



# U of L Geriatrics

## Geriatrics and Substance Abuse:

# Are we ready for the boomers?

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SCHOOL OF MEDICINE

# PRESENT POPULATION

## 77 million Americans are over the age of 50

41.9 are 50 – 64

18.4 are 65 – 74

12.4 are 74 – 84

4.2 are 85+



At age 50, Americans can, expect to live another 30 years

At age 75 can expect to live another 11 years

At age 65 can expect to live till 90

\*The elderly currently comprise 13% of the population, utilize 40% of all doctor's visits and despite occupying 40% of all hospital beds, they utilize 60% of all hospital days.

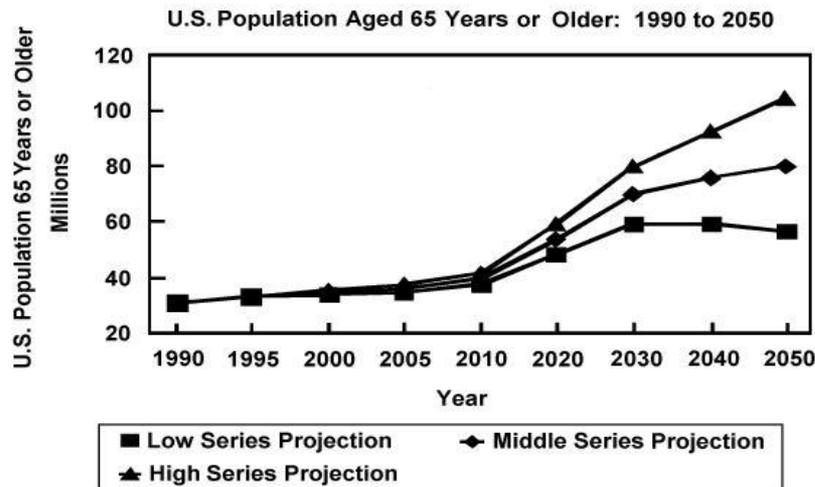
# THE SILVER TSUNAMI

By 2030, 70 million people will be over the age of 65

This will be about 26% of the population

More than 6 million will be over 85

The oldest old make up the fastest growing segment of the population



Source: Federal Interagency Forum on Aging-Related Statistics (2000).

# GOOD NEWS/ BAD NEWS IN HEALTH

Women live longer, but the gap between women and men is decreasing

Racial differences in life expectancy are decreasing

Smoking rates have decreased in the past two decades – by 23% in women and 36% in men

More Americans are reporting some increase in exercise

People are living longer

Therefore with multiple chronic disease/medications

# What is Polypharmacy?



- 5 or more medications taken simultaneously

• More medications used than are clinically warranted.

- A Random Uncontrolled Experiment

# Silent Epidemic



A side effect of **modern** medical care

- 15 minute office visit/Hospital visit
- New drugs added annually
- Over the counter products and supplements
- No captain of the ship

# Adverse Drug Reactions

- **2,216,000 hospitalized patients/year experience serious ADR\***
- **106,000/year die from an ADR**
  - 631,636 annual deaths are due to heart disease in the U.S
  - 444,000 die from smoking annually
  - 82,432 deaths annually due to Alzheimer's dementia
  - 72,449 deaths annually related to diabetes
- **ADRs rank as 4-6<sup>th</sup> leading cause of death (95% CI)**
  - Ranking *after* heart disease, cancer, stroke, (pulmonary disease and accidents)
    - **Ahead of diabetes** and pneumonia

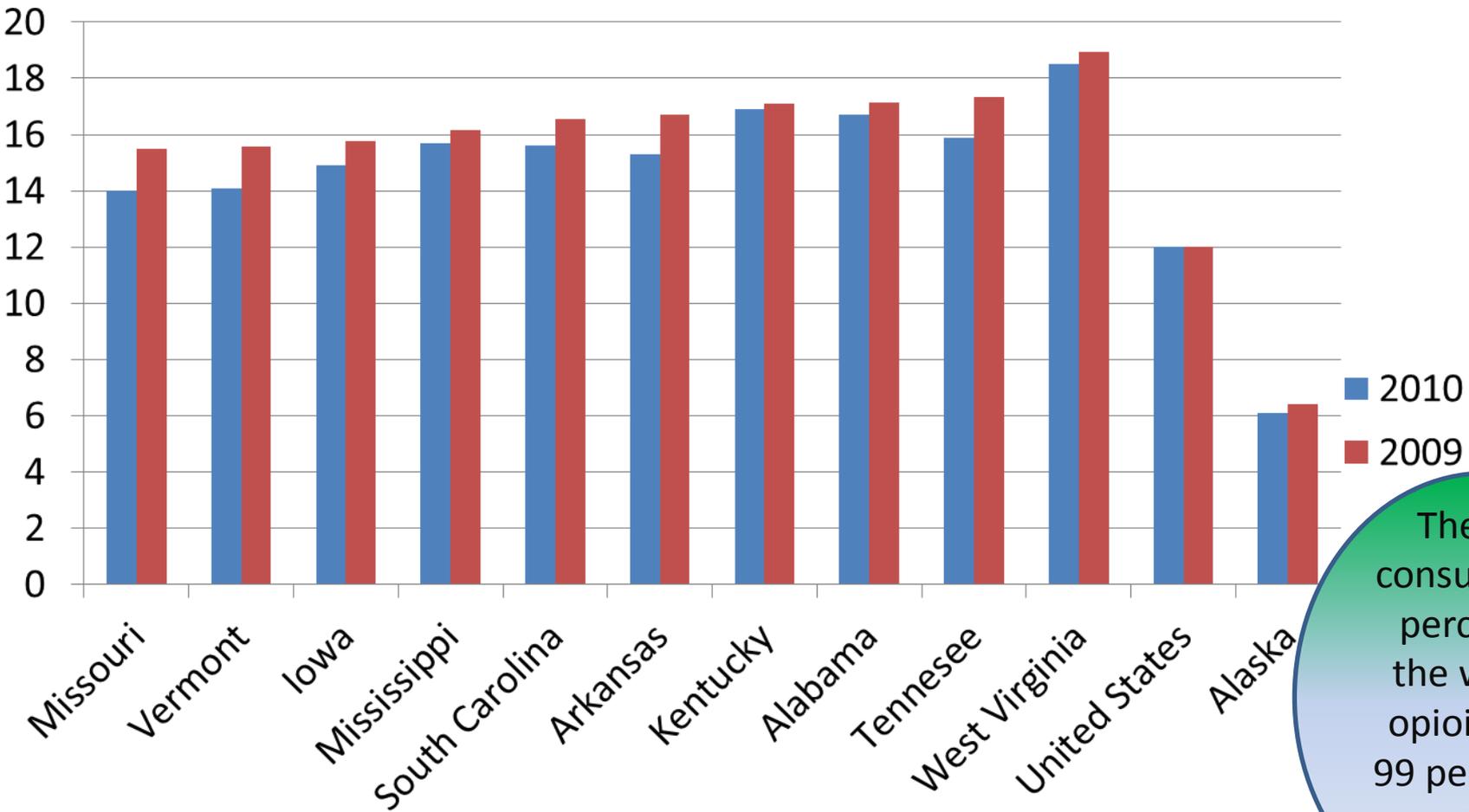
-Lazarou J, Pomeranz BH, Corey PN. Incidence of adverse drug reactions in hospitalized patients. JAMA 1998;279:1200-5.

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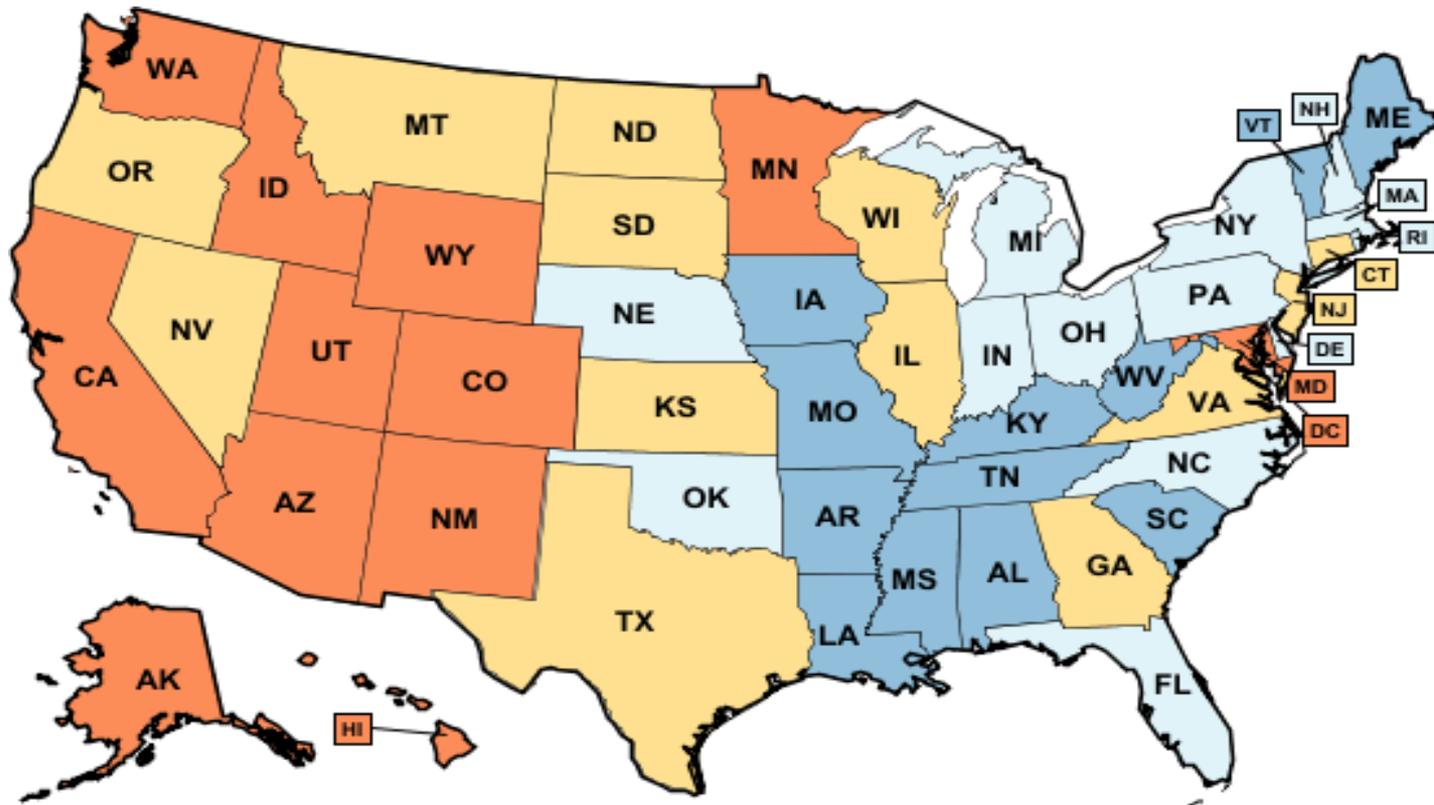
-Pirmohamed M, James S, Meakin S, et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18,820 patients. BMJ 2004;329:15-19

-Center for Managing Chronic Disease

# Scripts per capita 2010 (blue) Kaiser Foundation



The U.S. consumes 80 percent of the world's opioids and 99 percent of its hydrocodone



6.1 - 10.3

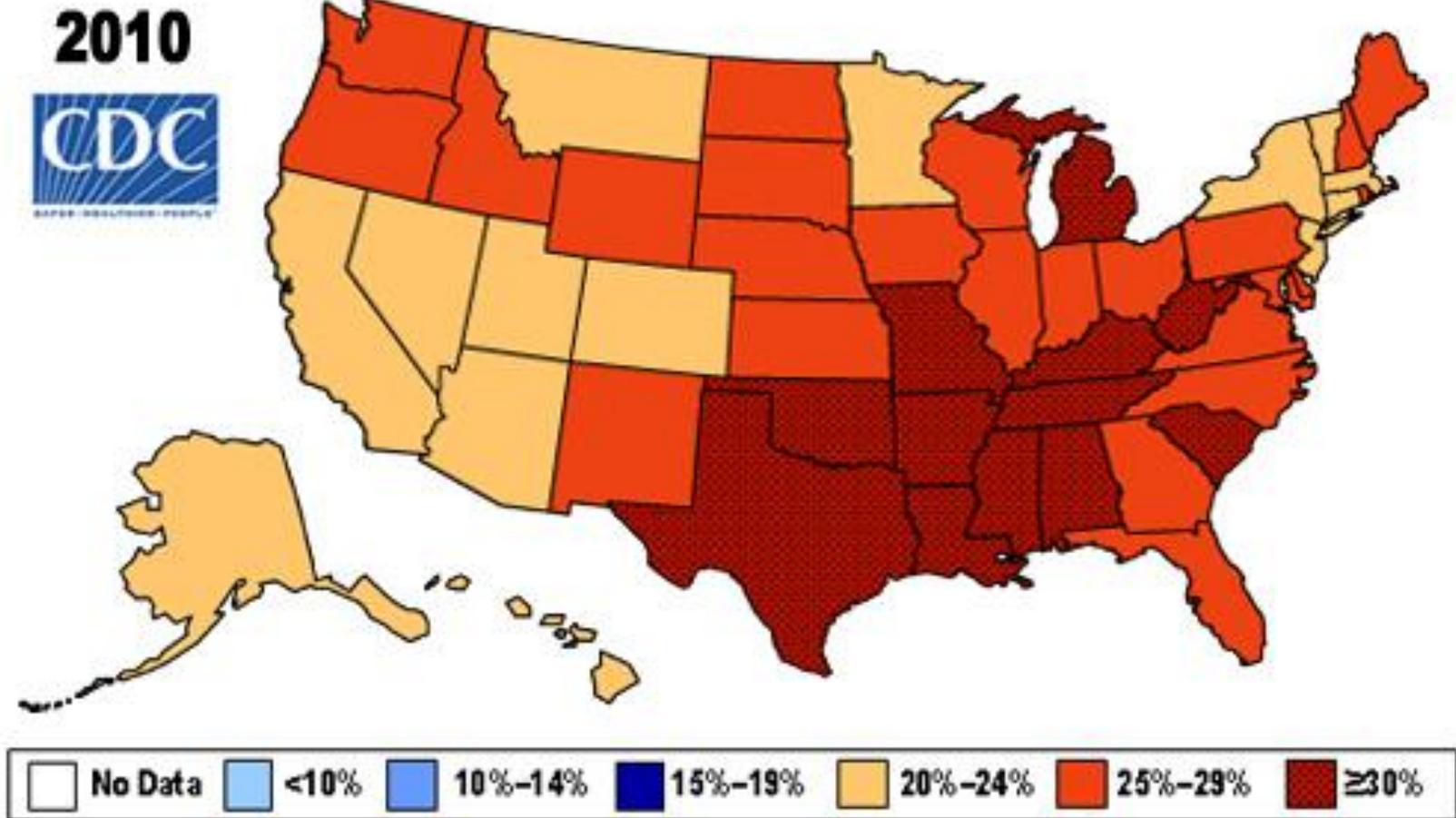
12.6 - 13.7

10.4 - 12.3

14.0 - 18.5

## Retail Prescription Drugs Filled at Pharmacies (Annual per Capita), 2010

# Interesting Parallel with BMI

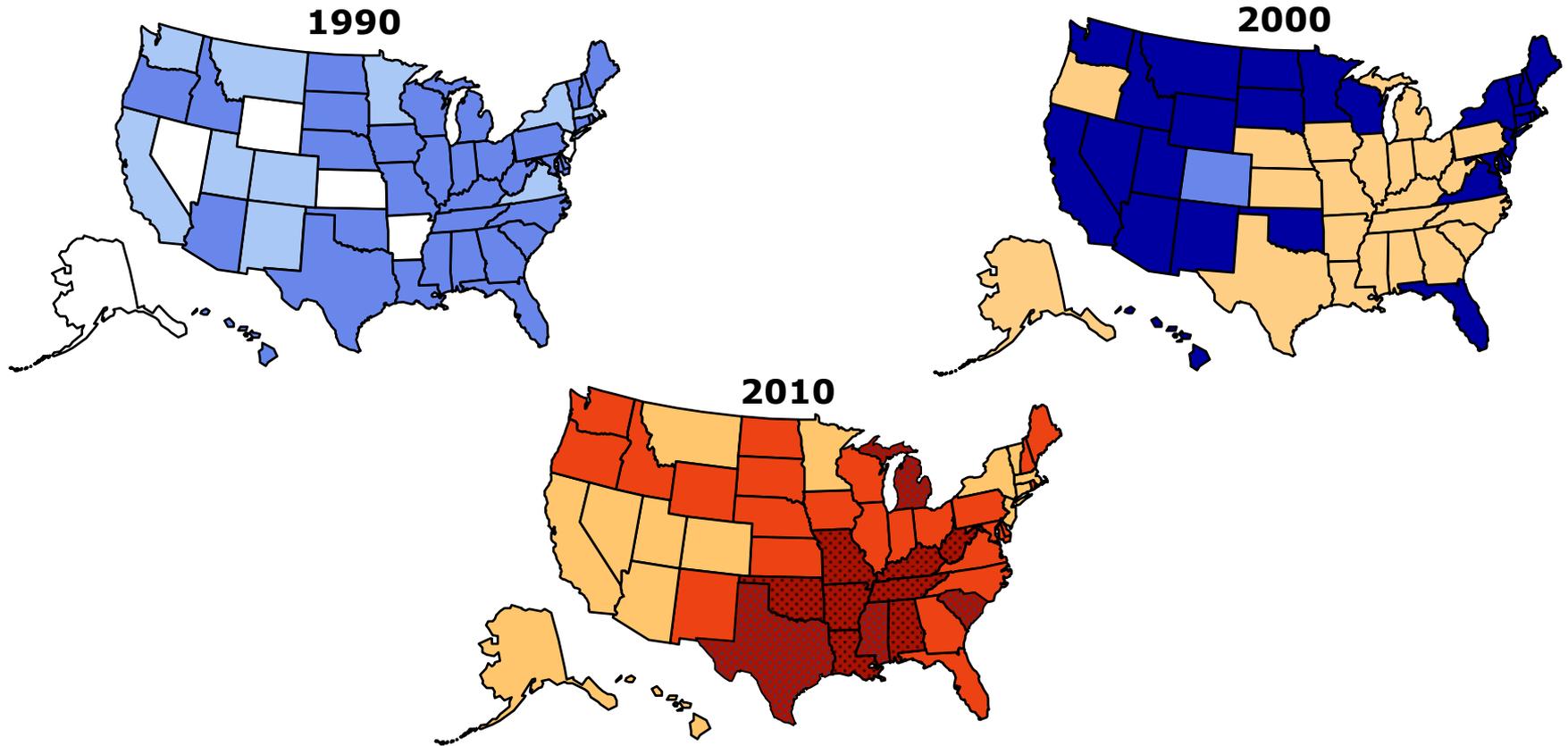


**PRESCRIPTION USE: WVA > TN > AL > KY > AK > SC > MS > IA > VT > MO**

# Obesity Trends\* Among U.S. Adults

## BRFSS, 1990, 2000, 2010

(\*BMI  $\geq 30$ , or about 30 lbs. overweight for 5'4" person)



# Scope of the problem

- Up to 30% of older persons are admitted to the hospital due to medication related problems.
- For every dollar Medicare spends on NH medications it spends \$1.33 addressing medication induced problems (Ouslander: the cost of healthcare)
- In 2000 it was estimated that MRP's cost 106,000 lives and 86 billion dollars. (Perry, "When Medicine Hurts")

# **Economic Impact of Diseases Impacting People over 65 years old**

**Cardiovascular diseases (all types): \$171.1 billion**

**Cancer (all types): \$104 billion**

**Alzheimer's Disease: \$100 billion**

**Diabetes: \$92 billion**

**Medication-related problems: \$88.2 billion**

**Osteoarthritis (all musculoskeletal conditions): \$64.8 billion**

**Stroke: \$30 billion**

**Osteoporosis: \$14 billion**

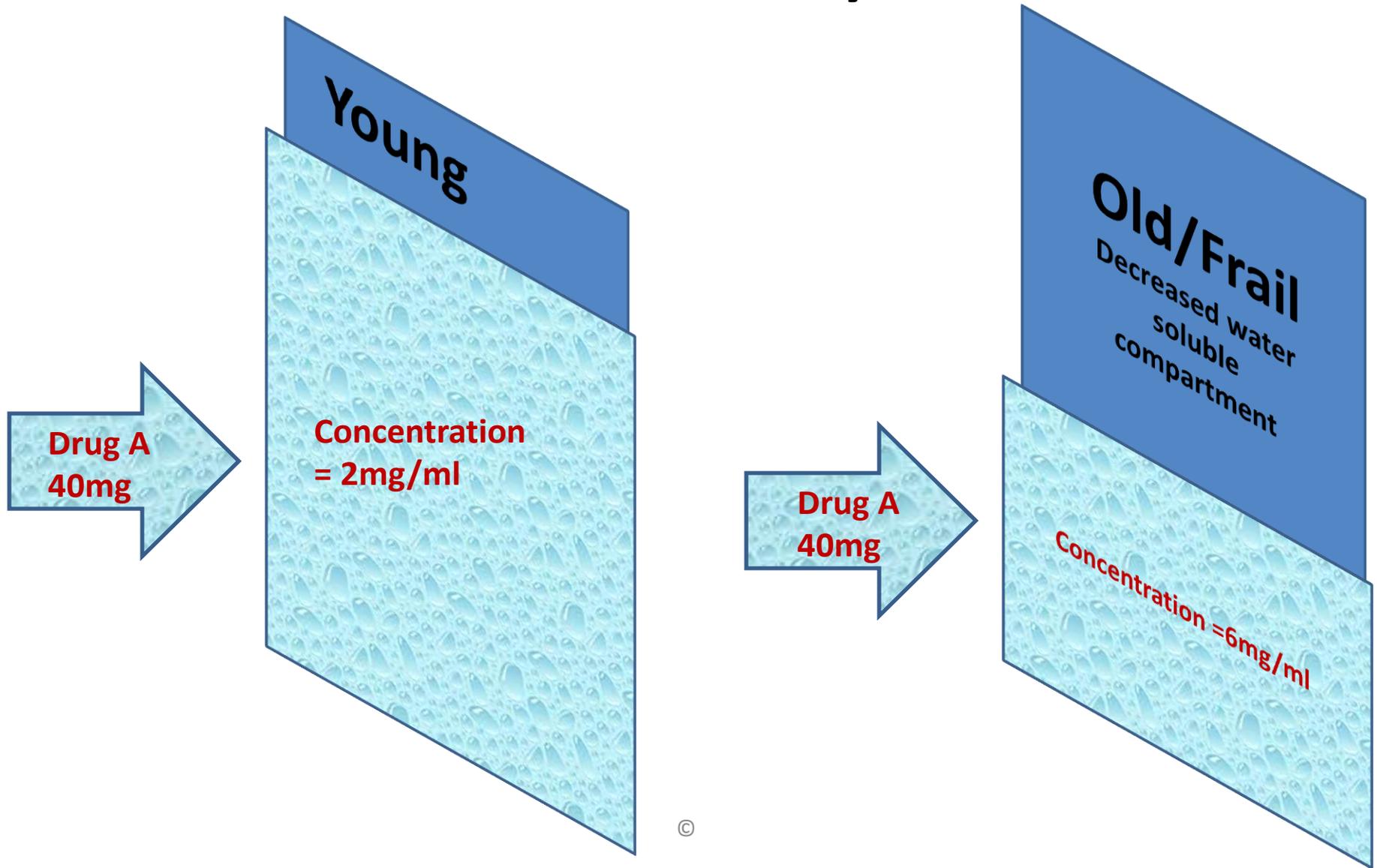
**Parkinson's Disease: \$5.6 billion**

(1995 dollars ranking the same today)

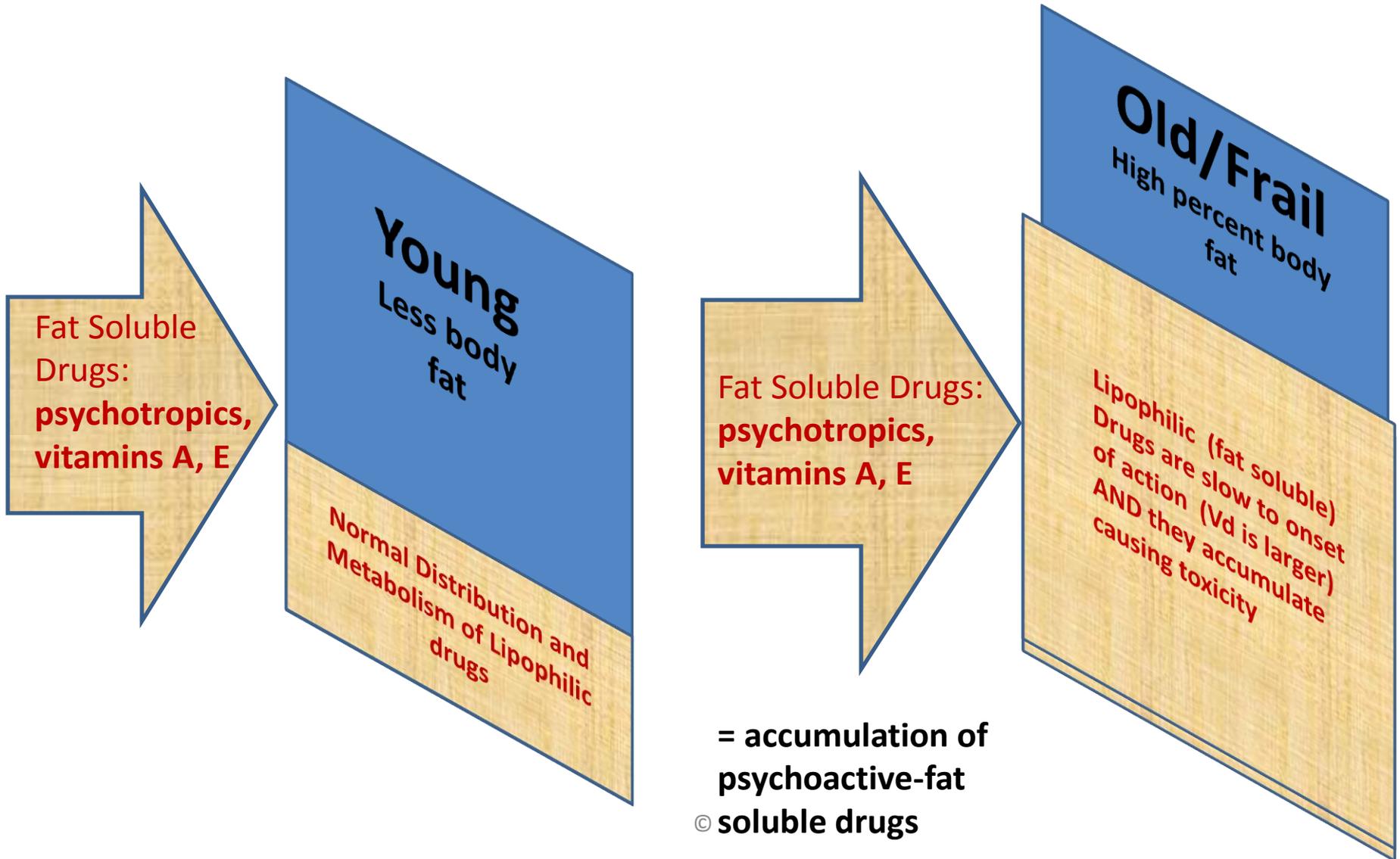
Sources: Alzheimer's Disease Foundation and Referral (ADEAR) Center; National Cancer Institute; American Diabetes Association; Arthritis Foundation; National Center for Health Statistics, 1994; National Parkinson Foundation; National Stroke Foundation

# A SHORT LESSON IN THE PHYSIOLOGY OF AGING

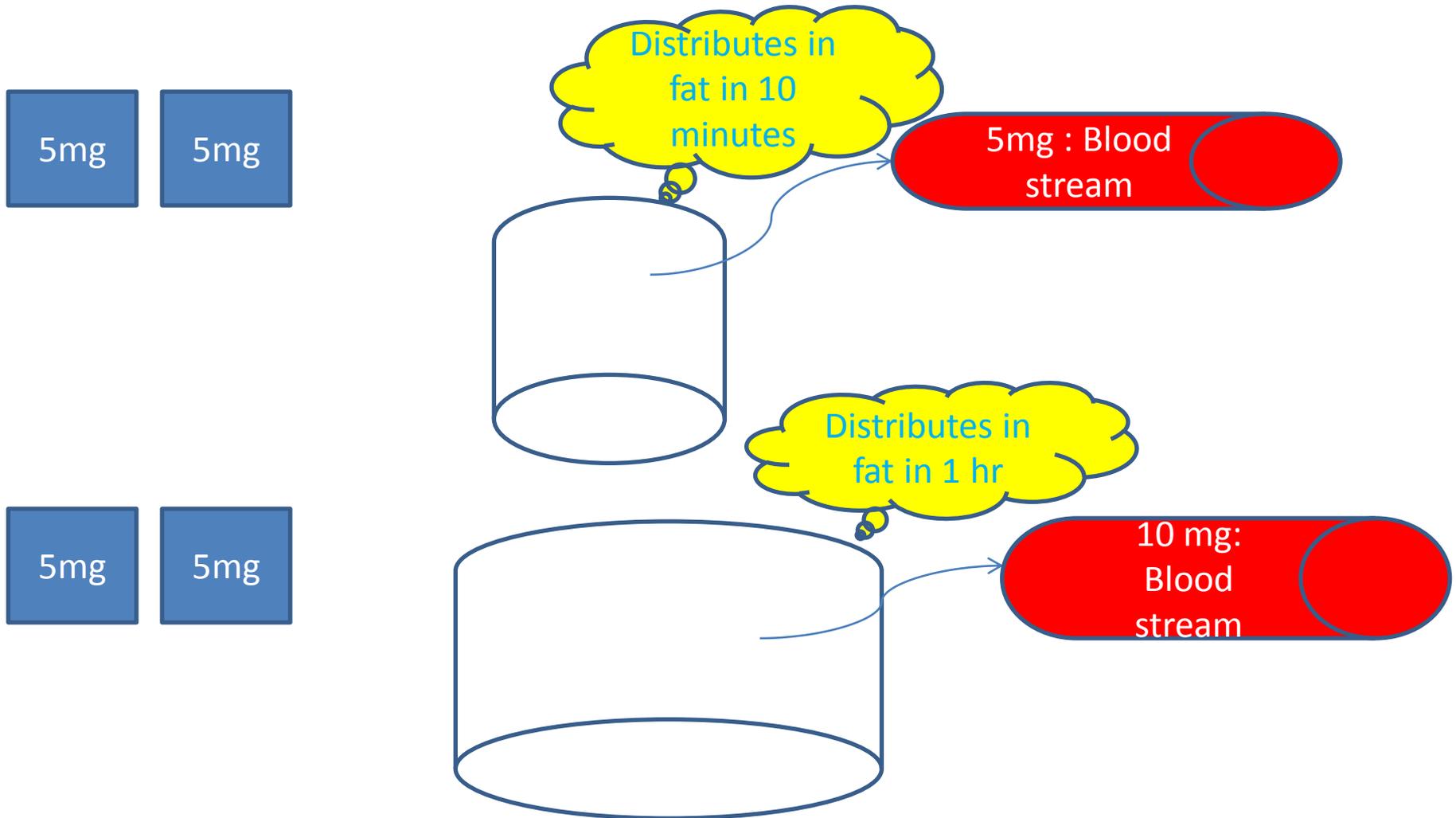
# Physiological Changes with Aging(muscle loss): decreased total body water



# Physiological Changes with Aging (muscle loss): increased percent body fat

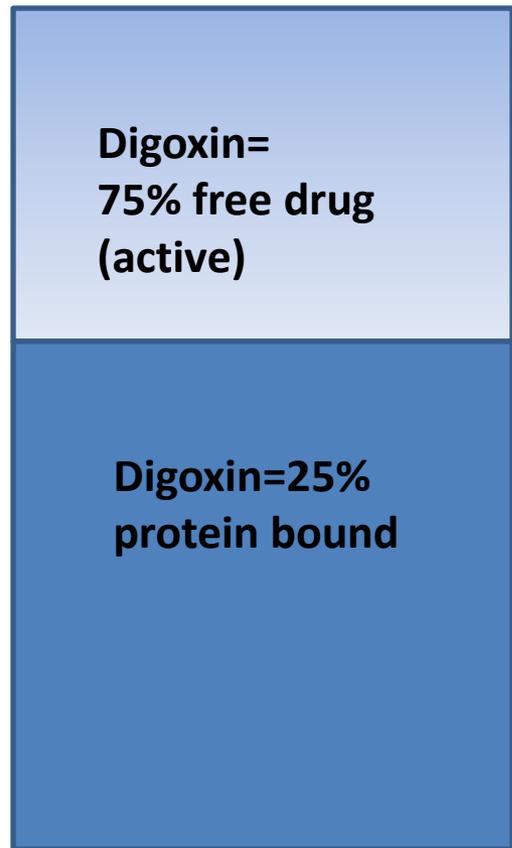


# Time to blood level max- changes with changing physiology

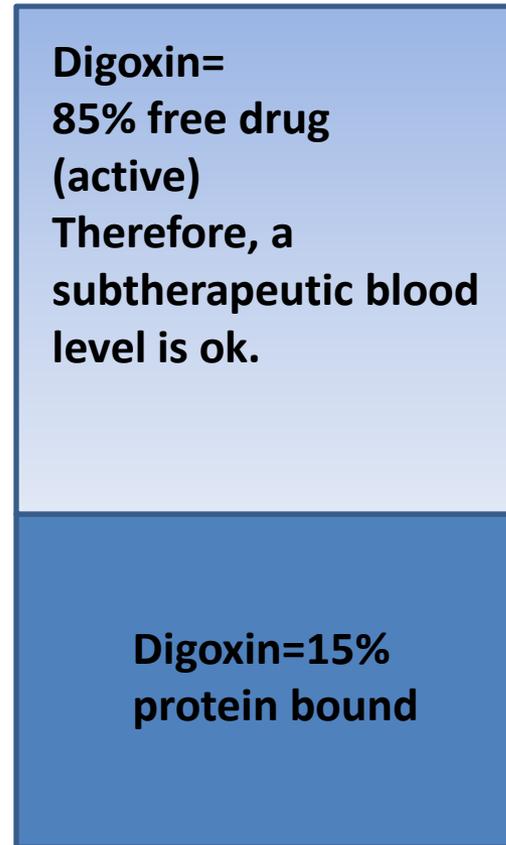


# Physiological Changes with Aging (frailty): **decreased protein binding**

**Example:  
Digoxin**



**Younger adult with normal serum protein levels**

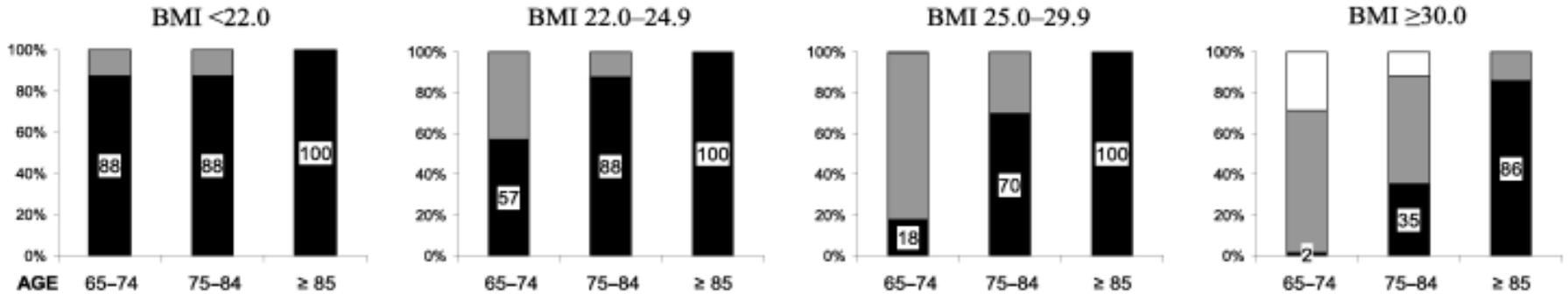


**Elder with decreased serum protein levels**

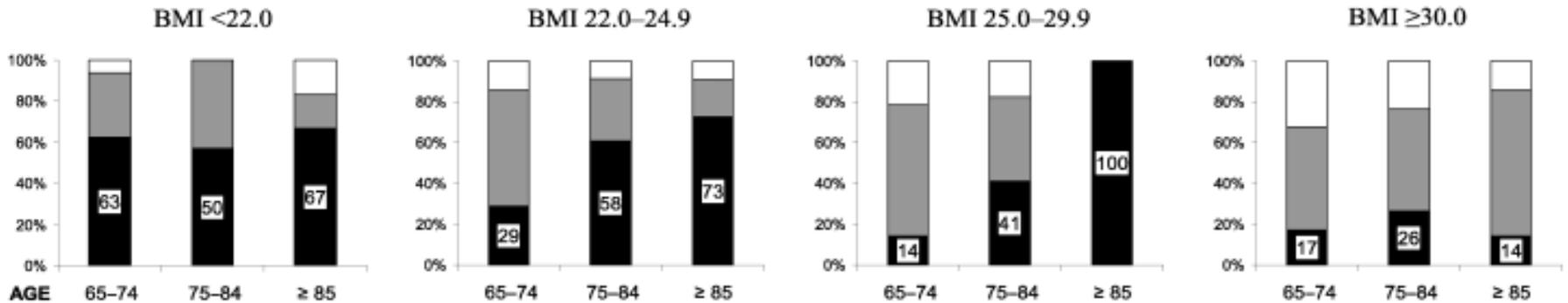
# Under-estimation Renal (kidney) Function w Normal Serum Creatinine

WOMEN

Cockcroft-Gault Equation



Creatinine Clearance Calculated Using 24-hour Urine Collection



# What is the evidence that a cautious approach is the way to go?

## Are we gonna blow out granny's liver?

Blood flow through the liver decreases and the metabolic capacity decreases with age [Acute ETOH abuse impairs liver function: **Bad** mix with Tylenol®]

- FDA Now:**
1. Asking manufacturers to limit APAP in Rx to 325mg (6/11)
  2. NMT 650mg per dose

Max daily=4  
grams  
LD=7grams



Approximately  
30% of Tylenol®  
Deaths are  
unintentional

# Are we gonna blow out granny's liver?

Drug clearance may fluctuate because of EtOH use  
– especially in binge drinking.

With drugs like warfarin or anticonvulsants, this can have catastrophic consequences

Or the mixture of sedatives and ETOH – chronic drinkers have decreased effect of say temazepam and binge drinkers will have increased effect when they drink

# IMMUNE FUNCTION

Decreased immune function as we age

ETOH itself in large doses is an immunosuppressant

This increases problems with infection and poorer outcomes when an infection occurs

Macrophages (immunomodulators) have benzodiazepine receptors!

ETOH, benzos, opioids all decrease the level consciousness, thus increasing risk of aspiration

Increased risk of HIV – one of the fastest growing segments of population is the elderly (? Thanks to viagra et al?)

# NEUROLOGIC CHANGES WITH INCREASING AGE

The brain atrophies significantly: 50% of 85 year olds have some CI

Blood flow to the brain decreases by 20%

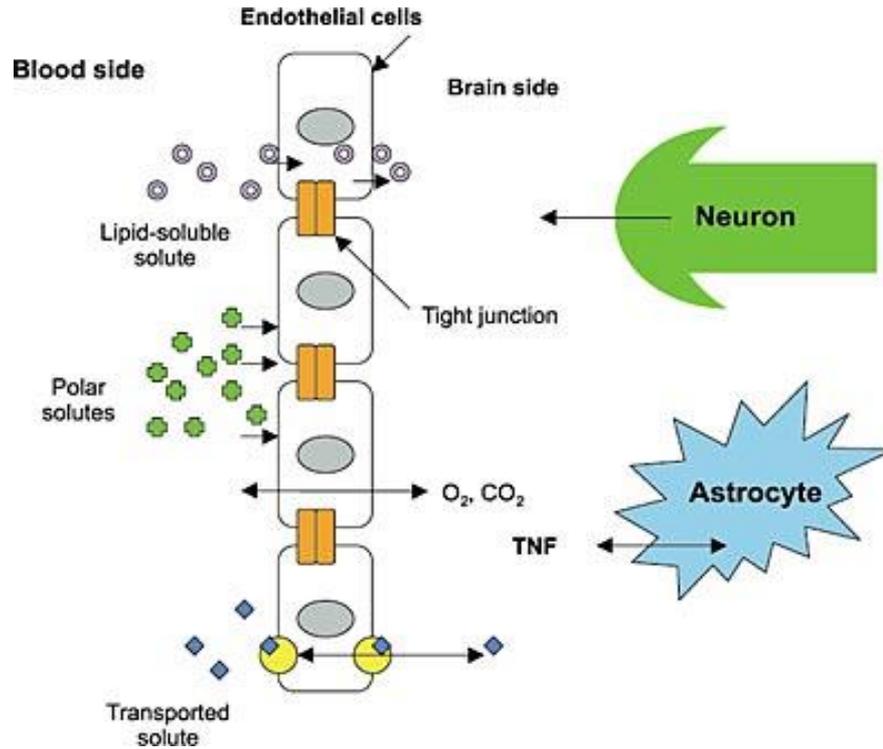
There is significant cellular loss, plus disease loss

Proprioception decreases with age

- All of this will be worsened by ETOH and other psychoactive drugs
  - Studies show that the benzos increase cognitive decline – especially the long acting
  - ETOH can give global cognitive impairment
  - Peripheral neuropathy with ETOH abuse and vitamin deficiency



# Special Mention: the BBB



The blood brain barrier is designed to keep polar (hydrophilic) compounds out of the brain. This weakens with frailty. Drugs designed to stay out such as new generation urinary incontinence medications (i.e. solifenacin) can readily cross leading to serious SE' s.

Zeevi N, Pachter J, Mc Cullough L. et al. The Blood –

Brain Barrier: Geriatric Relevance of a Critical Brain-

Body Interface. JAGS 58:1749–1757, 2010

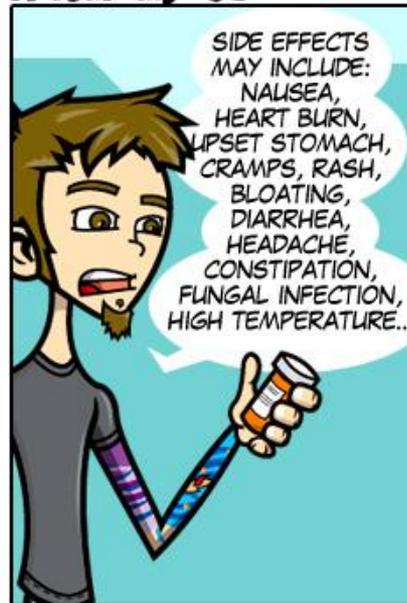


**"If you remember, I did mention possible side-effects."**

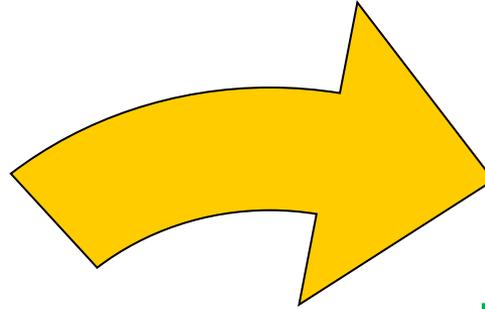
# Signs of Medication Related Problems: ???

- **Mental status changes**
  - Agitation
  - Manic behavior
  - Any change in affect
  - Confusion
- **Not eating**
- **Not sleeping**
- **Somnolence**
- **Falls**

## Naturally Us

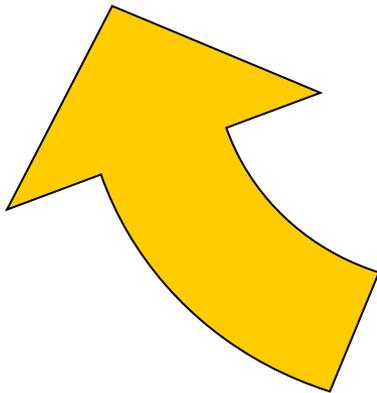


**Is it the drug  
or the  
disease?**

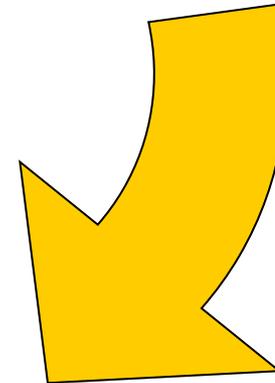


**Signs and Symptoms**  
**(multiple & nonspecific)**

**Diagnosis or  
Drug Side Effect?**



**New  
Treatment Added**



# Akathesia, Agitation & the spectrum of movement disorder



# The Boomers Are Coming!



**Born between 1946-1964**

# SOCIAL SUPPORT SYSTEMS

As people age, the social support system becomes more important

But the longer people live, the more likely they are to live alone

Especially if they are female:

½ of all females in the 75-84 and 58% of females older than 85 lived alone in 1999

1/3 of people providing support to the elderly are adult children

# SOCIAL SUPPORT SYSTEMS

During the “baby bust” of the 60’s, there was a marked increase of females not having children.

This means that people now in their 60’s are much less likely to have a social support system with adult children to help

Those WITH adult children are less likely to live in the same general area.

# The Boomers

- 4 million Americans nearing retirement age have a substance abuse problem
- More often than not “high end” professionals with disposable income
- Experts say they will place a tremendous strain on the health care system as they deal with illness and addiction
- SAMHSA: between 1998-2008 reported that the number of older people treated for combination cocaine and EtOH tripled.

# The Boomers

- Interestingly, the number of older people admitted to the hospital for SA treatment had begun using the substances in the past 5 years
  - Cocaine abuse 26.2%
  - Rx abuse 25.8%
- Boomers typically enter rehab taking an average of 4.5 Rx meds and 3.5 OTC meds

# The Boomers

"Boomers are at a critical stage in life when stress mounts from age-related health issues, blended families, grief and loss, financial strain and caring for both aging parents and children, It seems to hit them all at once, and can open the door to alcohol addiction, drug abuse or both."

John Dyben, director of the "Freedom Program for Boomers" of the non profit Hanley Center, WPBeach.

# The Boomers

"They are not prepared to simply accept aging, or the physical pain, the trouble sleeping and other problems that come along with it. **There is prescription medication for whatever ails you.** It's real effective. And much of it is highly addictive."

John Dyben, director of the "Freedom Program for Boomers" of the non profit Hanley Center, WPBeach.

# Some Emergency Room Data

**SAMHSA:** 111 percent increase in the number of opiate pain reliever related visits for non medical use opiate overdose

**CDC:** most common poisoning treatments in ER are caused by misuse of pain medications

\*as common as poisonings due to illicit street drugs

# SO WHY ARE THE “BOOMERS” DIFFERENT THAN OTHER AGING POPULATION COHORTS?

High demand for a quick fix, and the disposable income to drive it

- It is the perfect storm

Ambivalence towards substances dates back to the 60's and 70's

- “Better living through chemistry”

# SO WHY ARE THE “BOOMERS” DIFFERENT THAN OTHER AGING POPULATION COHORTS?

Higher member population cohort

The dynamics of the “Me” generation – rightly or wrongly are accused of being more self centered and used to having things their way

Higher risk of substance abuse in this cohort than in others previously

Certainly more accepting of “Sex, Drugs, and Rock and Roll”

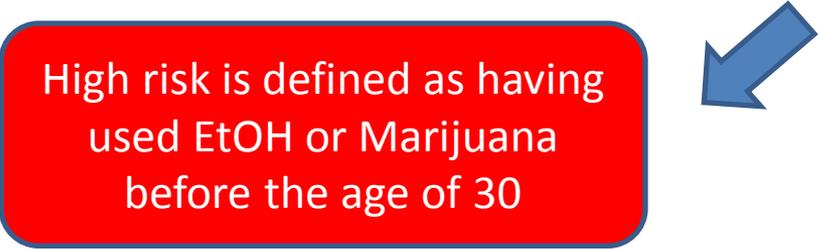
# The Boomers

## National Household Survey on Drug Abuse (NHSDA)

- regression models estimate the number of adults with substance abuse problems in the year 2020.
- the number of adults over the age of 50 with substance abuse problems will **double** to 5 million during the time period from 1999 to 2020.
- In 2020, approximately 50 percent of persons aged 50 to 70 will be in a **high-risk group**



Versus 9% in 1999



High risk is defined as having used EtOH or Marijuana before the age of 30

# Things are gonna have to change

## **The way we look at substance abuse in elders**

- Redefine limits
- Example: EtOH Men 1 glass daily, Women less than 1
- Screening for SA should be part of routine physical

## **We have no treatment algorithms for the elderly**

- Yet by 2020, it's predicted that we'll need to double the number of treatment centers
- Development of age appropriate treatment models
- Most treatment is institutionalized but that goes against the preference of the older cohort
- Most elders cannot detox at home, they need medical supervision

# ETOH AND THE “ELDERLY”

# ETOH & COMMUNITY DWELLING ELDERLY 60 AND ABOVE

62% drink ETOH

Heavy drinking in 13% of males and 2% of females

Overall 6% of elderly were considered to be heavy drinkers

In this study heavy drinking was defined as greater than two standard drinks in a day

A standard drink is 1.5 ounces of distilled spirits, 12 oz. of beer or 5 oz of wine

This study lowered the standard definition of heavy drinking because of the elderly lowered tolerance

# ETOH & HOSPITAL AND NURSING HOME

13% of elderly trauma patients had blood ETOH levels greater than 0.1

23% of elderly Psychiatry patients have history of ETOH abuse

10 -21% of elderly patients admitted to inpatient med/surg abuse ETOH (may be higher)

In a recent study, 49% of patients in a nursing home met criteria for lifetime ETOH abuse or dependence

# RISK FACTORS FOR ETOH-Rx ABUSE IN ELDERLY

Males

Major life changes or losses

Especially retirement or death of a spouse

Substance abuse earlier in life

Comorbid psyche disorders

Positive family history

Abuse of nicotine

Use/abuse of psychoactive drugs

# WHY DO MDs AND HEALTH CARE WORKERS HAVE PROBLEM DIAGNOSING SUBSTANCE ABUSE IN THE ELDERLY?

Faulty assumptions and myths ie the alcoholic as a bum

Denial by the abuser, family and MD: plus no captain of the healthcare ship

May be fewer social signs of problem like losing a job or legal

Substance abuse problems overshadowed by the other medical probs

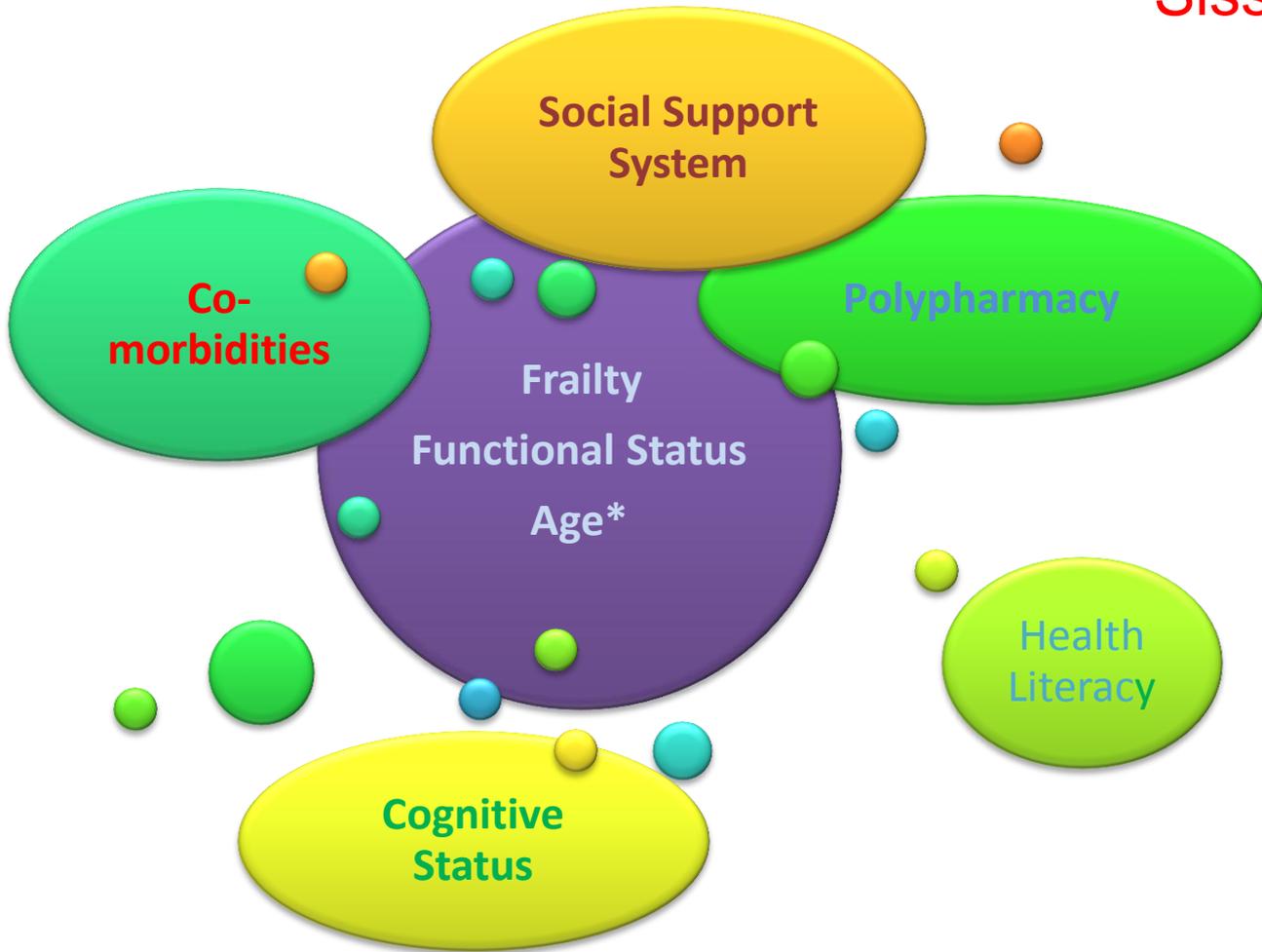
The physical and/or cognitive decline caused by chronic substance may be thought of as the “ravages of aging”

Substance abuse problems are the “Great Masquerader”

# Medication Management and the

Elderly \*:

Isn't for  
Sissies!



# Misdiagnosed

People don't like to be identified as having a problem

So, they try to self treat:

Memory problems

Isolation

Pain

Weight loss

Falls

Addiction can worsen or precipitate

Diabetes

Ulcers,  
Cancers, Gout,  
Stones,

Cholesterol  
and heart  
disease

Falls  
Memory

Isolation

Avoidance of  
MD

Serious  
impairment  
goes unnoticed

Self treatment

Mis-self  
diagnosis

Interaction of self  
treatment /  
substance w disease

More  
impairment

# Rx Abuse

- Attitudes (too good) towards medications
- It has been estimated that 25% to 86% of community-dwelling elderly have pain-related problems.
- Older adults, particularly, are at greater risk for chronic musculoskeletal and neuropathic pain conditions, including arthritis, osteoporosis, lower back pain, and peripheral neuropathies.
- In the geriatric population chronic pain has been associated with depression, anxiety, insomnia, somatic complaints, substance misuse, financial hardship, and poor social support

# Risk of Opioid Abuse

- **INCREASED RISK**
  - Higher level of pain severity
  - Depressive symptoms
  - Lower level of physical disability
  
- **NOT INCREASED RISK**
  - Alcohol problems
  - Spirituality
  - Social support
  - Social network

## AND WHAT ABOUT CHRONIC PAIN?

Very common in the elderly

25 – 50% in the community dwelling

40 – 80% in the nursing home setting

1/5 65 yo and older take analgesics several times a week

Of these, 3/5 take prescription pain meds

Chronic pain causes all sorts of complications like depression, decreased socialization, sleep disturbance, and impaired mobility

# Did you ever wonder?

Why back in the day: the "Rat Pack" drank EtOH and chain smoked excessively?

Easy to get, there wasn't much else...besides marijuana, cocaine, maybe LSD

~~...And we didn't understand the toxicity or consequences~~

Why today's patients are taking an unprecedented number of medications together?

Very available, relatively affordable, poor coordination of care, hard scientific data on efficacy

...And, we don't fully understand the toxicity or consequences

Why the sudden epidemic of Rx abuse?

Easy to get, presumed safe, can be smart about use

DITTO

# Summary

- The Boomers are here (just about)
- Chronic and complex substance abuse in elders is a new phenomenon for health care providers to hurry up and figure what to do about it!
- We can't stop it until we get better at evaluating and recognizing SA in elders
- Strain on the system?

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