov/ncezid/what-we-do/our-topics/chronic-symptoms.html

513

ME/CFS

Some people with chronic symptoms following infections may not know which infection triggered the symptoms, or even recognize that they had an infection before their chronic symptoms began

People with chronic symptoms and unknown preceding infection may be diagnosed with

myalgic encephalomyelitis/chronic fatigue syndrome.

https://www.cdc.gov/chronic-symptoms-following-infections/about/?CDC_AAref_Val=https://www.cdc.gov/ncezid/what-we-do/our-topics/chronic-symptoms.html

514

ME/CFS

- ME/CFS is a biological illness that affects many body parts. It causes severe fatigue not improved by rest, problems thinking and sleeping, dizziness, pain, and many other symptoms.
- People with ME/CFS may not look sick but can't do their normal activities. ME/CFS may get worse after they do any activity -- physical or mental. This symptom is called post-exertional malaise (PEM). After they exert themselves, they may need to stay in bed for an extended time. About 1 in 4 people with ME/CFS are confined to bed at some point in their illness.
- People with ME/CFS are not able to function the same way they did before they became ill. They may not always be able to do daily tasks like showering or cooking a meal.

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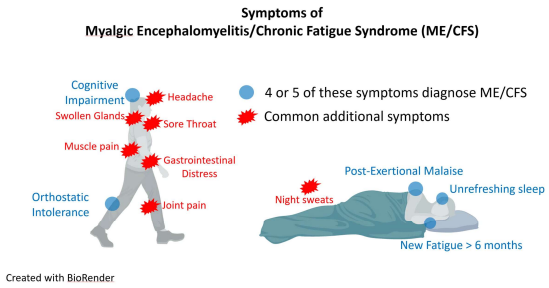

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ME/CFS

- It's estimated that up to 3.3 million people in the United States suffer from ME/CFS.
- More than 9 in 10 people with ME/CFS have not been diagnosed by a doctor.
- ME/CFS costs the U.S. economy about $18 to $51 billion annually in medical costs and lost income.
- All ages (esp. middle age), women more than men
- More whites diagnosed (possibly due to access or focus)

517

Disability:

https://www.hhs.gov/civil-rights/for-providers/civil-rights-covid19/guidance-long-covid-disability/index.html

For Patients:

https://www.publichealth.va.gov/n-coronavirus/docs/Fact-Sheet-Veteran-Facing-Long-COVID-0083022-FINAL.pdf

https://www.cdc.gov/me-cfs/toolkit/index.html

518

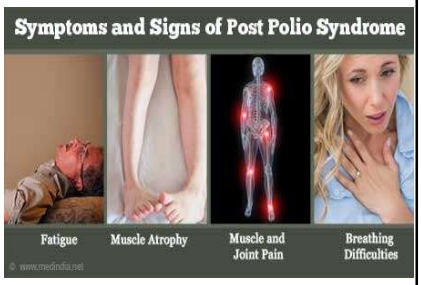
GUIDE TO:

POST-POLIO SYNDROME

519

POST-POLIO SYNDROME

- 1985 PPS described & named
- > 15 years after infection
- Weak, fatigue, joint/muscle pain
- Cold intolerance
- Esp. muscles affected earlier
- No Dx test
- Dx of exclusion



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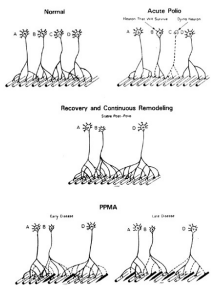
PPS THEORY



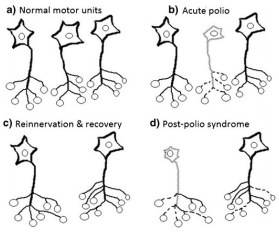
1) Nerve dies & Muscle weakens

2) Adjacent nerve innervates weak muscle & assumes function

3) Supporting nerve ages & loses connections

521

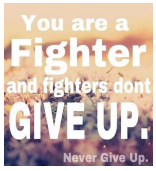
Post Polio Syndrome



https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Fact-Sheets/Post-Polio-Syndrome-Fact-Sheet

522

POST-POLIO SYNDROME Rx



Supervised exercise
Nutrition
Rest
Physiotherapy
Braces/Orthotics
Manipulation
Acupuncture
IV IG

523

In Conclusion…

- I hope that this presentation stimulates realization of areas of your practice or your skill sets that you might want to explore and revitalize in anticipation of an increased geriatric patient population under Medicare inclusion.
- Please contact NCMIC or me if you have questions or are interested in a focused presentation on any of the topics we covered.
- Thank you for your time and interest!

524

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525

526