

ADDICTION IN THE AGING POPULATION

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ADDICTION IN THE AGING POPULATION

- An invisible disease?
 - Underestimated
 - Under-identified
 - Underdiagnosed
 - Undertreated

Courtesy of Dr. Elizabeth Howell, MD

ADDICTION IN THE AGING POPULATION

- Factors influencing this “invisible disease”:
 - Ageism
 - Lack of awareness, denial
 - Clinician attitudes, behaviors
 - comorbidities

Courtesy of Dr. Elizabeth Howell, MD

ADDICTION IN THE AGING POPULATION

- Ageism
 - Explain away problems by “being old”
 - Negative stereotypes
- Lack of awareness
 - Addiction symptoms, signs
 - Stereotypes
- Stigma, shame, Denial
 - Patient and family; hidden use; ignoring the problem

Courtesy of Dr. Elizabeth Howell, MD

ADDICTION IN THE AGING POPULATION

- Clinician attitudes, behaviors
 - Lack of knowledge of addiction
 - Symptoms mimic dementia, depression, arthritis, etc.
 - Low index of suspicion
 - Stereotyping
 - Shorter office visits as age increases
 - Fear of offending the patient (e.g. urine drug screening)
- Transportation issues, financial concerns, lack of family involvement/awareness
- Example
 - VA consult 86yo man with AUD, anxiety-could not drive! Children were bringing alcohol to him

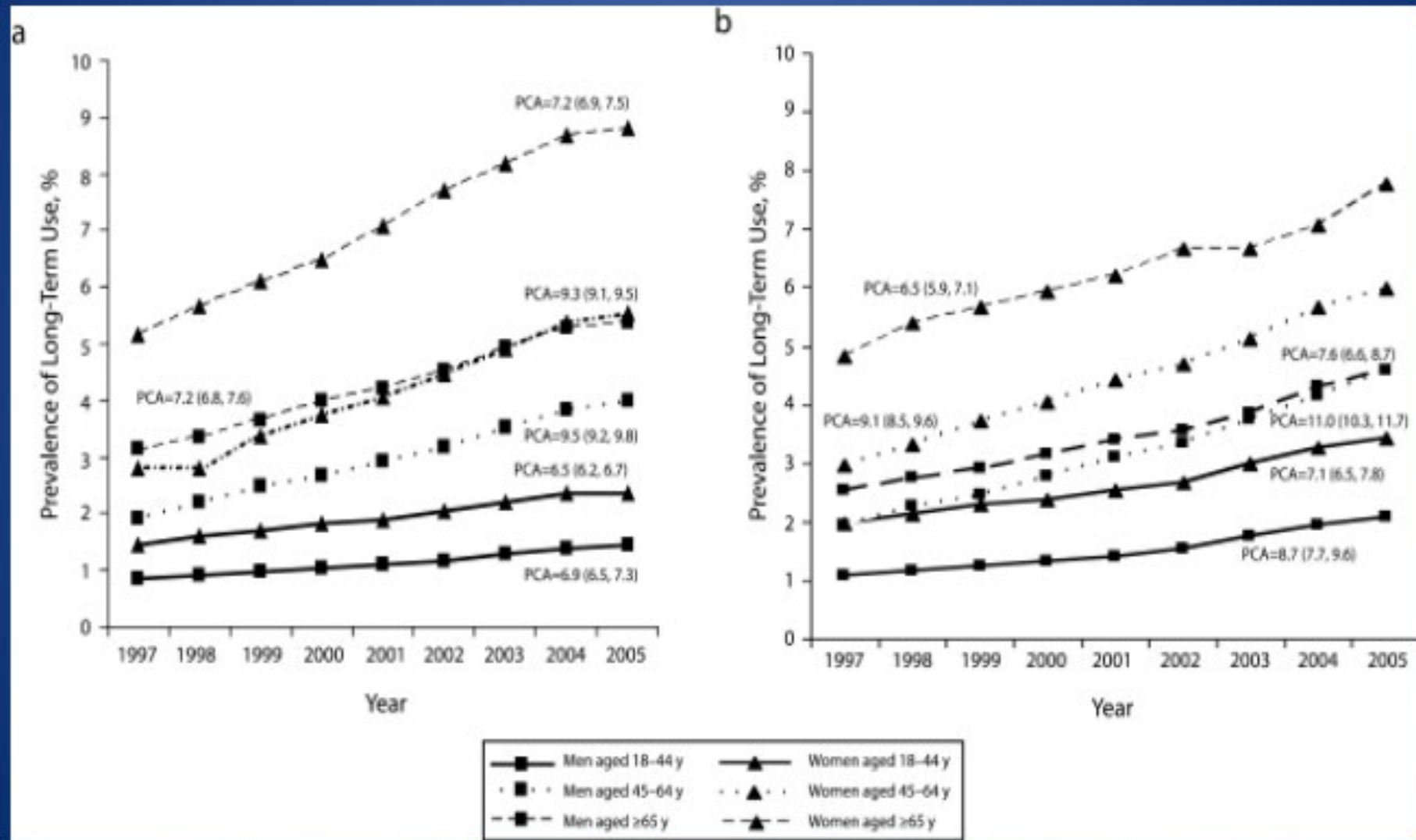
Courtesy of Dr. Elizabeth Howell, MD

ADDICTION IN THE AGING POPULATION

- In 2011, the “Baby Boomer” generation started turning 65
- By 2030, nearly 1 in 5 U.S. residents will be age 65+
- Aging adults are highest risk for polypharmacy (Ballentine 2008)
- Prevalence of cognitive and functional impairment in elderly increases their risk of non-adherence to medication regimen (DiMatteo et al. 2007)
- Older women in particular have the highest prevalence of long-term opioid use (8-9% in 2005 per CONSORT study Campbell et al. 2010)
- Projected increase in the number of older adults needing addiction treatment

Courtesy of Dr. Elizabeth Howell, MD

Trends in long-term opioid analgesic use in the U.S. by gender and age, 1997-2005



Campbell et al., *AJPH* 100 (12): 2541-47, 2010

TREATMENT CONSIDERATIONS

- Adverse drug events
 - Polypharmacy
 - Adults >65 prescribed the most medications
 - >40% on more than 5 medications
 - Deliriogenic medications
- Medical co-morbidities
- Decreased ability to eliminate medications

CO-MORBIDITIES INCREASE WITH AGE

Data from Cicero 2012:

- 2,573 opioid-dependent patients entering treatment in US from 2008 to 2010 aged from 18-75
- Moderate to very severe pain and psychiatric disorders, including poly-substance abuse, were present in a significant fraction of 18–24 year olds
- Severity grew exponentially as a function of age: 75% of those over 45 had debilitating pain and psychiatric problems. Women had more pain than men and much worse psychiatric issues in all age groups.

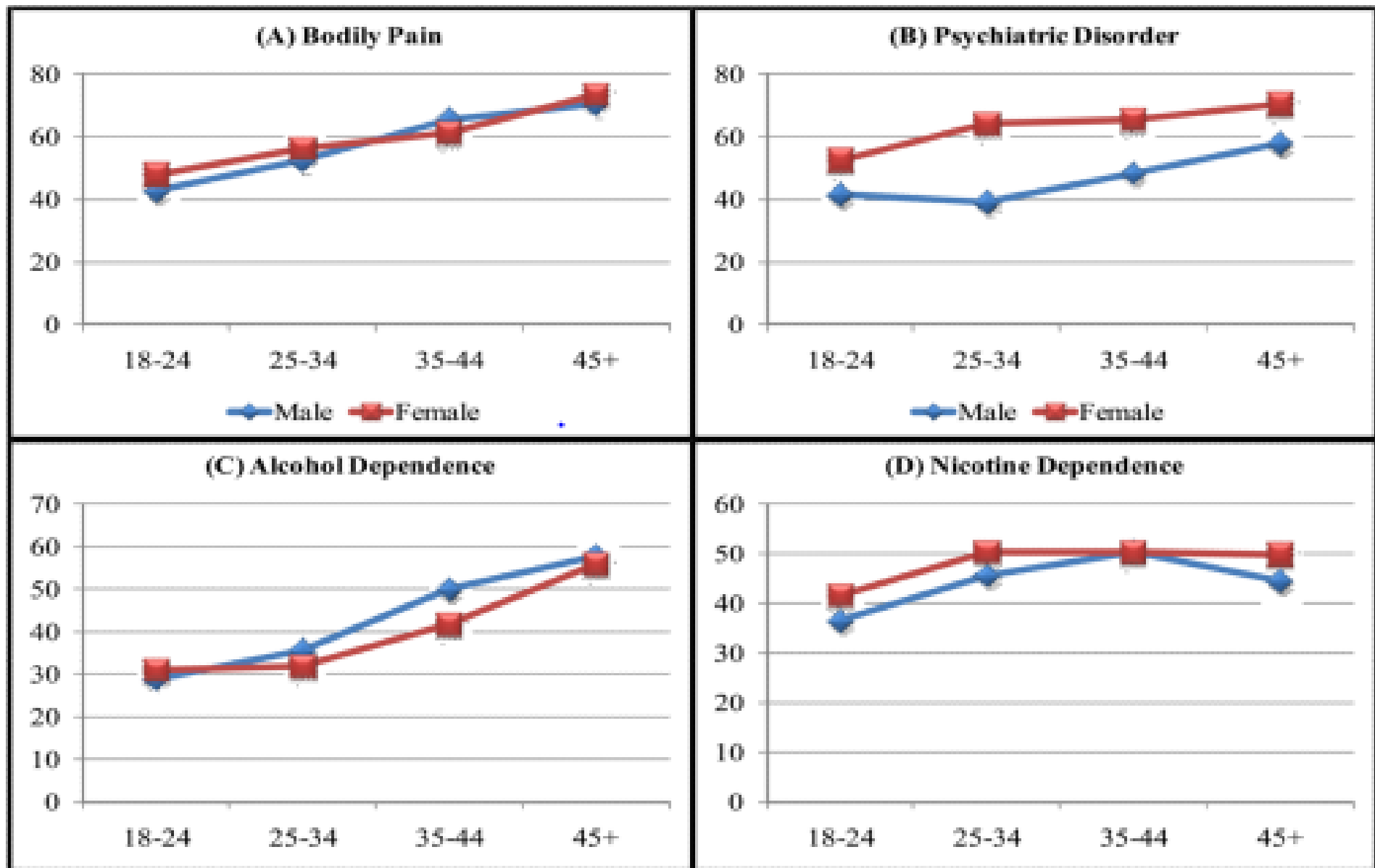


Figure 3. The percent of male and female patients of various ages with co-morbid bodily pain, psychiatric disorders, alcoholism and nicotine dependence

PHARMACOKINETICS IN OLDER ADULTS

- Reduced metabolism
- Reduced renal excretion
- Altered GI absorption (small bowel surface area, slowed gastric emptying, increase gastric pH)
 - Further changes with patients on PPIs or antacids
- Altered distribution
 - Increased body fat- increased distribution of lipophilic medications/drugs
 - Decreased total body water (10-15%)
 - Decrease in total body mass
 - Decreased serum albumin → increased levels of unbound medication

PHARMACOKINETICS IN OLDER ADULTS

- Reduced hepatic mass
- Decreased CYP450 enzyme activity by 30-40%
- First pass metabolism decreases->higher levels of circulating drug
 - Ex: increased bioavailability of morphine due to high first-pass extraction
- Reduced Creatinine Clearance with age
 - For >30 CrCl, there is a decrease by 8ml/1.73cm every 10 years

ALCOHOL USE DISORDER (AUD)

- Most commonly used substance in the aging population
 - Responsible for the most referrals to SUD treatment
- Several age related physiologic changes increase blood alcohol
- Drinking >65 associated with:
 - Increase in falls, fractures (hip), traffic accidents, depression, acceleration of aging and cognitive decline
- NIAAA recommendations:
 - No more than 1 std drink per day for men and women over age 65
 - Binge for men is >3 drinks, >2 for women

ALCOHOL USE DISORDER (AUD)

- Increasing prevalence:
- JAMA Psychiatry 2017 (Grant et al).: From 2001-2002 to 2012-2013 reviewed data from the National Epidemiologic Survey I (n=43,000) and NESARC III (n=36,000), face-face interviews
- Found the following % INCREASES
 - 12 month alcohol use 11.2% overall, **22.4% age >65**
 - High risk drinking 29.9%, **65.2% age >65**
 - Alcohol Use Disorder 49.4% overall, **106.7% age>65**
- Greatest increases among **older adults**, women, racial/ethnic minorities, lower educational level, lower family income

REASONS FOR INCREASE/DECREASE IN DRINKING

- Increased drinking associated with:
 - More social occasions
 - Less responsibilities
 - Stress/depression esp in women
- Decreased drinking associated with:
 - Fewer social occasions
 - Health precautions
 - Medical illness

Data from Britton et al. 2015

PHARMACOLOGIC TREATMENTS IN AUD

- **Naltrexone**-few studies in this population. One study in patients aged 50-70 with AUD, showed to prevent relapse.
- MOA: Mu opioid receptor antagonist
- Dosing 25-50mg daily
- It is the most studied MAT in older adults (with exception of methadone)
- Effective in decreasing relapse to heavy drinking, helpful for cravings
- Obtain baseline LFTS, monitor q3-6 months
- Can be prescribed in compensated cirrhosis if benefits outweigh cost
 - Do not Rx if acute liver failure, decompensated cirrhosis

Data from Britton et al. 2015

PHARMACOLOGIC TREATMENTS IN AUD

- **Acamprosate**
- MOA: modulates glutamatergic activity
- Dosing 666mg TID
 - Reduce to 333mg TID if CrCl 30-50 ml/min
 - Discontinue if CrCl <30
- Renally excreted
- Limited data in older adults
- Most helpful in maintaining abstinence, not promoting

Data from Britton et al. 2015

PHARMACOLOGIC TREATMENTS IN AUD

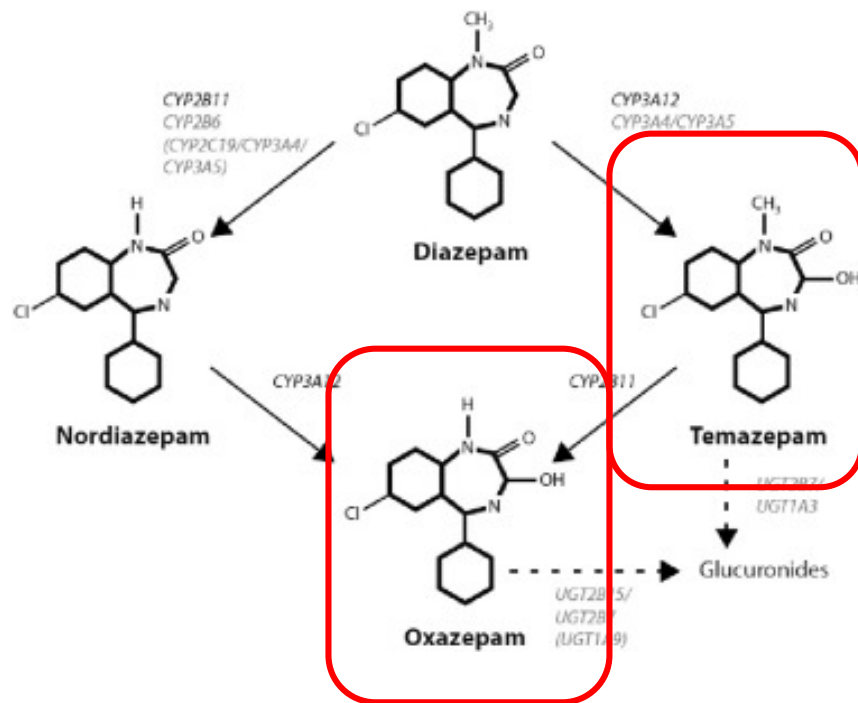
- **Disulfiram (Antabuse)**
 - Inhibits aldehyde dehydrogenase → acetaldehyde
 - Use with caution in aging adults
 - Hepatotoxicity, peripheral neuropathy
 - Recommend low dosing 125mg-250mg
- **Topiramate**
 - Not generally advised in older populations given cognitive impairment and appetite suppression
 - Must be renally dosed if CrCl <70
- **Gabapentin**
 - Risk for sedation, falls
 - Dose ranges 1200-1800mg for cravings, withdrawal and promoting abstinence, not studied in aging adults
 - Renal excretions, Reduce dose for CrCl <60

Data from Britton et al. 2015

PK/PD OF BENZOS

Hepatic Metabolism

- **Phase 1:** Involves the CYP enzymes
- **Phase 2:** Conjugation (UGT enzymes)



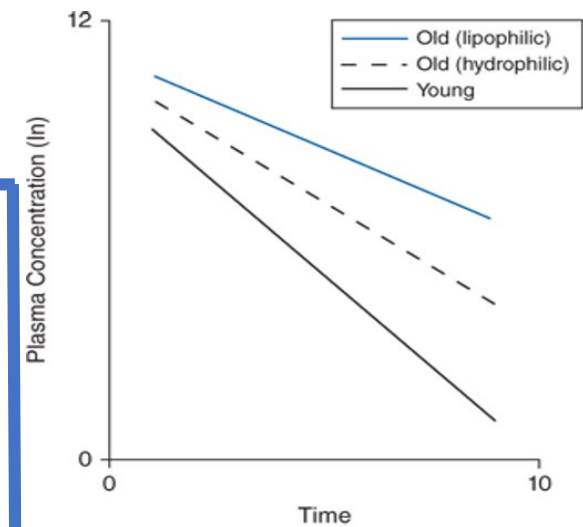
Drug	Relative Potency	Onset	Equivalent Dose	Metabolism	Half-life
Alprazolam	HIGH	1-2 hrs	0.5	CYP3A4	26 hours
Chlordiazepoxide	LOW	0.5-2 hrs	10-25	Multiple Hepatic Enzymes	48 hours
Clonazepam	HIGH	20-40 min	0.25	CYP3A4	60 hours
Diazepam	MED	15-30 min	5	CYP3A4	24+ hrs
Lorazepam	HIGH	20-30 min	1	Conjugated	10-20 hrs
Oxazepam	LOW	3 hrs	15	Conjugated	8 hours
Temazepam	LOW	~1 hr	10-30	Conjugated	4-18 hrs
Triazolam	HIGH	~1 hr	0.25	CYP3A4	5 hrs

Elderly Mature Kinetics

Vd: Volume of distribution; a measure of the space in the body available to contain a medication

Clearance: measure of the body's ability to eliminate a medication from circulation

	Δ in Elderly	Effect on Kinetics
Fat (% of body weight)	↑ by 30%	↑ Vd for meds distributing to fat
Intracellular water (% of body weight)	↓ by 30%	↓ Vd for water soluble meds
Muscle (% of body weight)	↓ by 12%	↓ Vd for meds distributing into lean tissue
Liver	↓ Size ↓ Hepatic blood flow	↓ Phase 1 metabolism Phase 2 remains normal
Kidney	↓ Renal blood flow ↓ GFR ↓ Tubular secretion	↑ Accumulation ↓ Clearance ↑ Drug-drug interaction



Source: Douglas E. Rollins, Donald K. Blumenthal: Workbook and Casebook for Goodman and Gilman's The Pharmacological Basis of Therapeutics, www.accesspharmacy.com Copyright © McGraw-Hill Education. All rights reserved.

Lead to an increase in BZD half-life

OPIOID USE DISORDER IN AGING ADULTS

- No studies of MAT specifically in older adults
- Same pharmacokinetic/pharmacodynamic considerations as with alcohol, benzodiazepine addiction
- More co-morbid chronic pain, depression, cognitive impairment with age
- Older adults less likely to abuse prescription opioids, but more likely to have polypharmacy
- Screening for co-morbid depression, anxiety, PTSD
- High risk social factors: estrangement from family, lack of financial support, homelessness, lack of transportation

OPIOID USE DISORDER IN AGING ADULTS

- Naltrexone: full Mu opioid antagonist
 - Patient should be highly motivated
 - Not requiring opioids for chronic pain
 - Caution with liver disease
 - Patient must be opioid free 7-10 days first, potentially longer given pharmacokinetic changes with age
- Buprenorphine (partial agonist) and methadone (full agonist)
 - Relatively equal efficacy in OUD
 - Some analgesic effect
 - Caution with prolonged QT (methadone)
 - Caution with constipation, urine retention
 - Caution with polypharmacy

RESOURCES

Principles of Addiction Medicine, 5th edition, 2014. Ries RK, et al, eds.

- Chapter 36 Treatment of Older Adults

Lowinson and Ruiz's Substance Abuse: A Comprehensive Textbook, Fifth Edition, 2011. Ruiz P, Strain E, eds.

- Chapter 58. The Older Drug Abuser. Bennett W. Fletcher and Wilson M. Compton

Clinical Manual of Geriatric Psychiatry. Edited by Mugdha E. Thakur, M.D.; Dan G. Blazer, M.D., Ph.D.; David C. Steffens, M.D., M.H.S.

- Chapter 9. Alcohol and Drug Problems

Prescription Opioid Addiction and Chronic Pain in Older Adults, 2014. Maria A. Sullivan, MD, PhD, Associate Professor of Clinical Psychiatry, Division on Substance Abuse, Columbia University/New York State Psychiatric Institute.

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