



# Geriatric Medicine

Kierstyn Napier-  
Dovorany, OD, FAAO

Associate Professor

Western University of  
Health Sciences,  
College of Optometry

# Learning Objectives

- List demographics the older population
- Describe chronic diseases and top causes of death in the older population
- Outline medical considerations specific for the older population
- Describe strategies an optometrist can utilize in care of the older population

# How old is “old”?

- Depends who you are talking to
- Usually considered age 65+
  - Sometimes age 50+
- “Young Old”  $\approx$  65-79
- “Oldest Old”  $\approx$  80+
- “Frail elderly”  $\approx$  65+ with decreased ability to recover from a stressor event

# *Age* is in the eye of the beholder



# The older population today

- 46.2 million = 14.5% of total pop (2014)
  - 72,197 people >100 (2014)
- Increased by 28% in the prior 10 years
- Almost 12% of the worlds population is over age 60
- 2/3 of the worlds older population resides in developing countries
- Expected to double by 2060

A Profile of Older Americans: 2015 by Administration on Aging, US DHHS

# Life expectancy

- Current life expectancy = 78.8 years\*
- BUT, if you reach 65 years, it's expected that you'll live another 20 years +/- \*\*
- The Oldest Old (85+) are the fastest growing segment of the overall population

# Age and Gender

- Older woman outnumber men by 6 million
- Sex ratios
  - Birth: 95 girls for every 100 boys
  - Age 65+: 135 woman for every 100 men
  - *Age 85+: 216 woman for every 100 men*
- **WOMEN OUTLIVE MEN**

US Census 2010



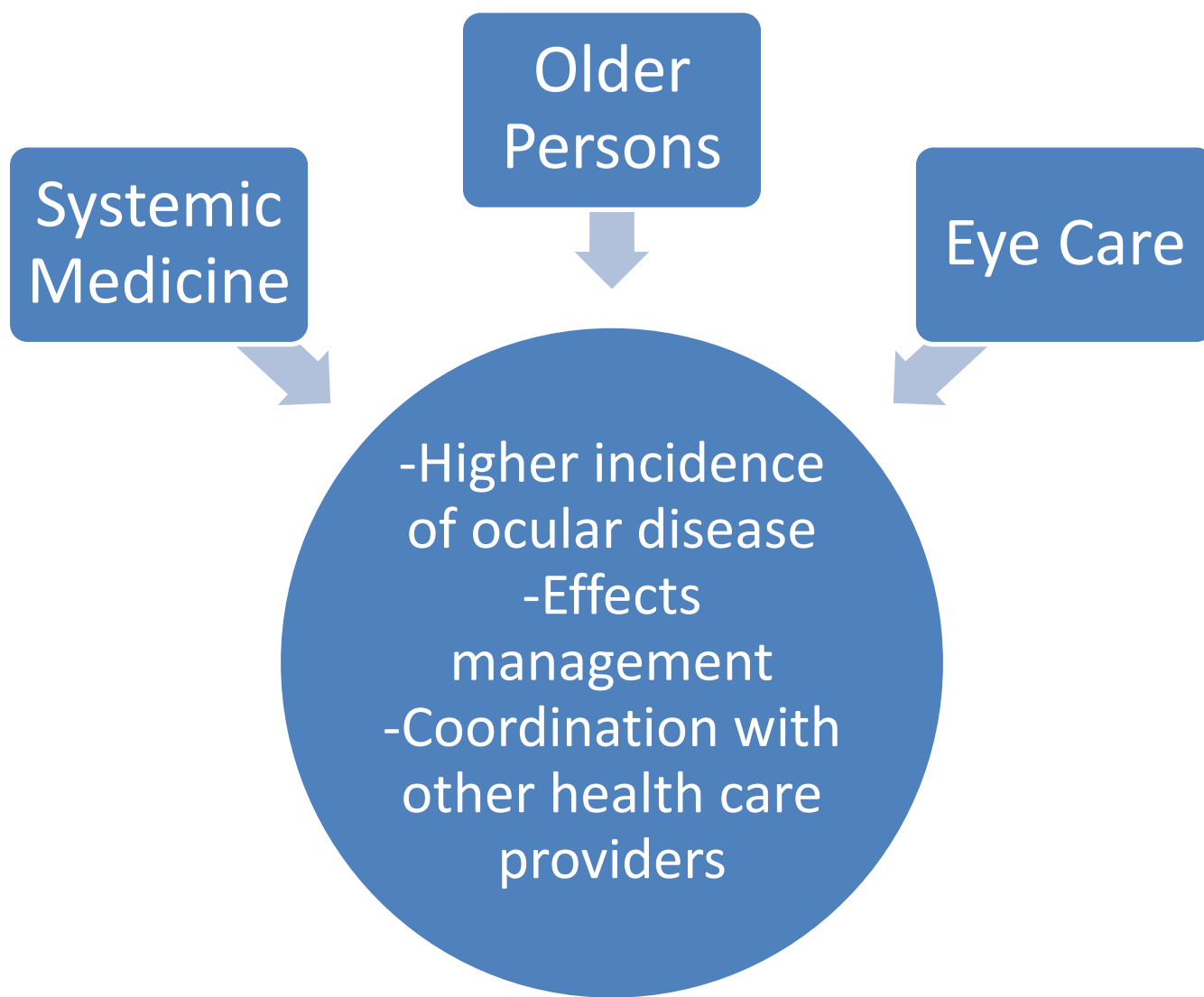
# Socioeconomics

- Median income of 65+ in 2010 was
  - Male: \$31,169
  - Female: \$17,375
- 84% collect Social Security
  - Assets 51%
  - Private pension 27%
  - Govt employee pension 14%
  - Earnings 28%
- Almost 4.5 million elderly were below poverty level (10%)
  - 2015 Poverty level for 1 person: \$11,670\*\*

A Profile of Older Americans: 2015 by Administration on Aging, US DHHS

\*\*Office of the Assistant Secretary for Planning and Evaluation US DHHS





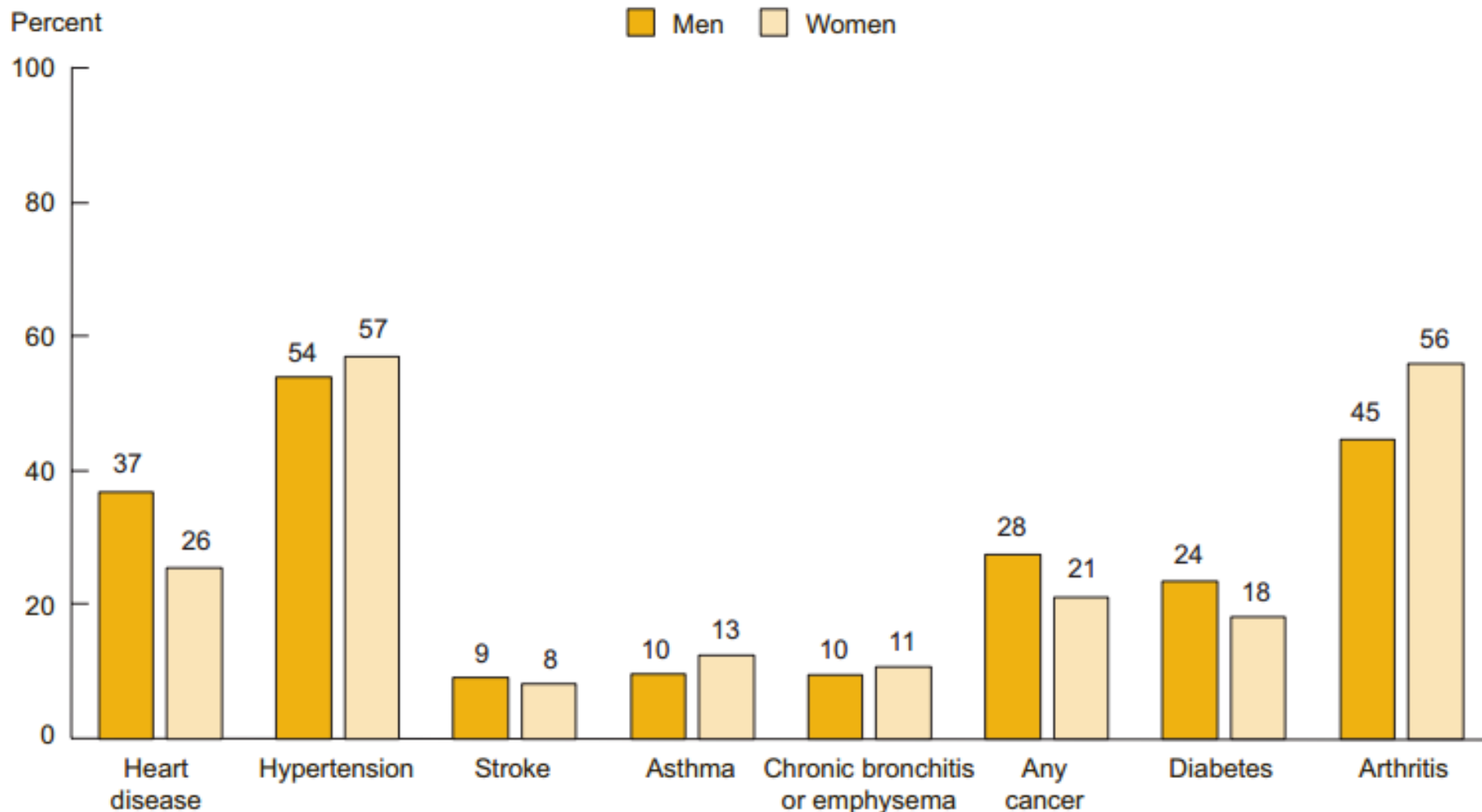
27% of all physician visits are for people age 65+\*

\*The National Ambulatory Medical Care Survey 2012

# Health Status

- Decline in body functions-age 30  
→deteriorates 1% per year
- Acute diseases in the elderly are treatable
- Chronic disease is most common in the elderly
- Chronic disease causes more problems

## Percentage of people age 65 and over who reported having selected chronic health conditions, by sex, 2009–2010



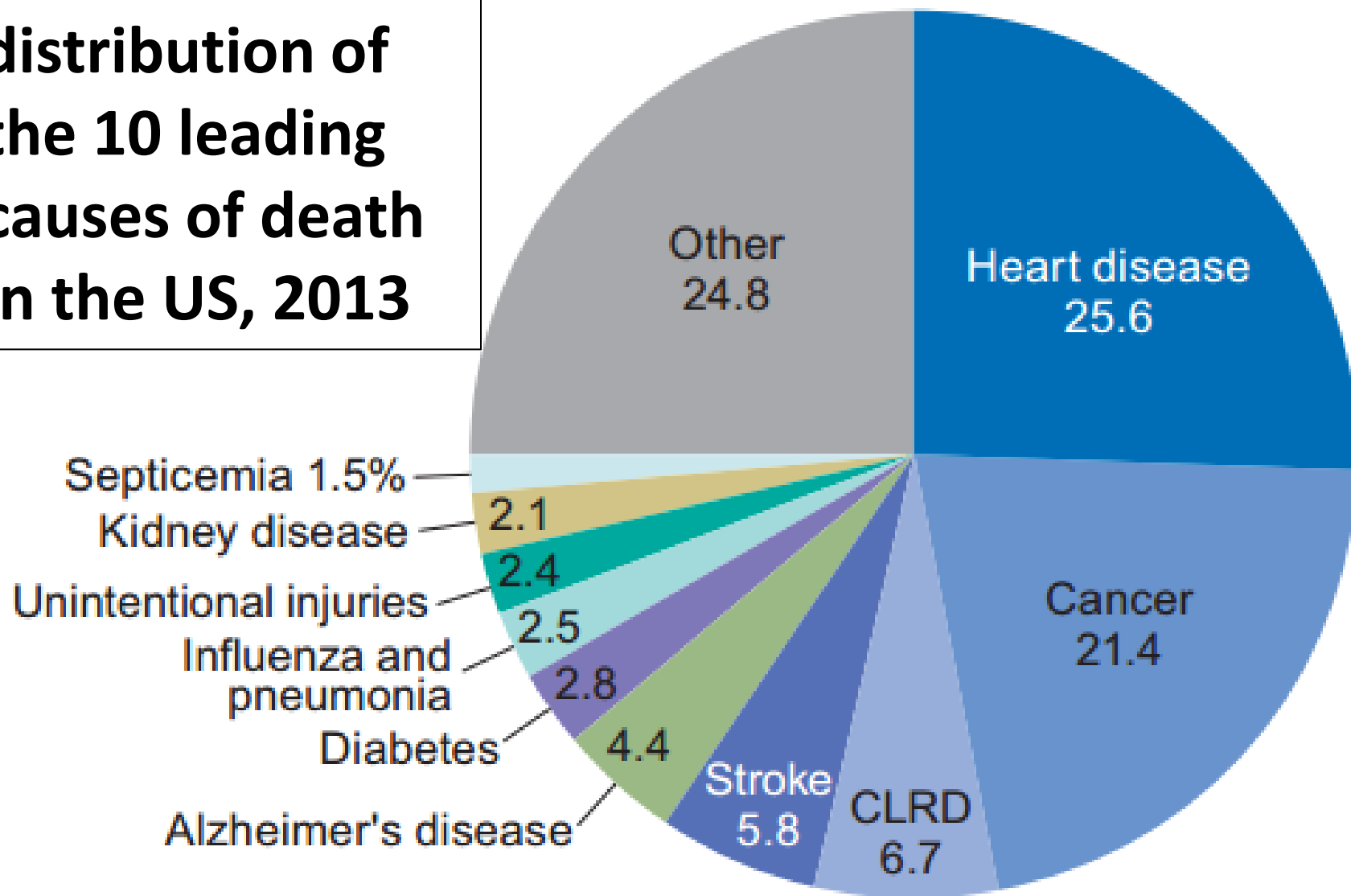
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SOURCE: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey.

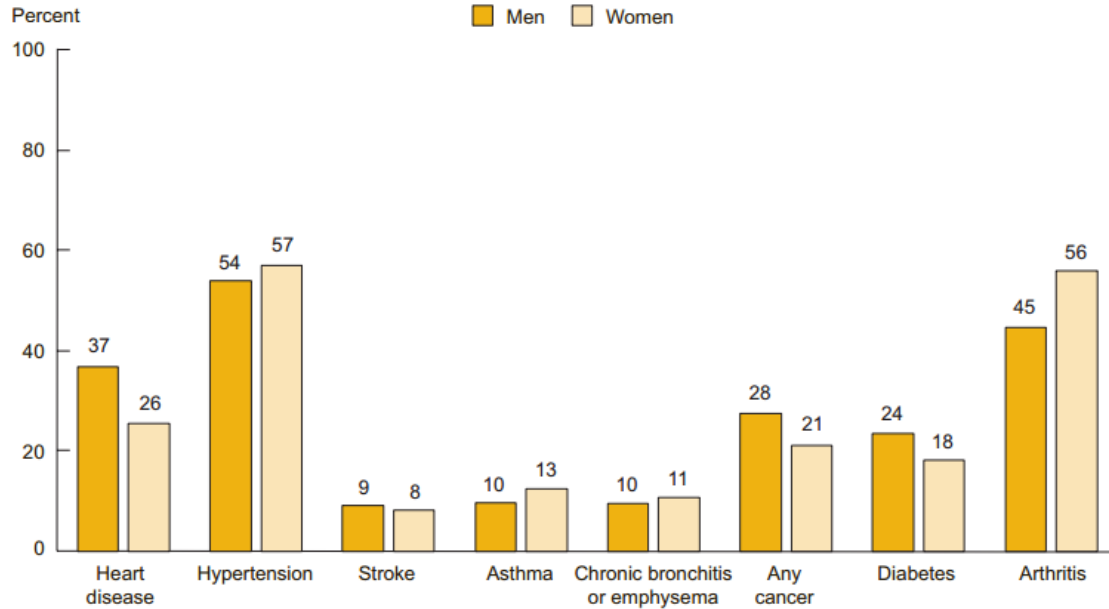
# Percent distribution of the 10 leading causes of death in the US, 2013

Ages 65 and over



NOTES: CLRD is Chronic lower respiratory diseases. HIV is Human immunodeficiency virus. Values show percentage of total deaths.  
SOURCE: CDC/NCHS, National Vital Statistics System, Mortality.

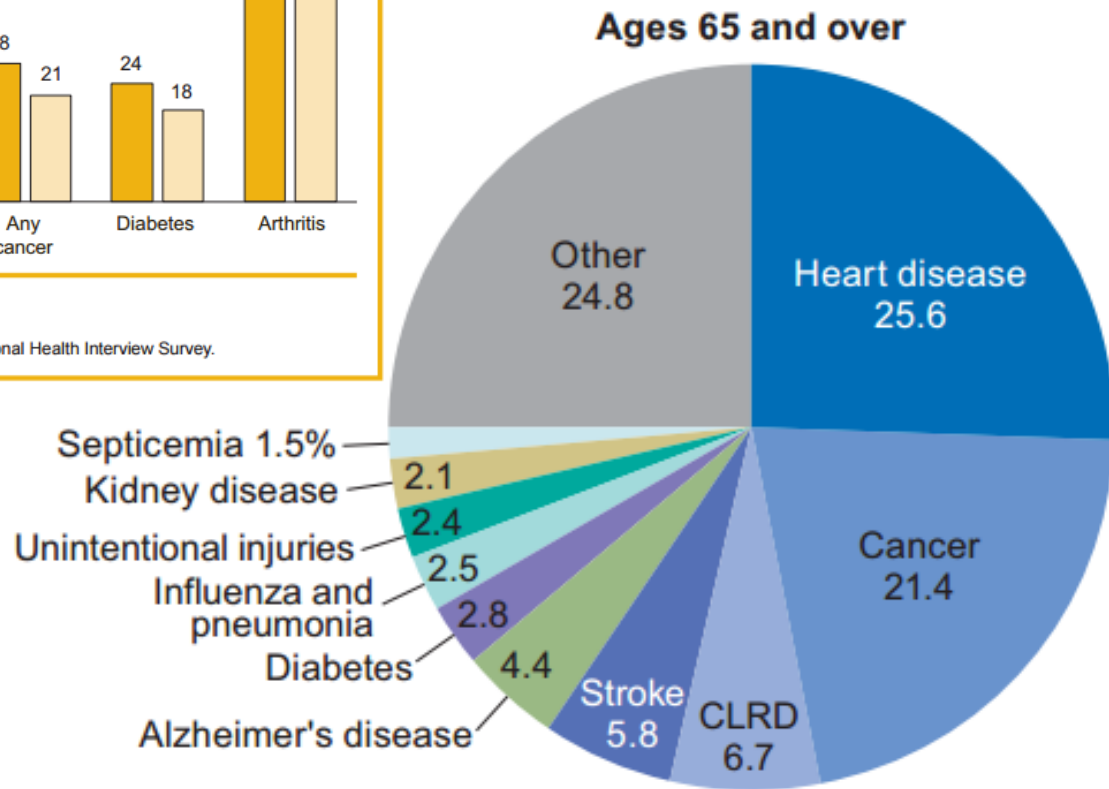
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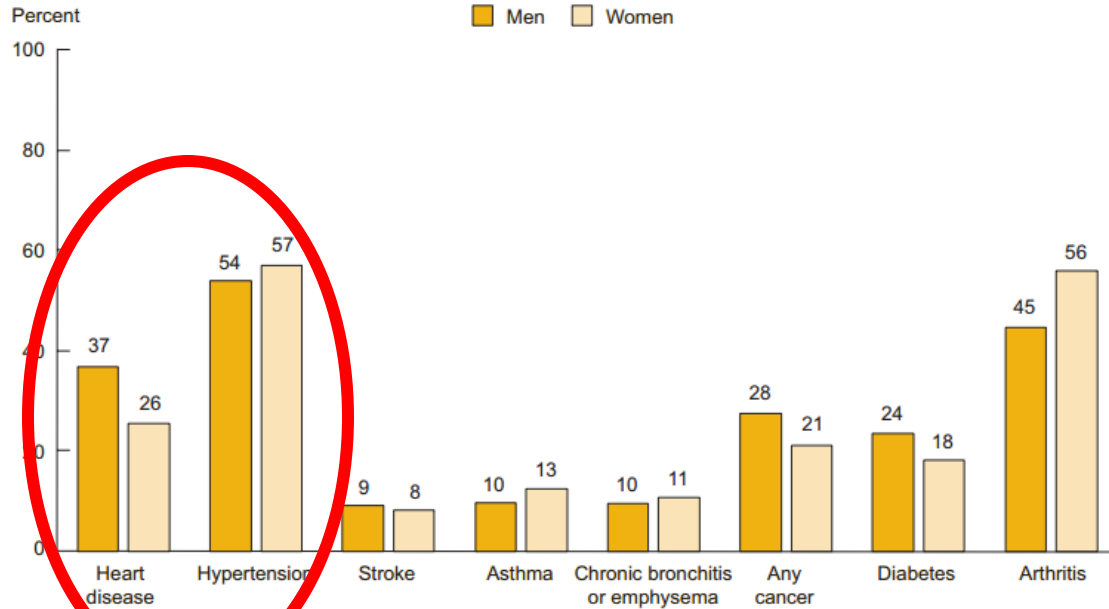
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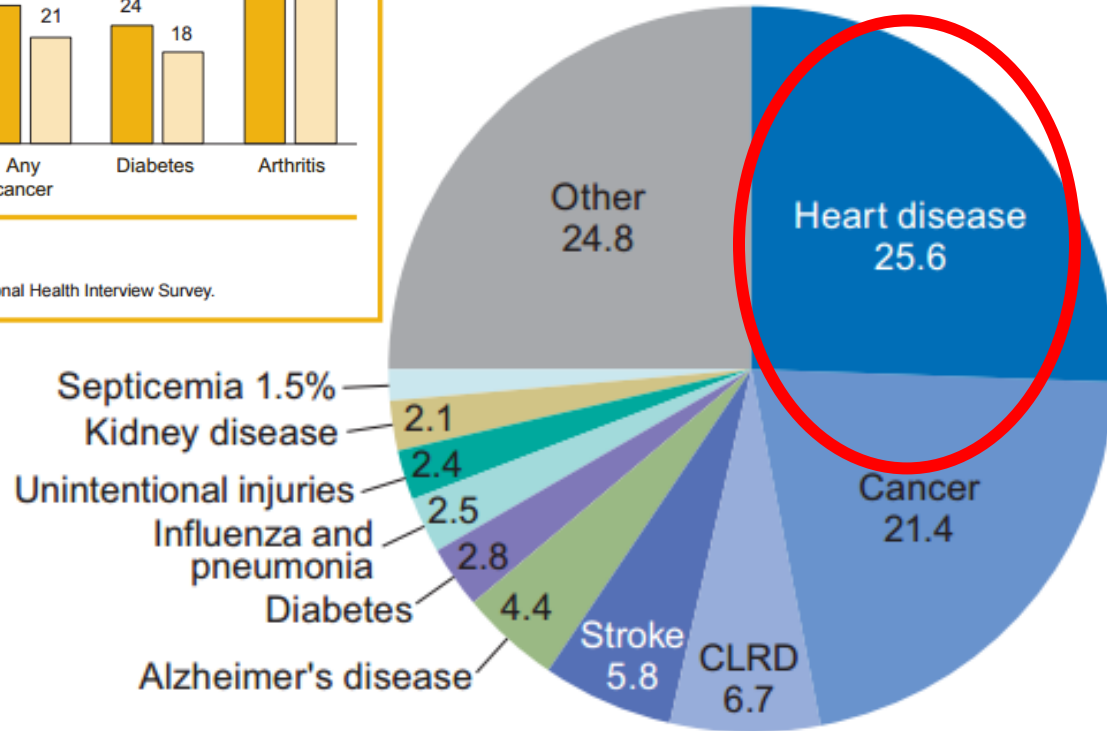


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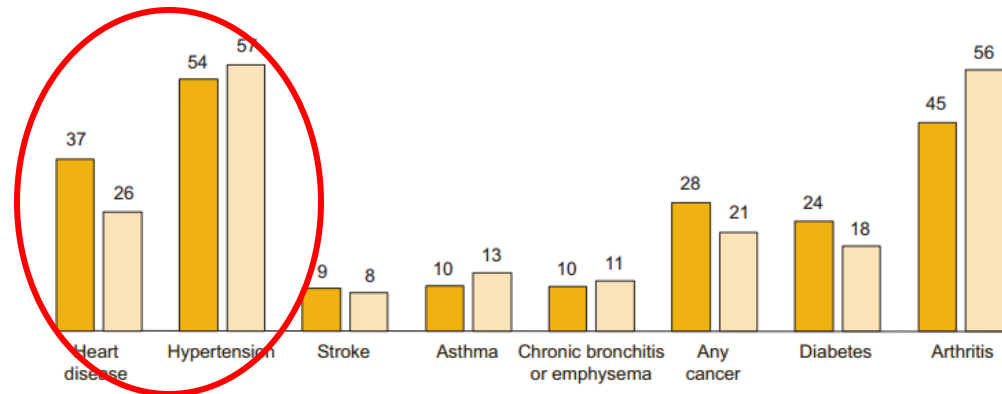
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**Ages 65 and over**

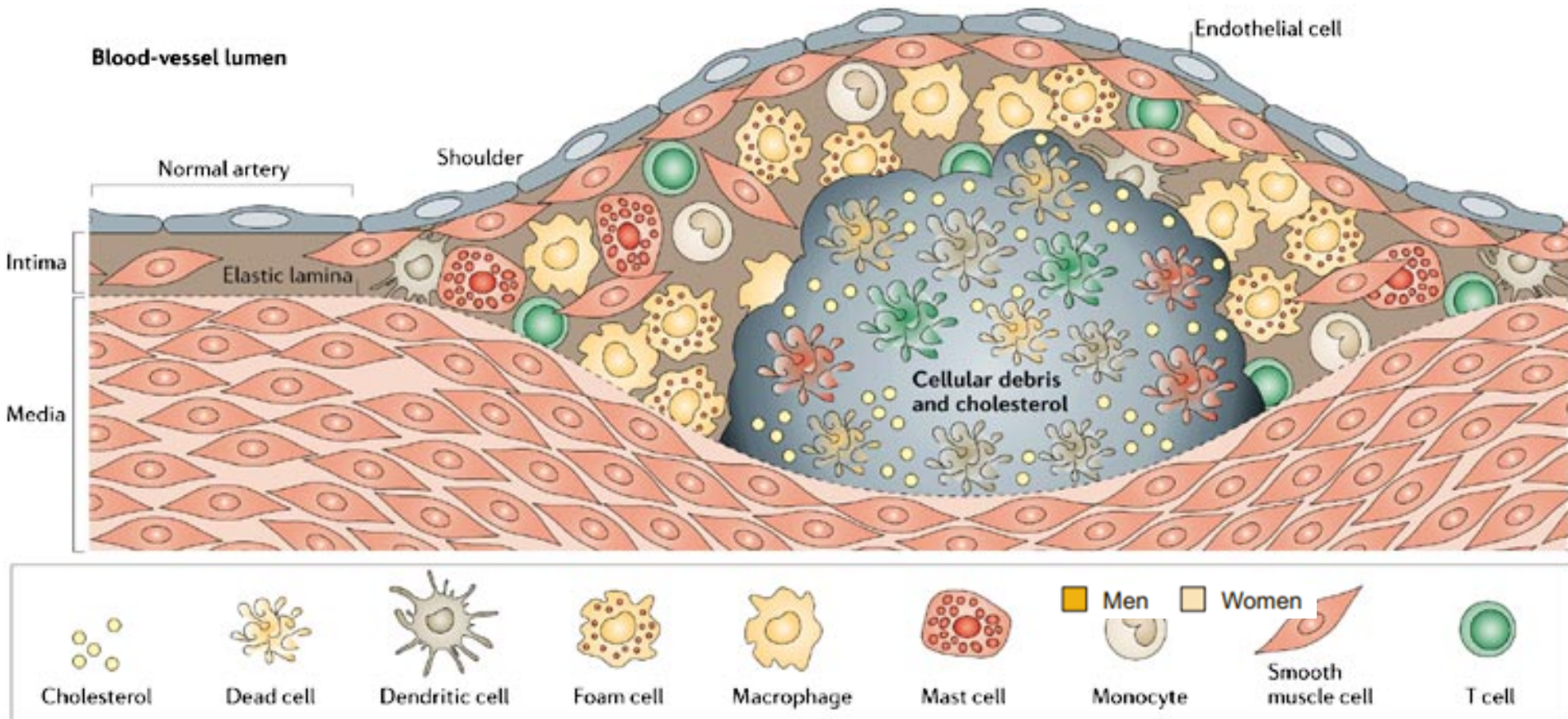


# Cardiovascular Disease

- Leading cause of death in the US
- Risk factors:
  - **Atherosclerosis**
  - **Primary hypertension**
  - Also: **smoking, obesity, family history, diabetes, high cholesterol**
- Asymptomatic
- Affect other systems



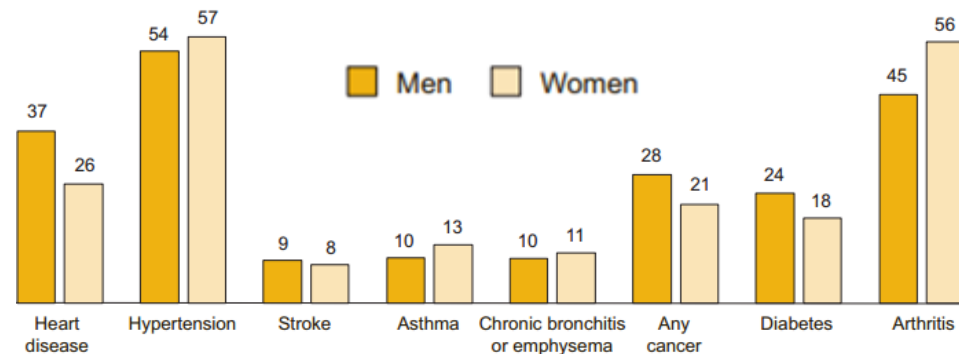
# Atherosclerosis





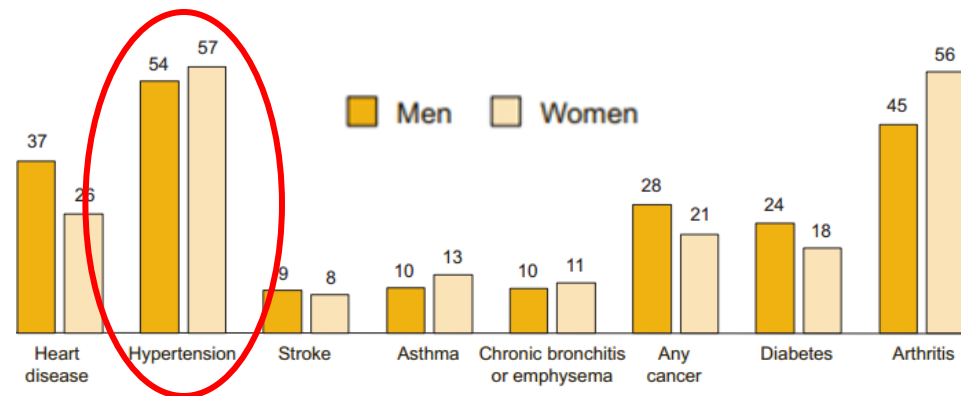
# Atherosclerosis-Treatment

- STATINS
  - Decrease cholesterol
  - Improve endothelial lining
- Improve diet
  - Weight management
  - Increase antioxidants
- Exercise (weight management)
- Smoking cessation
- Hypertension management
- Diabetes management
- (Infection management)



# Essential Hypertension

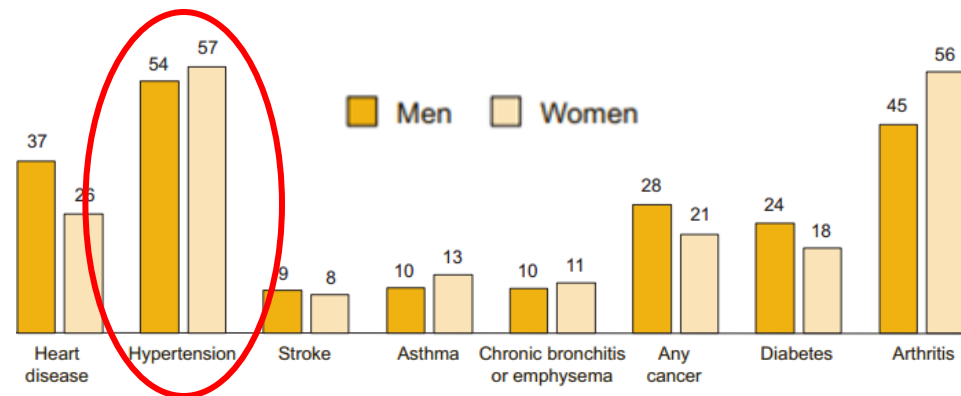
- Up to 2/3 of the older adult population
- JNC 8 (2014) definitions and recommendations differ for older adults
  - 150/90 mm Hg or higher in adults 60 years and older



James PA, Oparil S, Carter BL, et al. 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Panel Members Appointed to the Eighth Joint National Committee (JNC 8). JAMA. 2014;311(5):507-520. doi:10.1001/jama.2013.284427.

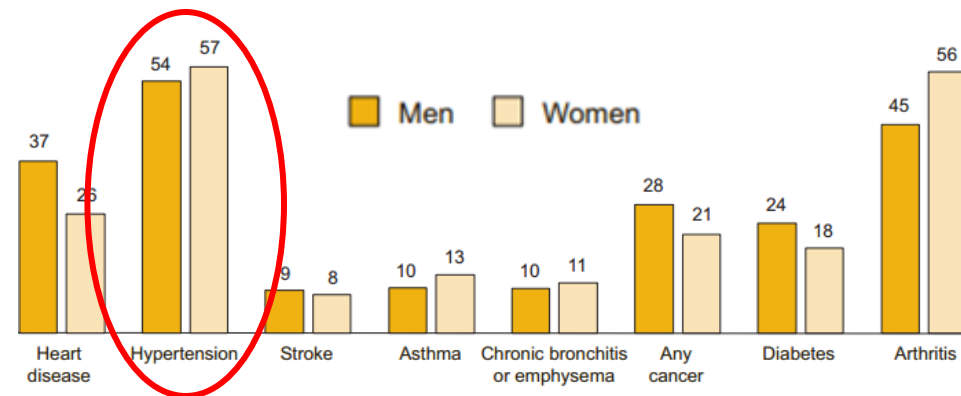
# Essential Hypertension-Diagnosis

- Average of two or more properly measured readings **after an initial screening**
  - Prehypertension: systolic 120 to 139 mmHg or diastolic 80 to 89 mmHg
  - Stage 1: systolic 140 to 159 mmHg or diastolic 90 to 99 mmHg; **150/90 in adults >60 years**
  - Stage 2: systolic  $\geq 160$  mmHg or diastolic  $\geq 100$  mmHg
  - Repeated home blood pressure readings that average  $\geq 135/85$  mmHg



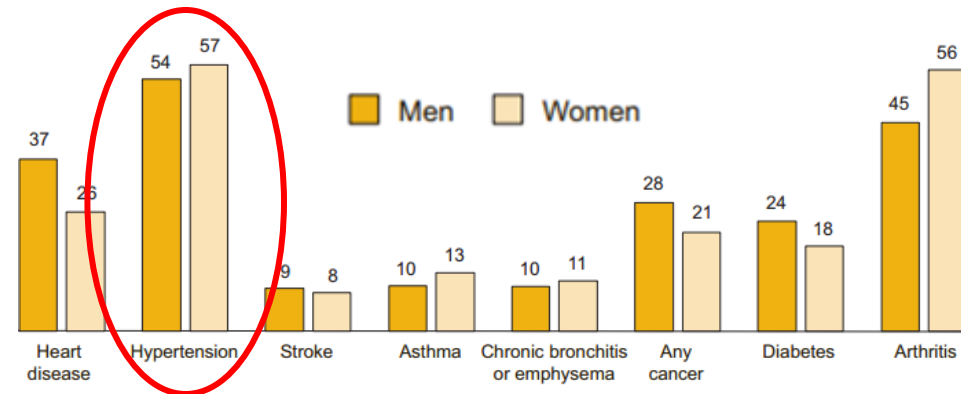
# Essential Hypertension-Treatment

- Lifestyle
  - Diet (salt restriction)
  - Weight loss
- Medication
  - Consider lower initial doses
  - Normal aging changes
  - Consider frailty



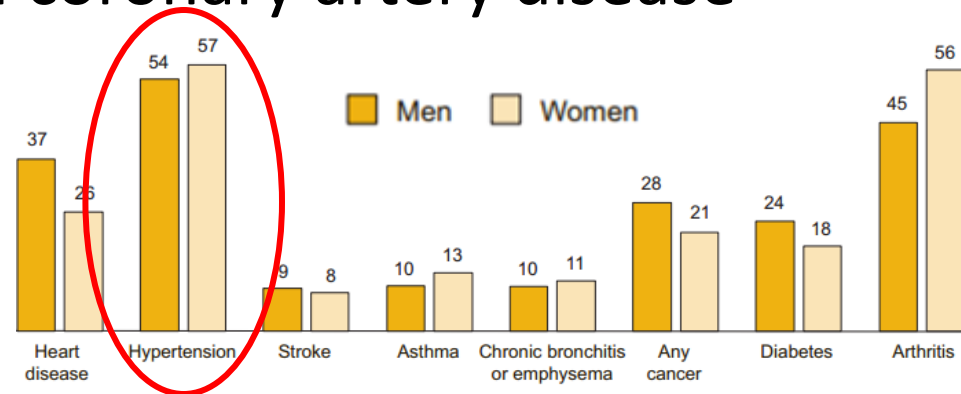
# Essential Hypertension-Treatment

- Consider drugs with other affects
  - ACE inhibitors/ARB –
  - Beta-blocker-block sympathetic effects on heart
- Ca channel blockers-vasodilation “-dipine”
  - Nifedipine/procardia, amlodipine/norvasc, diltiazem, verapamil
  - Treat angina, afib; favorable for osteoporosis
- Thiazide diuretics-decrease blood volume
  - Hydrochlorothiazide
- ACE inhibitors-inhibit vasoconstriction- “-pril”
  - Captopril, lisinopril, enalapril
  - Treat heart failure
- Angiotensin II receptor blockers (ARBs)-inhibit vasoconstriction “-sartan”
  - Losartan/cozaar
  - Treat heart failure
- Beta blockers
  - Treat heart failure, angina, afib; favorable for hyperthyroid, migraine
- Alpha blockers
  - Favorable for BPH

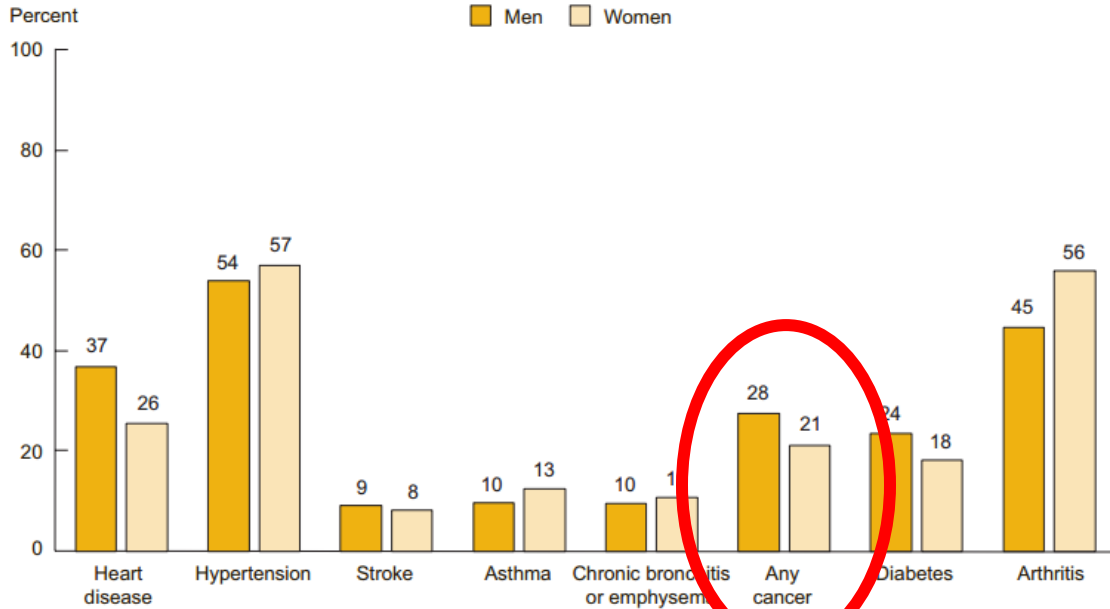


# Essential Hypertension - Considerations for the elderly

- BP shouldn't get too low or decrease too aggressively
  - Need to perfuse organs
  - Consider symptoms
  - Assess for orthostatic hypotension
  - Maintain treated diastolic pressure >60mmHG, >65mmHg with known coronary artery disease

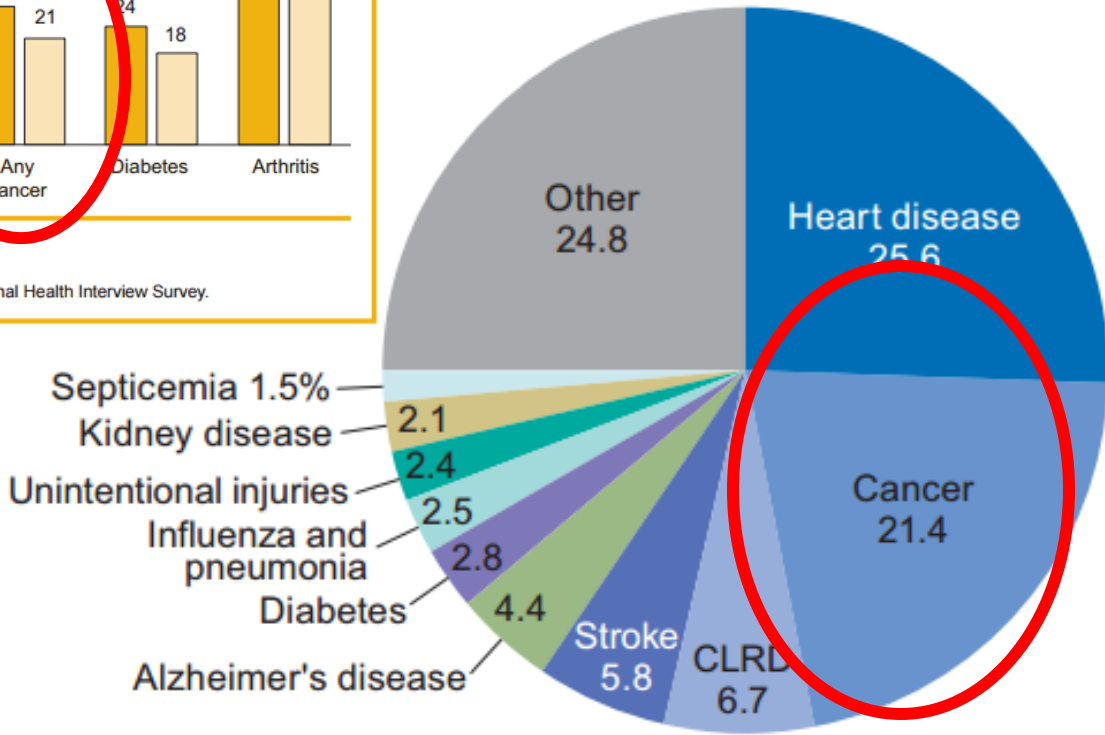


**Percentage of people age 65 and over who reported having selected chronic health conditions, by sex, 2009–2010**



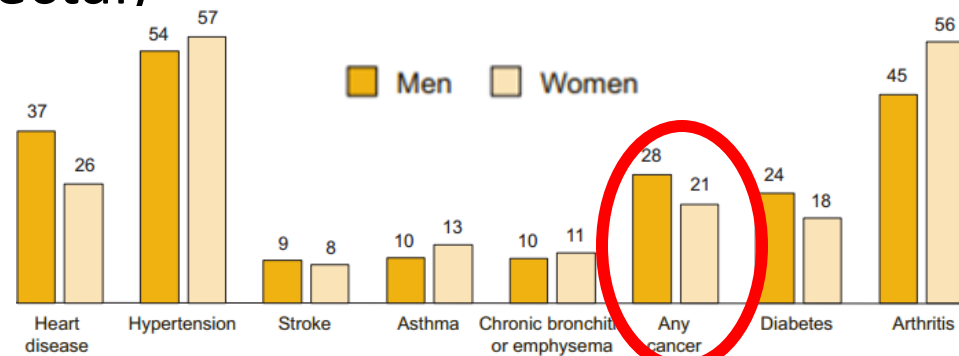
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**Ages 65 and over**



# Cancer

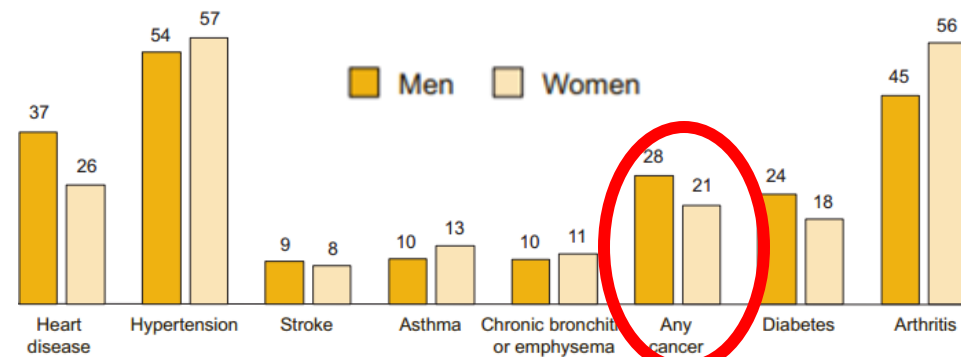
- 2/3 occur in adults >65 years
- Most common: lung (2/3), breast, prostate, colorectal
- Risk factors:
  - Smoking (lung, prostate, colorectal)
  - Obesity (breast, colorectal)
  - Diet (prostate, colorectal)
  - Physical inactivity (colorectal)
  - COPD (lung)



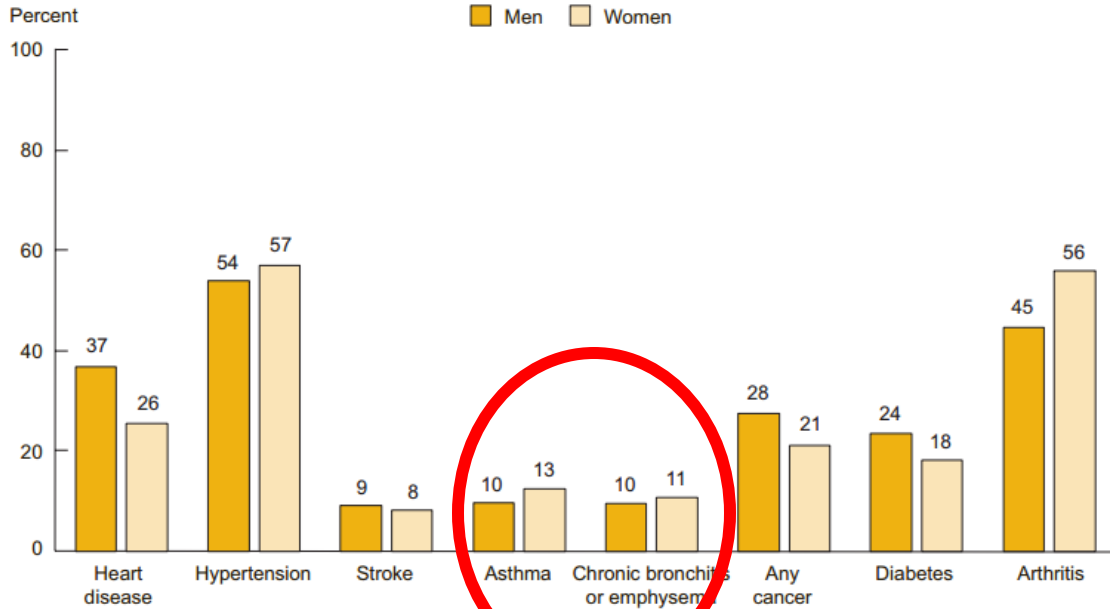


# Cancer

- Issues in the elderly:
  - Frailty
  - Estimated survival
  - Effects of treatment
  - Mental health
  - Pain control

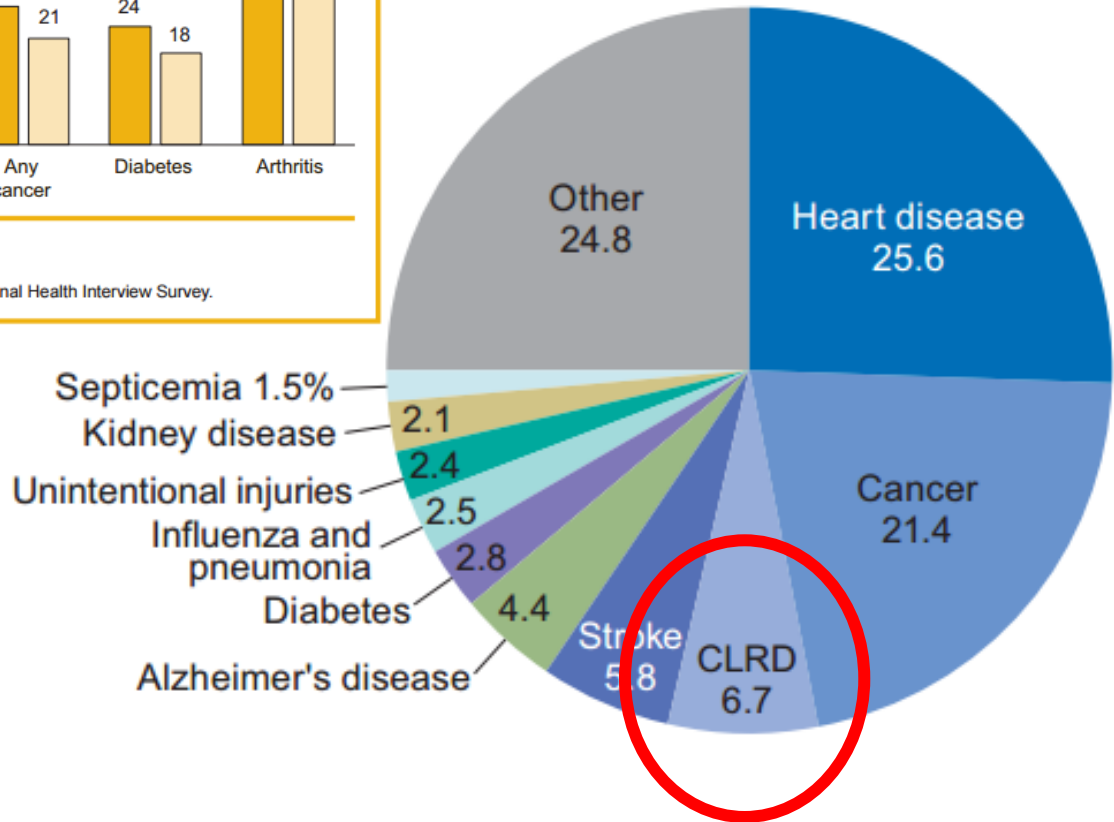


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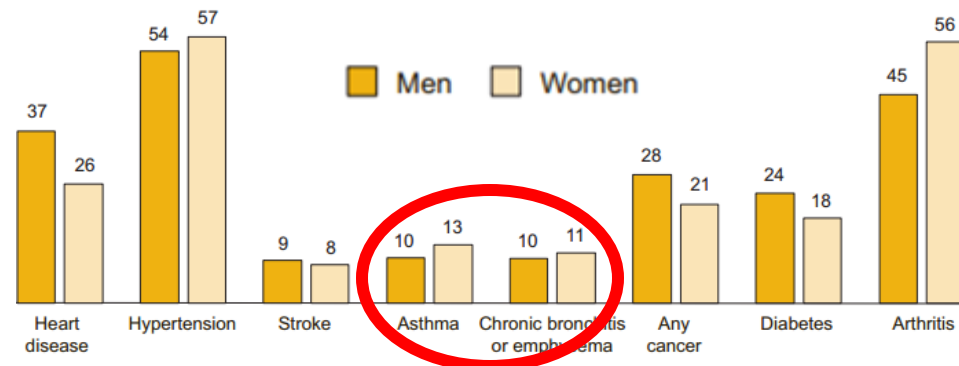
**Ages 65 and over**





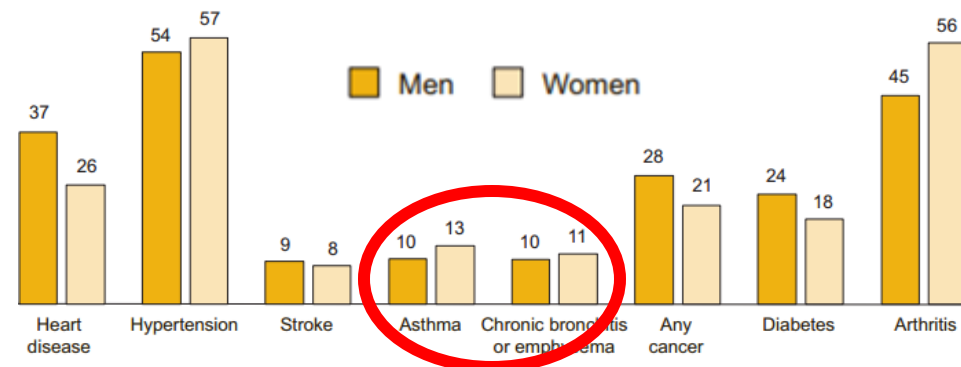
# Pulmonary Disease

- Risk factors/comorbid diseases:
  - Smoking
  - Inactivity
  - Lung cancer
  - Cardiovascular disease
  - Osteoporosis
  - Mental health problems
  - Diabetes

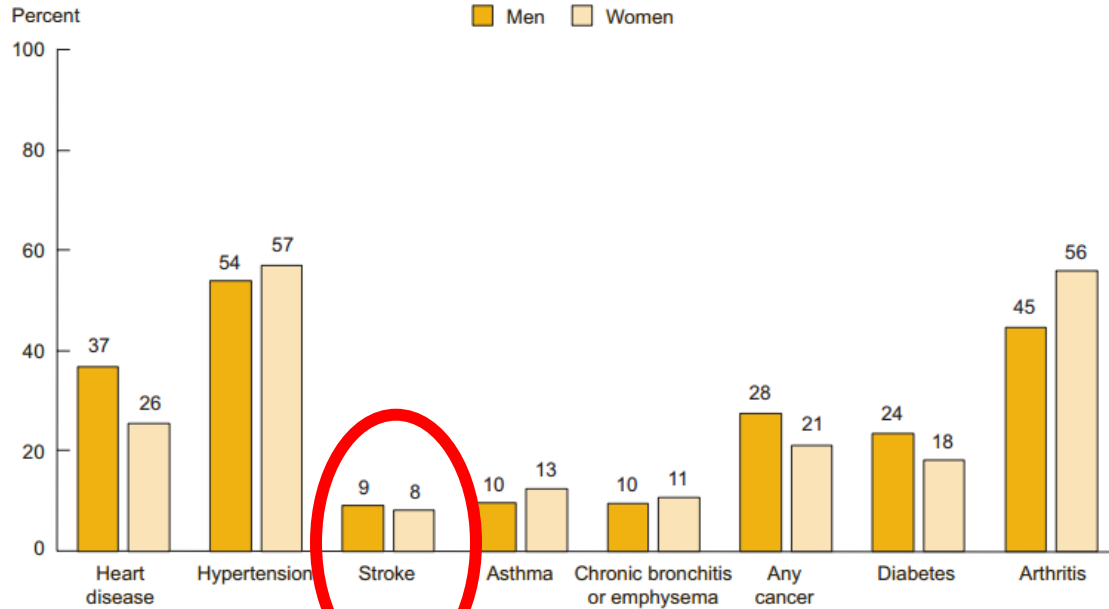


# Pulmonary Disease-Treatment

- Inhaled bronchodilators
  - Beta agonists
  - Anticholinergics
- Inhaled glucocorticoids
- *Oral theophylline*
- *Systemic/IV glucocorticoids*
- Oxygen
- Smoking cessation



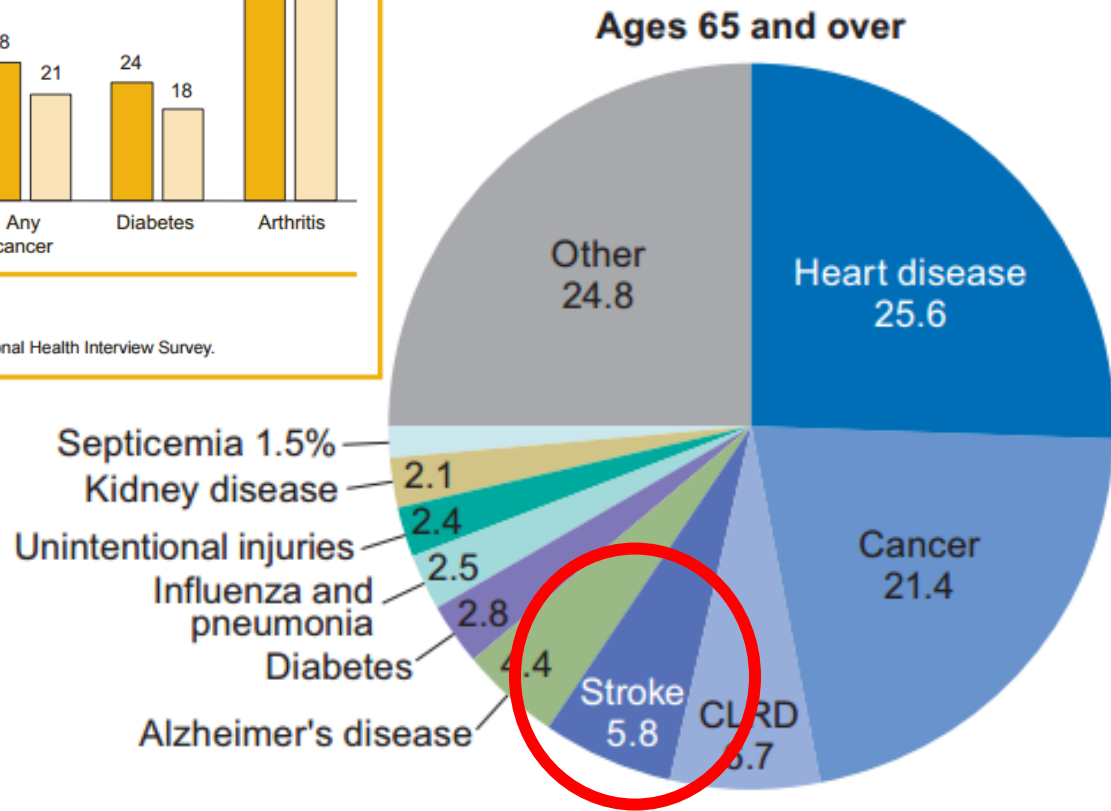
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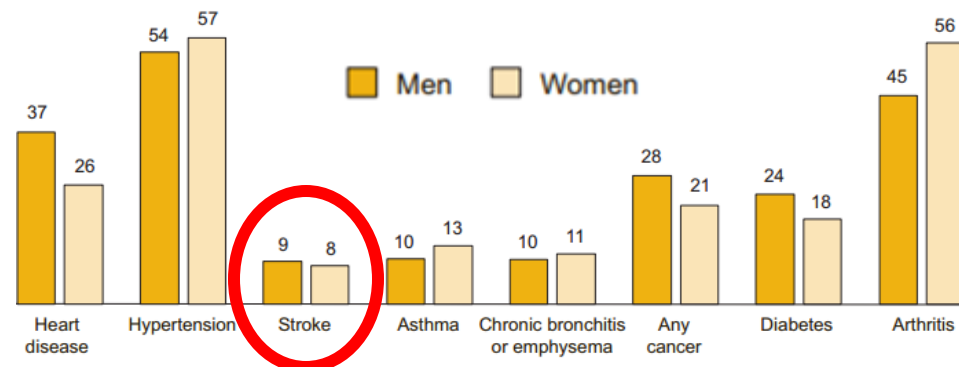
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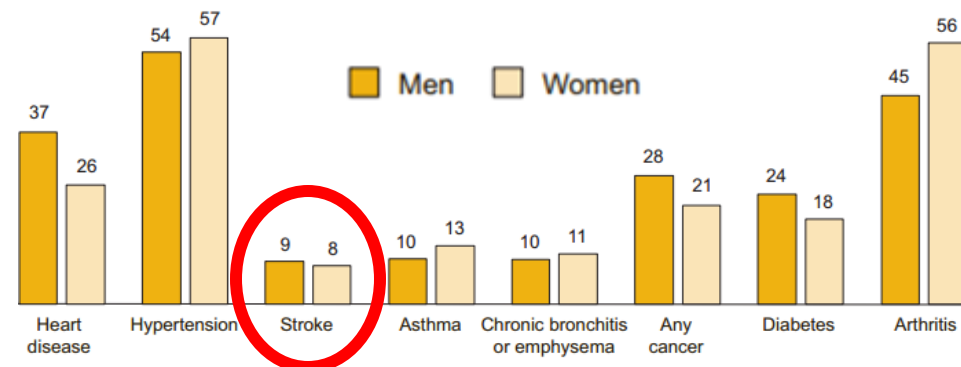
# Stroke

- Risk factors:
  - **Atherosclerosis**
  - **Primary hypertension**
  - Also: heart disease, diabetes, overweight, smoking, alcohol use, inactivity, family history
- Ischemic-68%
  - Atherosclerosis
- Hemorrhagic-32%
  - Hypertension



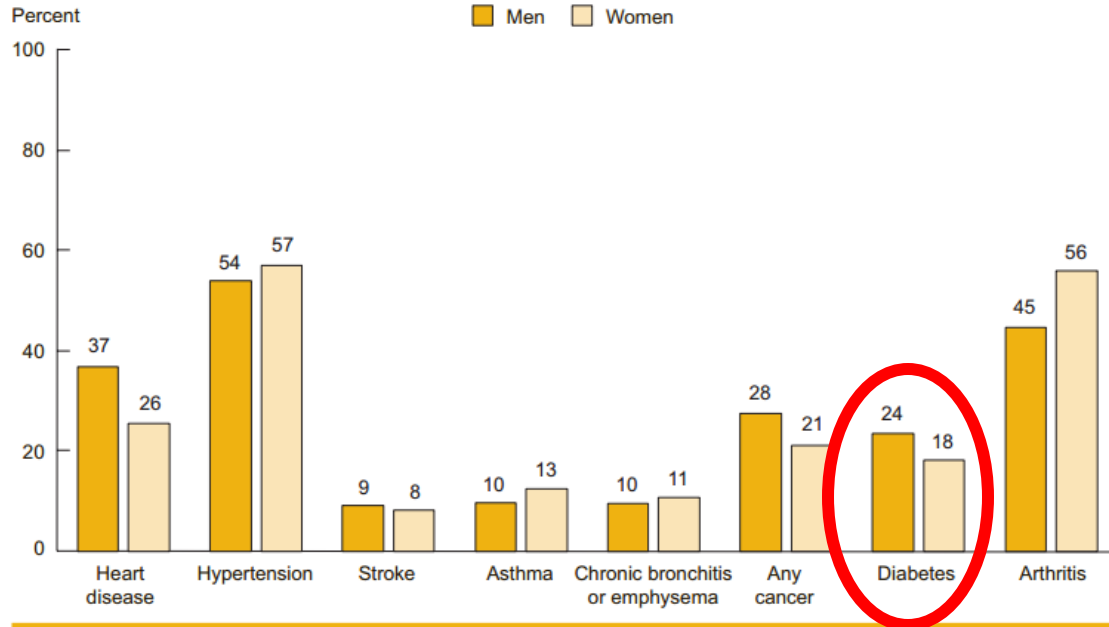
# Stroke-Treatment

- Treat underlying cause (HTN, atherosclerosis)
- Acute, within 3 hours-IV alteplase
- Discharge-antithrombotic therapy
  - ASA
  - Clopidogrel/Plavix
  - Dipyridamole/Persantine
- Smoking cessation
- Manage other conditions
- Weight management





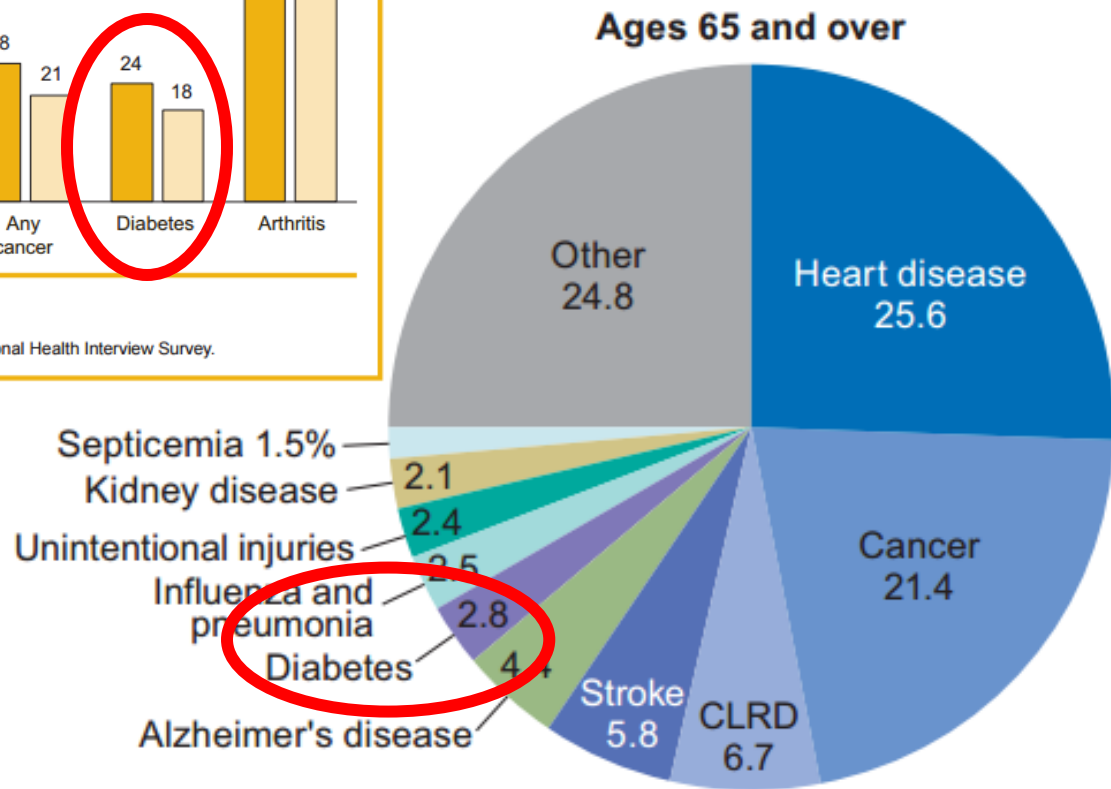
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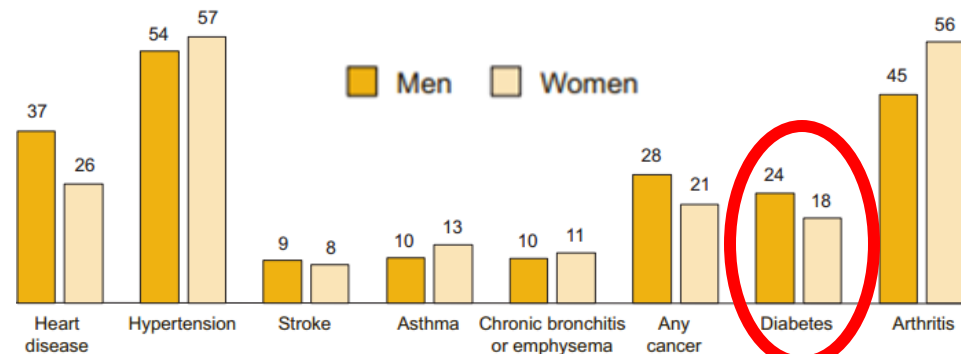
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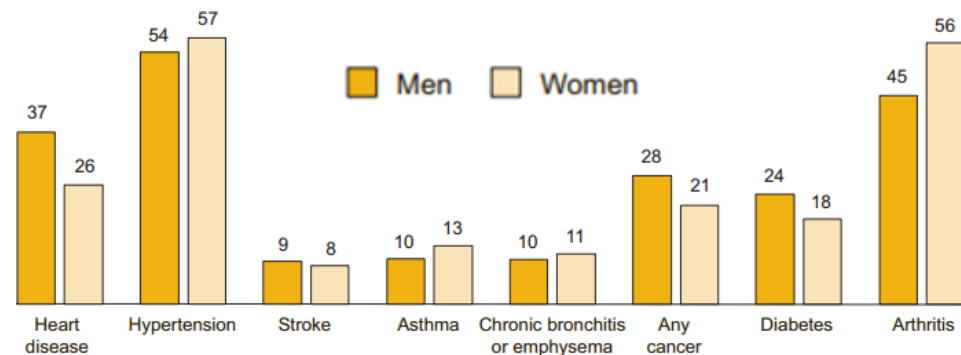
# Diabetes

- Increasing in the elderly
- High association with coronary heart disease
- Risk factors:
  - Smoking
  - Hypertension
  - Dyslipidemia
  - Inactivity
  - Diet



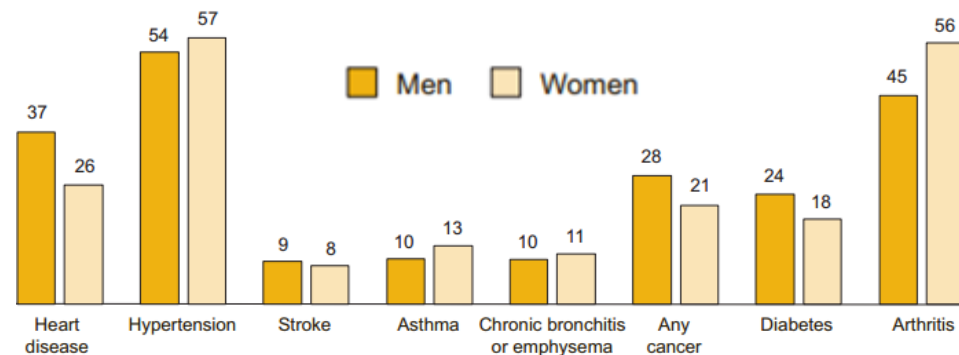
# Diabetes

- Additional problems in the elderly
  - Cognitive impairment
  - Depression
  - Polypharmacy
  - Falls
  - Urinary incontinence

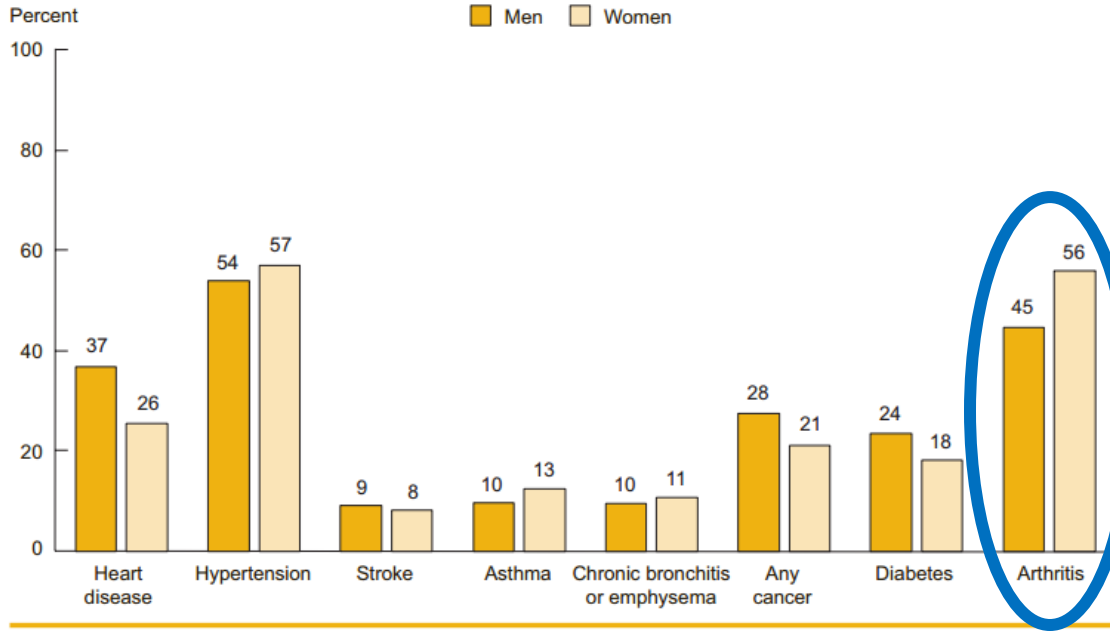


# Diabetes-Treatment

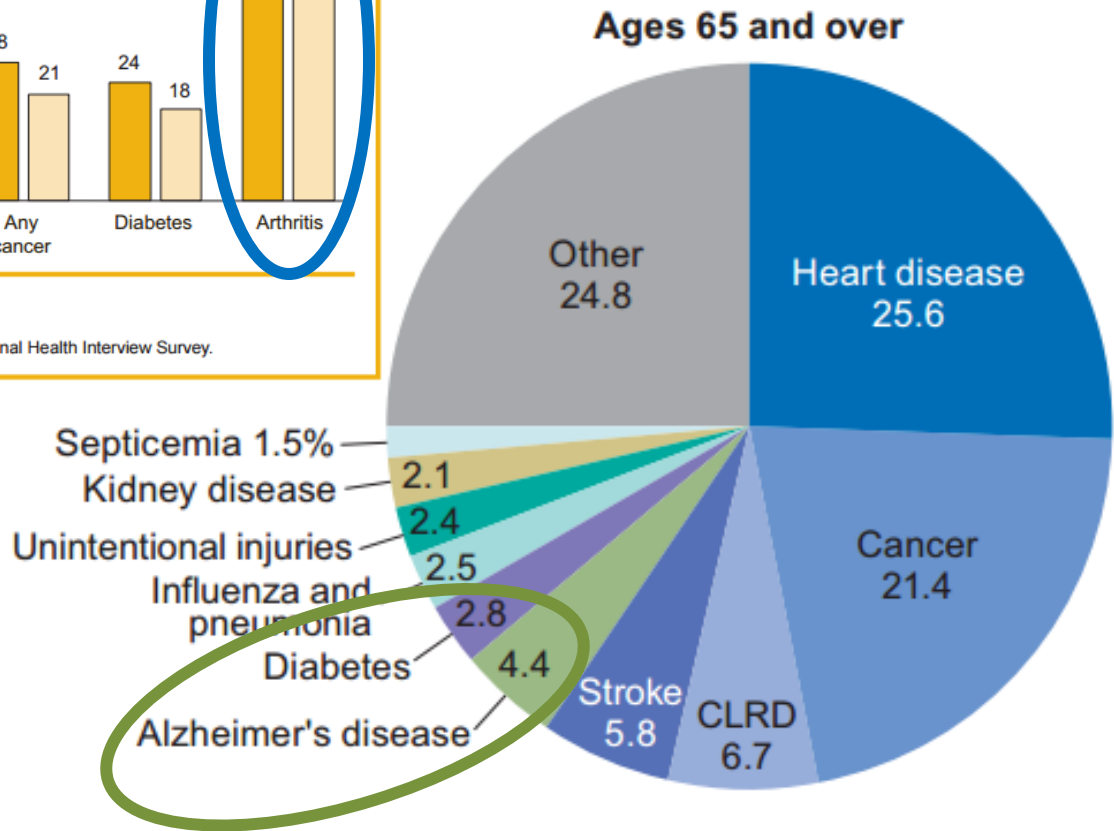
- Biguanide-**Metformin**/Glucophage
- Short-acting sulfonylurea-**Glipizide**
  - Similar: Repaglinide/Prandin, Nateglinide/Starlix
- DPP4-Alogliptin/Nesina, Saxagliptin/Onglyza
- Insulin



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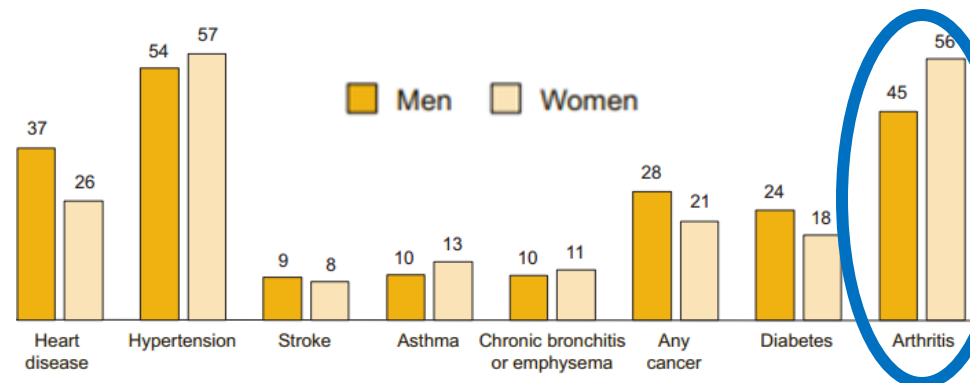


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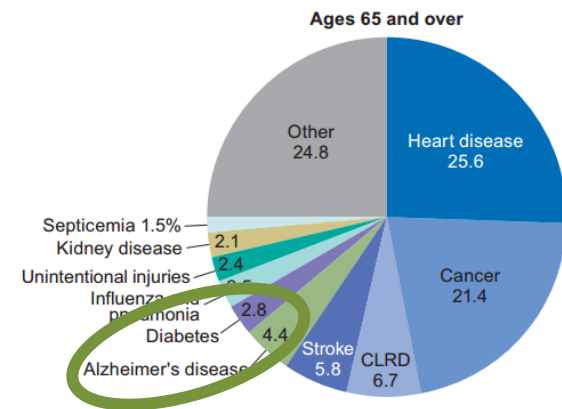
# Arthritis

- Up to 80% of older adults
- Inflammation, in addition to degeneration
- Can lead to chronic disability
- Risk factors
  - Joint injury
  - **Obesity**
  - Genetics (usually premature)
  - Anatomic features
  - Gender



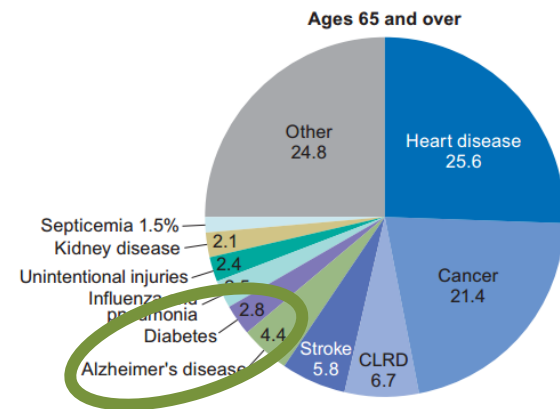
# Mental Health Disease

- Dementia
  - 5% of individuals >65 years
  - 35 to 50% >85 years
- Depression
  - 10-20% >65 years
  - Increases with age
- *Often misdiagnosed*



# Dementia

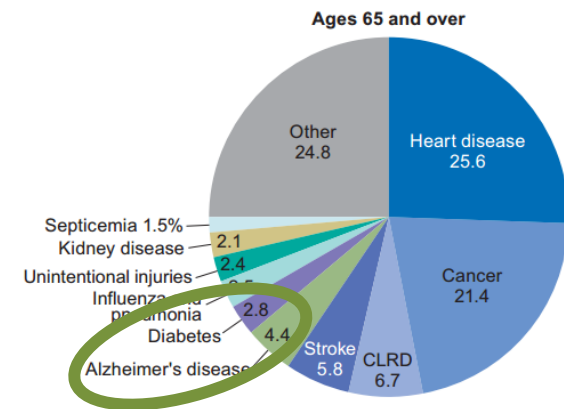
- NORMAL (non-dementia) aging cognitive decline
  - mild changes in memory
  - mild changes in the rate of information processing
  - not progressive
  - do not affect daily function





# Dementia

- 60-80% Alheimers (others: mild cognitive impairment, dementia with Lewy bodies, vascular dementia, Parkinson disease with dementia, others)
- DSM-5: Significant cognitive impairment in at least 1:
  - Learning and memory
  - Language (aphasia)
  - Executive function
  - Complex attention
  - Perceptual-motor function
  - Social cognition



# Depression

- Beyond sadness and grief over major life changes
- Suicide risk: 24 percent of all completed suicides
- Risk factors:
  - Female sex
  - Social isolation
  - Widowed, divorced, or separated marital status
  - Lower socioeconomic status
  - **Comorbid general medical conditions**
  - Uncontrolled pain
  - Insomnia
  - Functional impairment
  - **Cognitive impairment**

# Medical Considerations for the Older Patient

# Medication Issues

- Polypharmacy
  - Including over-the-counter
- Complicated medical picture
- Nutritional changes
- Risk for adverse drug reactions increases with increasing age

# Complex health care

- Many co-morbidities
- Many medications
- Frequent encounters
- See a variety of health care providers
- Extensive test result data

# Disease often not identified

- Undiagnosed/underdiagnosed/ incorrectly diagnosed conditions
  - Blaming “normal” aging
  - Altered presentation
  - Cognitive decline
  - Fear of dying
  - Fear of treatment

# Chronic disease and eye disease

- Direct relationship
- Similar risk factors

# Strategies for an Optometrist

- Clinical support
- Obtain records from other providers (eye, PCP, other as needed)
- Alter examination
- Query for new symptoms
- Query medication usage
- Educate patient and family
- Communicate with other providers



# Multiple providers

- Approach to correct:
  - Patient has copy of entire record
  - Patient has up-to-date copy of medications
  - Obtain records from all other doctors
  - Patient maintains medical home
    - <http://www.ncqa.org/tabid/631/default.aspx>
  - Provider or pharmacist performs medication reconciliation

# Medication Reconciliation

- Compare prescribed meds to those patient is taking
- Purpose is to avoid errors (omissions, duplications, dosage errors, drug interactions)
- When?
  - New meds ordered
  - Med orders rewritten
  - Change in provider
  - Etc

# Check for interactions

- Electronic drug orders
- Pharmacists
- Websites
  - [Micromedex](https://micromedex.com)
  - [Epocrates](https://epocrates.com)
  - <http://reference.medscape.com/drug-interactionchecker>

The screenshot displays the Medscape Drug Interaction Checker interface. At the top, the Medscape logo is visible, along with navigation tabs for Today, News, Reference, and Education. The main heading is "Drug Interaction Checker". Below this, there is a search bar labeled "Enter a drug, OTC or herbal supplement:" and a "Print" icon. A red button indicates "1 Interaction Found". The "Patient Regimen" section lists three drugs: timolol, latanoprost, and diltiazem (with Cardizem as a brand name), each with a clear button. A "Clear All" button is also present. The interaction result is displayed in a box titled "Significant - Monitor Closely", stating: "timolol + diltiazem: timolol and diltiazem both increase anti-hypertensive channel blocking. Significant - Monitor Closely."

# Geriatric Assessment

- Work with local internists and geriatricians
- Eye care should be part of regular geriatric work-up

*If I'd known I was going to live this long, I'd  
have taken better care of myself.*

--Eubie Blake, age 100

- References:

- UpToDate.com

- Muchnick B. Clinical Medicine in Optometric Practice. 2<sup>nd</sup> ed. St. Louis: Mosby; 2008.

- Capriotti T, Parker Frizzel J. Pathophysiology: Introductory Concepts and Clinical Perspective. 1<sup>st</sup> ed. Philadelphia: FA Davis; 2016.

# Thank you!

- Kierstyn Napier-Dovorany, OD, FAAO
- Western University of Health Sciences, College of Optometry
- 309 E Second St. Pomona, CA 91766
- 909-706-3887
- [knapier@westernu.edu](mailto:knapier@westernu.edu)