Geriatric Principles

- Focus on quality of life and not on quantity or prolongation
- Comorbidity: Multiple chronic diseases present in most patients
- Manage symptoms and avoid harm
- Functional Status should be a vital sign
- Establish decision-maker for goals of care and teach communication about issues
- Estimate life expectancy and use in setting goals?

ADL and IADL Status in All

- Activities of Daily Living: dress, transfer, toilet needs, bathing, feeding
- Patients in long-term care institutions almost always have ≥2 ADL limitations
- Instrumental Activities of Daily Living: manage own finances, transportation within community, shopping for food/clothing, preparation, use of phone or computer, housework, handle own meds
NEW DEVELOPMENTS IN HYPERTENSION

Functional and Cognitive Status

- The holy grail of Geriatrics: The end outcome of all diseases
- Diseases matter to the extent they impact functional status
- How do functional and cognitive status impact natural history and outcomes of the condition
- What is the impact of the condition on ADL, IADL, cognitive function?

Physical and Cognitive Function

- Use of functional status measures in clinical practice as routine practice
- Measurement of gait speed predicts falls risk and morbidity/mortality
- Get up and Go Test
- Evaluate cognitive status
- Use functional status as a target of therapy: prevent ADL disability or delirium
NEW DEVELOPMENTS IN HYPERTENSION

Care Across Settings and Options for Long Term Care

- Care transitions often disastrous for elders
- Hospital-home; hospital-SNF; SNF-hospital
- Interventions to improve care transitions
- Long term care not just nursing homes
- Family caregivers
- Other informal care
- Assisted living
- Evaluate personal finances

Palliative Care and Symptom Management

- End of life care and hospice are underused for most clinical problems
- Palliative Care is focused on improving symptoms, well being, and quality of life
- Should be present throughout the course of serious illness
- Focus on major sources of distress including patient perspective
NEW DEVELOPMENTS IN HYPERTENSION

Medication Management

Appropriate Medication Management in Geriatrics Medicine

- 90% take medications every day and 46% take 5 or more
- 54% have more than one clinician prescribing and 35% use >1 pharmacy
- Over 50% of all prescribed drugs
- Half do not take all medications as prescribed
- Up to 60% of outpatients have medications considered suboptimal
NEW DEVELOPMENTS IN HYPERTENSION

Adverse Drug Effects are Common

- 25% of outpatient practices report
- About 10% to 17% of hospital admissions are due to ADE
- Increase in ADE is disproportionately affecting elderly: 20% of all ADEs
- Greatest predictor of ADE is the total number of prescribed meds

Beers Criteria 2012+

- Goal to reduce inappropriate medications
- Beers meds linked to ADE, hospitalization, delirium, falls, GI bleed
- 53 classes of medications listed in 3 categories:
  - Avoid regardless
  - Inappropriate with certain diseases or syndromes
  - Use with caution

www.americangeriatrics.org
J Am Geriatrics Society 2012
Cognitive Impairment
or
Dementia
or
Neurocognitive Disorders

Cognitive Impairment Clinical Case

EM is a 75 year-old woman with a h/o high blood pressure and hyperlipidemia. Brought in by husband who is reporting that patient’s personality has changed over the past couple of years. She is becoming more suspicious, and at times talks and “doesn’t make sense”. She is paranoid about the neighbors and called 911 thinking someone was breaking in.
NEW DEVELOPMENTS IN HYPERTENSION

Prevalence Cognitive Impairment

- AD estimated prevalence 5.2 million in US in 2014; 13.8 by 2050
- 32% in 85+ years
- 11% age 65+
- Lifetime risk of dementia after age 65 is 20%
- Costs $150 billion/yr


Risk Factors for Cognitive Impairment

- Increasing Age
- Down’s syndrome
- Head trauma/Traumatic Brain Injury
- Fewer years of formal education
- Female sex: 1.6X more common
- Family history of Alzheimer
- Vascular Disease risk factors
- Cerebrovascular events – strokes
NEW DEVELOPMENTS IN HYPERTENSION

Pathophysiology of AD

- Neuritic plaques
  - Amyloid precursor protein cleaved
  - Makes beta amyloid protein
  - Accumulation initiates cell death
- Neurofibrillary tangles
  - Filaments of abnormally phosphorylated tau protein
- Loss of neurons
  - Cholinergic, noradrenergic, serotonergic neurotransmitters
- Is it amyloid deposition that kills neurons OR are neurons being damaged by something else?

Clinical Presentation of Dementia

- Cognitive changes
- Personality changes
- Changes in day-to-day functioning
- Activities that require calculation or planning first to be impaired
- Psychiatric symptoms
- Problem Behaviors
- Ask caregivers, family and friends
NEW DEVELOPMENTS IN HYPERTENSION

Rapid Screening for Cognitive Impairment

• Routine screening not recommended
• Use as indicated as diagnostic screen
• Verbal Fluency Test: Sensitivity 88%; specificity 96%; takes One minute
• Ask patient to name as many animals as possible in one minute
  – 1 point/animal
  – Score <15 suggestive of dementia
    • Score <12 if 1-7 years of school
    • Score <9 if no education

Simmons BB, et al. AAFP, 2011

Mini-Cog: Three Item Recall and Clock Draw

• Ask the standard orientation questions
• Give three items to learn and repeat right away and then ask for recall after one minute
• Draw a clock showing the time now
• Validated in multiple languages
• Sensitivity is 76%
• Specificity is 89%

Borson, JAGS, 2003
NEW DEVELOPMENTS IN HYPERTENSION

DSM5 Neurocognitive Disorder

- Clinical diagnostic criteria
  - Memory impairment AND one or more:
    - Aphasia: language problems
    - Apraxia: motor problems
    - Agnosia: sensory problems
    - Disturbance in executive functioning
  - Deficits impair social/occupational function, represent a decline from baseline, not due to delirium, depression
  - Mild cognitive impairment: impairment does not affect function

Mini-Mental State Exam

- Maximum score 30
- Score <24 suggests cognitive impairment
- Decline of 4 points over 1-4 y significant
- Scores inversely correlated with age;
  median score = 25 if age >80
- Not as sensitive in people with higher levels of education;
  median score = 22 if 0-4 years of education
  mini_mental_state_examination_normative%20data.htm
- MMSE is proprietary

Crum RM et al. JAMA, 1993;269(18); Holsinger T, et al. JAMA, 2007;297.
NEW DEVELOPMENTS IN HYPERTENSION

Montreal Cognitive Assessment

- Maximum score is 30 points
- >26 is normal
- May be better at diagnosing mild cognitive impairment
- Includes executive function testing
- Better for use with patients with limited formal education
- [www.mocatest.org](http://www.mocatest.org)
- Not proprietary

Work-Up of Cognitive Impairment

American Academy of Neurology recommendations:

- Vit B12, thyroid, depression screen
- Other tests as indicated: CBC, urine tests, liver tests, syphilis test, lumbar puncture?
- Neurological imaging (CT or MRI)
Symptomatic Treatment of Memory Disturbance

- Cholinesterase Inhibitors delay degradation of acetylcholine at the synaptic cleft
- Indicated for mild-moderate Alzheimer’s
- Donepezil (Aricept)--5-10mg/day
  - Rivastigmine (Exelon)--6-12mg/day
  - Galantamine (Razadyne)--24-32mg/day or patch 4.6-9.5mg
- May cause weight loss, nausea, vomiting, diarrhea, vivid dreams, AV Block, bradycardia
- Memantine: NMDA-receptor antagonist; moderate/severe AD; may combine
Clinical Significance of Long-term Donepezil Treatment

- 565 patients with mild-mod AD randomly assigned to donepezil 5mg or placebo; Followed up to 3 years
- End points: Institutionalization or progression of disability (loss of ADLs): No difference in rates by treatment
- No difference in care costs, unpaid caregiver time, behavioral/psychological symptoms


Evaluation of Driving Risk in Dementia – Practice Parameter

- Patient at increased risk for unsafe driving:
  - Caregiver rates patient’s driving ability as marginal or unsafe
  - Pt has previous accidents or citations
  - Pt has reduced driving mileage or self-reported situational avoidance
  - MMSE score ≤ 24
  - Pt with aggressive/impulsive personality
  - Report to DMV

NEW DEVELOPMENTS IN HYPERTENSION

Updates in Prevention
Estrogen Replacement Therapy

- Women’s Health Initiative Memory Study: 4532 healthy post-menopausal women
  - Randomized to estrogen/progestin or placebo: HRT increased risk for probable dementia (HR 2.05)
  - 2947 randomized to estrogen only or placebo: Risk of development of probable dementia (HR 1.49; CI 0.83-2.66)


Should Statins be in the Water?

- RCT: Pravastatin vs. placebo
  - No difference in cognitive function after 3.2 years

- RCT: Simvastatin vs. placebo
  - No difference in incidence of dementia

- No evidence that cholesterol lowering with statins prevent vascular dementia or other types of cognitive impairment

Heart Protection Study Collaborative Group. Lancet, 2002;360.
NEW DEVELOPMENTS IN HYPERTENSION

Prevention of AD with Anti-Inflammatory Drugs

- Meta-analysis of observational studies
  - NSAIDS >2yrs reduced risk by 73%
  - Confounding?
- RCT
  - 2528 volunteers >70 yrs with FH AD
    - Naproxen vs. Celebrex vs. Placebo
  - Study stopped after 3 years: no evidence anti-inflammatory drugs prevent AD

BMJ, 2003(327), Neurology 2007(68)

But Be Skeptical of Wonder Drugs...
NEW DEVELOPMENTS IN HYPERTENSION

Sleep and AD

- Sleep and AD = bidirectional relationship
  - Brain regions involved in sleep and circadian control affected early in AD
  - Patients with AD often have worse quality of sleep
  - Sleep changes may precede onset of cognitive symptoms
    - Amyloid deposition associated with worse sleep quality

- Chicken or the egg?
- Chronic disrupted sleep likely has some cognitive effect

Leisure Activities and Risk of AD

- Multiple small trials: May improve short-term global cognitive function in pts with dementia/MCI
- Cognitive reserve is protective
- Cognitive Training may work
  - Neuro Racer Video game

USPTF, Ann Intern Med, 2014
NEW DEVELOPMENTS IN HYPERTENSION

Exercise and Dementia Prevention

• Meta-analysis: 33,816 non-demented patients followed prospectively

• Participants with high-level physical activity protected against cognitive decline (HR=0.62; 95% CI 0.54-0.7)

• Low-moderate exercise was also protective (HR 0.65; CI 0.57-0.75)


Prevention of AD – Stay Positive

Barnes DE and Yaffe K. Lancet Neurol, 2011
NEW DEVELOPMENTS IN HYPERTENSION

Risk and Prevention of Falls

Falls Burden in Older Adults

- 15,000 deaths, 475,000 hospitalizations, 1,360,000 ED Visits; Latinos have highest rate
- Serious Falls-related Injuries:
  - Hip fractures (55%): 20% mortality at 1 year
  - Non-Hip fractures (21%)
  - Traumatic Brain Hemorrhage (10%)
  - Chest Injury (7%)
Functional Consequences of Falls

- 60% report moderate activity restriction
- 33% require help with ADLs
- Increases risk of nursing home placement
- One-third develop fear of falling:
  - Decreases physical and social activity
  - Decreases self-reported health status
  - Increased depression

LR of Risk Factors for Future Falls

- Fall in last year: 2.8 - 3.8
- Orthostatic hypotension –
- Visual acuity –2
- Gait and Balance 2
- Medications 1.7
- Assess Cognition 4 - 17
- Limitation in ADLs or IDLs: 2 - 4
Gait and Falls

- Gait abnormalities in 20% to 40% of persons >65 and over 50% if ≥ 85 y
- Gait speed predicts 10-year mortality
- Assess normal, safe speed
- In office tests: Gait balance test
- Learn with physical therapy evaluation
- Risk of multiple falls among >64 y from California Health Interview Survey: Latinos 17%, Blacks 11%, Asians 8%, Whites 12%

Falls Recommendations USPSTF

- Exercise and physical therapy significantly reduces falls; the more the better: RR = 0.85 (0.78-0.92)
- Vitamin D supplementation without calcium: RR = 0.83 (0.77-0.89)
- Vision correction shows no reduction
- Multifactorial intervention seems to reduce falls but not statistically significant
Urinary Incontinence

Prevalence of urinary incontinence in women across the age spectrum

NEW DEVELOPMENTS IN HYPERTENSION

Changes in Lower Urinary Tract Function with Aging

- ↑ involuntary bladder muscle contractions
- ↓ total capacity of the bladder
- ↓ bladder contractility and urinary flow
- ↑ atrophy of urethral mucosal epithelium

Pathophysiology of incontinence

- Over-activity of the detrusor muscle → Urge incontinence (leakage from a sudden or strong urge to urinate)
- Sphincter deficiency &/or pelvic floor weakness → Stress incontinence (leakage associated with ↑ in abdominal pressure)
- Bladder outlet obstruction or detrusor weakness → Overflow incontinence (frequent or constant small-volume urine leakage)
- Major mobility or cognitive impairment → Functional incontinence (inability to get to the toilet or recognize the need to void)
NEW DEVELOPMENTS IN HYPERTENSION

Distribution of stress, urge, and mixed UI in women across the age spectrum

Adapted from Hannestad et al. J Clin Epidemiol, 2000

Vaginal and C-section delivery both increase risk of incontinence

Adjusted odds ratios for UI by mode of delivery*

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Any UI</th>
<th>Moderate or severe UI</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-section vs no delivery</td>
<td>1.7 (1.3-2.1)</td>
<td>1.6 (1.1-2.3)</td>
</tr>
<tr>
<td>Vaginal delivery vs no delivery</td>
<td>2.8 (2.5-3.2)</td>
<td>3.3 (2.7-4.0)</td>
</tr>
<tr>
<td>Vaginal delivery vs C-section</td>
<td>1.7 (1.2-2.1)</td>
<td>2.2 (1.5-3.1)</td>
</tr>
</tbody>
</table>

*Adjusted for age, parity, years since last delivery, & BMI
Dose-response between body mass index and incontinence risk

Any incontinence

Severe

The impact of diabetes on urinary incontinence risk in women

• Diabetic women with 28% ↑ risk of any UI and 40% ↑ risk of severe UI in Nurses Health Study

• Risk of incident UI increased with increasing duration of diabetes

• Adjustment for age, parity, BMI, and medication use did not explain increased risk

• Possible mechanisms—damage to innervation of bladder & urethra, ↑ volume of urine
NEW DEVELOPMENTS IN HYPERTENSION

Behavioral treatment for Urgency Incontinence

• Pelvic floor muscle exercises
• Bladder training techniques
• Urge suppression techniques

Pelvic floor muscle exercises

• Teach patients to distinguish between pelvic vs. abdominal or buttock muscles
• Encourage patients to work up to holding contractions for 3+ seconds at a time
• Recommend repetitions on a set schedule (e.g., set of 10, 5 times/day)
NEW DEVELOPMENTS IN HYPERTENSION

**Bladder training techniques**

- Instruct patients to starting void every hour regardless of need to urinate
- Progressively increase the interval by 30 minute increments to reach 3-4 hours
- Recommend pelvic muscle contractions for urgency between voiding

**Urge suppression techniques**

When you feel the urge to urinate...
- Stop, sit down, and take deep breaths
- Imagine the urge peaking, then subsiding
- Practice pelvic floor muscle exercises

Once you feel the urge is under control
- Walk slowly to the bathroom and void
NEW DEVELOPMENTS IN HYPERTENSION

The 3 Incontinence Questions (3IQ)

1. During the last 3 months, have you leaked urine, even a small amount?

2. During the last 3 months, have you leaked urine:
   a. When you were performing some physical activity such as coughing, sneezing, lifting or exercise?
   b. When you had the urge or the feeling that you needed to empty your bladder but you could not get to the toilet fast enough?
   c. Without any physical activity or a sense of urgency

3. During the last 3 months, have you leaked urine most often: (a-c)
   About equally as often with a physical activity and with urgency?

Diagnosis with 3IQ and Empirical Treatment

- Multi-center study of ambulatory women with weekly incontinence (N=301)
- Compared diagnosis by 3IQ + urinalysis versus traditional extended evaluation
- 3IQ had sensitivity & specificity of 0.75 and 0.77 for urge UI, 0.86 and 0.60 for stress UI
  Brown JS et al. Annals Internal Med 2006;144:715
- 645 ambulatory women identified by the 3IQ randomized to pharmacologic therapy vs placebo
- Moderate decrease 1 episode incontinence/day frequency over 12 weeks
  Huang AJ, et al. AJOG; 2012
NEW DEVELOPMENTS IN HYPERTENSION

<table>
<thead>
<tr>
<th>Name</th>
<th>Available forms</th>
<th>Instructions for use</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immediate-release</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxybutynin (Ditropan)</td>
<td>2.5 or 5 mg</td>
<td>Start at 2.5 mg (1/2 pill) BID</td>
<td>$</td>
</tr>
<tr>
<td>Tolterodine (Detrol)</td>
<td>1 or 2 mg</td>
<td>Start at 2 mg BID, lower to 1 mg BID if poorly tolerated</td>
<td>$$$</td>
</tr>
<tr>
<td>Trospium (Santura)</td>
<td>20 mg</td>
<td>Take 20 mg BID, lower to 20 mg QHS if poorly tolerated</td>
<td>$$$</td>
</tr>
<tr>
<td><strong>Extended-release</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxybutynin ER (Ditropan XL)</td>
<td>5, 10, or 15 mg</td>
<td>Start at 5 or 10 mg QD, increase to max of 30 mg QD</td>
<td>$</td>
</tr>
<tr>
<td>Tolterodine LA (Detrol LA)</td>
<td>2 or 4 mg</td>
<td>Start at 4 mg QD, lower to 2 mg QD if poorly tolerated</td>
<td>$$$</td>
</tr>
<tr>
<td>Darifenacin (Enablex)</td>
<td>7.5 or 15 mg</td>
<td>Start at 7.5 mg QD, wait ≥2 weeks before increasing dose to 15 mg</td>
<td>$$$</td>
</tr>
<tr>
<td>Trospium XL (Santura)</td>
<td>60 mg</td>
<td>Take 60 mg QD</td>
<td>$$$</td>
</tr>
<tr>
<td>Solifenacin (Vesicare)</td>
<td>5 or 10 mg</td>
<td>Start at 5 mg QD, increase to max of 10 mg QD as tolerated</td>
<td>$$$</td>
</tr>
<tr>
<td>Fesoterodine (Toviaz)</td>
<td>4 or 8 mg</td>
<td>Start at 4 mg QD, increase to max of 8 mg as tolerated</td>
<td>$$$$</td>
</tr>
</tbody>
</table>

**Tips on starting an anti-muscarinic medication for urge incontinence**

- Avoid in patients with gastric retention, severely-decreased GI motility
- Contraindicated in narrow-angle glaucoma (consider possibility in elderly, farsighted, Asian)
- Start with a low dose (e.g., ½ pill of oxybutynin 5 mg twice daily), then increase as tolerated
- Discuss strategies for preventing or decreasing side effects (e.g., lozenges)