Disclosures for Richard W. Besdine, MD

- I have no financial relationship with a commercial entity producing health-care related products and/or services.
- I have a deep and abiding passion for improving health and healthcare for older persons, and will do almost anything to achieve the goal.
Why Assess Function?

- Identify problems - symptom underreporting; functional loss often first disease indication
- Identify risks - death, NH, falls, UI, MVA
- Identify resources and strengths
- Risk stratification for interventions, Dx or Rx
- Monitor Rx response and disease progression
- Set clinical objectives for Rx or rehab
- Communication among multiple professionals
- Develop, implement and monitor an integrated and coordinated care plan
Functional Status of US Elders

- **Independent**
- **IADL Deficit Only**
- **1-2 ADL Deficits**
- **3-6 ADL Deficits**

- **65-74**
- **75-84**
- **85+**

Medicare Current Beneficiary Survey www.cms.hhs.gov/mcbs
## Predictive Value of Function

<table>
<thead>
<tr>
<th>Functional Status at Age 70</th>
<th>Average Life Expectancy (years)</th>
<th>Annual Health Care Costs ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>14.3</td>
<td>$4600</td>
</tr>
<tr>
<td>IADL Deficit Only</td>
<td>12.4</td>
<td>$8500</td>
</tr>
<tr>
<td>&gt;1 ADL Deficit</td>
<td>11.6</td>
<td>$14,000</td>
</tr>
</tbody>
</table>

Lubitz. NEJM 2003; 349:1048-55
Median Survival by Gait Speed for Men >65

Median Survival by Gait Speed for Women >65

Validated Screens for Function

- Activities of Daily Living (ADL), Instrumental (IADL)
- Vision - Do you have trouble?
- Hearing – Audioscope, whispered voice
- Leg strength, balance – Up and Go Test
- Urinary incontinence – Do you wet; >6 days?
- Nutrition – 10 lb. wt. Loss in 6 mo. or <100 lbs.?
- Memory – Do you have trouble? Mini-cog
- Mood/affect – Do you often feel depressed? GDS
- Comprehensive assessment if screen positive

Doing Comprehensive Assessment

- Geriatrics-oriented history (done), screens, and physical exam (invite me back)
- Cognition – MMSE usual, but mini-cog as good for memory, adds clock; Mattis DRS for detail
- Affect – Geriatric Depression Scale
- Social function - self-rated health, networks, caregiver support, advance directives
- Physical Fx - LE strength, balance predict falls
  + Timed Up-and-Go
  + Activity for all, exercise for those who can
Tools to Make it Easier

- MMSE, mini-cog (F/U with Mattis DRS or neuro-psych testing)
- GDS
- Katz ADL (Lawton modification)
- Lawton IADL
- Up and Go Test
- Hearing Handicap Inventory, Elderly (HHIE)
- (Home Safety evaluation) – no scale
- Braden Pressure Sore Risk Scale
Decremental effects of aging restrict capacity to maintain homeostasis under stress of illness - weak links (e.g., cognition, balance, continence); interaction with disease produces physical or cognitive function loss as its primary expression.

Primary pathology not necessarily in organ system with symptoms; rather, weak link surfaces first:
- Confusion (Delirium)
- Dizziness
- Falls (“Dysmobility”)
- Syncope
- Urinary incontinence
- Weight or appetite loss
Recognizing Geriatrics Syndromes

- Most often, syndromes result from interaction of multiple predisposing risks with pure aging
- Syndromes may result from interaction of a single disease with pure aging
  + Confusion following administration of meperidine (hallucinogenic narcotic) for post-operative pain
  + Falling as the first sign of pneumonia
  + Urinary incontinence heralding the development of a brain tumor
Recognizing Geriatrics Syndromes

- Each syndrome that has been carefully studied (falls, UI, delirium) has conformed to a consistent pattern of causation.
- Multiple risks have been discovered for each, and the number of risk factors determines the level of risk.
Most exciting of all:

- Identifying risk factors and intervening on those that are modifiable can prevent the development of syndromes.
- Syndromes, when present, also respond to interventions; but harm may have already occurred, so prevention is vital.
- Risk-reducing interventions are easy.
Risk of Falls Annually by Count of Risk Factors

Many acute illnesses present with a fall; falling is a geriatrics syndrome.
Evidence-Based Interventions for Falls

- Exercise or physical therapy
- Modification of home hazards
- Medication withdrawal or adjustment
- Nutritional or vitamin supplementation
- Referral for correction of visual deficiency
- Cardiac pacemaker for syncope-associated falls
- Multidisciplinary, multifactorial, health, and environmental risk-factor screening and intervention
- Cognitive-behavioral intervention
- System Δ to prevent falls in high-risk hospital patients
- Education of physicians in CT (Tinetti M et al. NEJM. 2008;359:252)
Adjusted Annual Rates of Serious Fall-Related Injuries and Use of Medical Services/1000 > 70 Age

A. Serious Fall-Related Injuries

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Usual care</td>
<td><img src="usual_care_graph" alt="Graph" /></td>
<td><img src="intervention_graph" alt="Graph" /></td>
<td><img src="evaluation_graph" alt="Graph" /></td>
</tr>
<tr>
<td>Intervention</td>
<td><img src="intervention_graph" alt="Graph" /></td>
<td><img src="intervention_graph" alt="Graph" /></td>
<td><img src="evaluation_graph" alt="Graph" /></td>
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</tbody>
</table>

B. Fall-Related Use of Medical Services

<table>
<thead>
<tr>
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</tr>
</tbody>
</table>

Instruments for Comprehensive Geriatric Assessment
MINI-COG ASSESSMENT - Combines 3-item recall test with a clock-drawing test (CDT); about 3 min, no equipment, little effect of education or language.

Administration

1. Instruct patient to listen carefully to remember 3 (unrelated) words, then repeat back to you (to be sure the patient heard them)
2. Instruct the patient to draw the face of a clock (blank page or with circle already on it).
3. After patient puts numbers on clock face, ask pt. to draw hands of clock to read 8:20. No further instructions to be given. If after 3 min, the CDT is not finished, go to next step.
4. Ask pt. to repeat the 3 previously presented words.

Scoring - 1 point for each recalled word after CDT; 0–3 for recall. 2 points for normal CDT (all numbers depicted once, in correct order and position, hands show requested time), 0 for abnormal CDT. Add recall and CDT scores to get Mini-Cog Score- 0-5.

Interpretation – 3 or more normal, 2 or less abnormal
Draw a Clock Face at 3 O'clock

MMSE=26
<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toileting</td>
<td>Independent, no incontinence</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Anything else</td>
<td>0</td>
</tr>
<tr>
<td>Feeding</td>
<td>Eats Independently</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Anything else</td>
<td>0</td>
</tr>
<tr>
<td>Dressing</td>
<td>Dresses, undresses, selects from own wardrobe Anything else</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Anything else</td>
<td>0</td>
</tr>
<tr>
<td>Grooming</td>
<td>Always neat (hair, nails, hands, face, clothing) without assistance</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Any dependence</td>
<td>0</td>
</tr>
<tr>
<td>Walking</td>
<td>Independent, distances &gt;1 block</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>&lt;1 block or restrictions or aid</td>
<td>0</td>
</tr>
<tr>
<td>Bathing</td>
<td>Bathes self (tub, shower, sponge bath) alone</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Any assistance</td>
<td>0</td>
</tr>
</tbody>
</table>
### Lawton IADL Scale (range 0-8)

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telephone</td>
<td>Independent, dials few numbers, answers only Cannot use</td>
<td>1</td>
</tr>
<tr>
<td>Shopping</td>
<td>Independent Cannot</td>
<td>1</td>
</tr>
<tr>
<td>Food Prep</td>
<td>Independent Not independent</td>
<td>1</td>
</tr>
<tr>
<td>Housekeeping</td>
<td>Independent, light only, light but dirty home Cannot</td>
<td>1</td>
</tr>
<tr>
<td>Laundry</td>
<td>Independent, small items only Cannot</td>
<td>1</td>
</tr>
<tr>
<td>Transportation</td>
<td>Independent, arranges taxi only, public assisted Cannot, taxi or private car only when assisted</td>
<td>1</td>
</tr>
<tr>
<td>Medications</td>
<td>Takes drugs in right dose at right time Any assistance; e.g., loading of daily pill boxes</td>
<td>1</td>
</tr>
<tr>
<td>Finances</td>
<td>Independent; assistance with bank, big purchases Cannot</td>
<td>1</td>
</tr>
</tbody>
</table>
GERIATRIC DEPRESSION SCALE - GDS

Choose best answer for how you felt over the past week.

1. Are you basically satisfied with your life? yes/no
2. Have you dropped many of your activities and interests? yes/no
3. Do you feel that your life is empty? yes/no
4. Do you often get bored? yes/no
5. Are you in good spirits most of the time? yes/no
6. Are you afraid that something bad is going to happen to you? yes/no
7. Do you feel happy most of the time? yes/no
8. Do you often feel helpless? yes/no
Choose the best answer for how you felt over the past week.

9. Do you prefer to stay at home, rather than going out and doing new things?  yes/no

10. Do you feel you have more problems with memory than most?  yes/no

11. Do you think it is wonderful to be alive now?  yes/no

12. Do you feel pretty worthless the way you are now?  y/n

13. Do you feel full of energy?  yes/no

14. Do you feel that your situation is hopeless?  yes/no

15. Do you think most people are better off than you?  yes/no

1 point for each yellow answer; >5 suggests depression
The patient sits in an armless chair.

Instruction is to stand without using hands, walk to a mark 10 feet away, turn, walk back to the chair, and sit again.

The patient is told that she will be timed.

This is a validated performance measure; time >9 seconds indicates a 2-fold fall risk.

Much can be learned observing the patient.
Hearing Handicap Inventory for Elders

1. Does hearing make you embarrassed to meet people?
2. Does hearing make you frustrated talking to your family?
3. Do you have trouble hearing someone speaks in a whisper?
4. Do you feel handicapped by a hearing problem?
5. Does hearing cause a problem when visiting friends/relatives?
6. Does hearing prevent you attending religious services?
7. Does hearing cause arguments with family members?
8. Does hearing make it hard to listen to TV or radio?
9. Does hearing limit or hamper your personal or social life?
10. Does hearing cause difficulty in a restaurant with friends?

**YES = 4 pts.; SOMETIMES = 2; NO=0**

0-8 = normal; 10-24 = 50% impairment; 26-40 = 84%
1. Non-blanchable erythema
2. Partial thickness skin loss
3. Full thickness skin loss to, but not through fascia
4. Full thickness skin loss through fascia to muscle, bone, organs
Assessment at Home

- Identifies problems not detected in office assessment; those needing immediate attention after hospital discharge
  - Environment – hazards, temperature, assists, refrigerator, cleanliness
  - Behavior - self-assertive or passive
  - Others - caregiving, impediments
  - Safety – toxins, smoke/CO, guns
- Home assessment of healthy older people delays functional disability and NH need
Fundamentals of Geriatrics 2016
Successful Aging: an Agenda in Prevention

Richard W. Besdine, MD, FACP
Professor of Medicine
Professor of Health Services Policy and Practice
Greer Professor of Geriatric Medicine
Director, Division of Geriatrics and Palliative Medicine
Director, Center for Gerontology and Healthcare Research
Learning Objectives

Demonstrate the ability to

- Understand and explain the importance and relevance of prevention to older persons and to healthcare’s “Triple Aim” (population health, patient experience, cost)
- Identify and explain interventions to maximize vitality in older persons
- Using the Medicare preventive services bundle, Manage a prevention portfolio to improve health and healthcare of older persons
"The only way to keep your health is to eat what you don't want, drink what you don't like, and do what you'd rather not."

Why Prevention Fails

Since my last heart attack, I'm not allowed to smoke, drink or eat fatty deli meat.

Gee, that's rough! What do you do?

Go to church, and pray that my next heart attack kills me.
Missed Health Promotion/Disease Prevention Opportunities for Seniors

- 73% age 65-74 report no regular physical activity
- 81% age 75+ report no regular physical activity
- 61% unhealthy weight
- 33% fall each year
- 35% no flu shot in past 12 months
- 45% no pneumococcal vaccine
- 20% prescribed “unsuitable” medications

[www.cdc.gov/nchs](http://www.cdc.gov/nchs)
US Deaths from Behavioral Causes, 2000

Schroeder S. NEJM 2007;357:1221
## Age-adjusted % of Adults with Chronic Disease
### Risk Factors & Conditions 1999–2012

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes*</td>
<td>9.0%</td>
<td>10.4%</td>
<td>11.5%</td>
</tr>
<tr>
<td>High cholesterol*</td>
<td>25.0%</td>
<td>27.0%</td>
<td>26.7%</td>
</tr>
<tr>
<td>Hypertension*</td>
<td>30.0%</td>
<td>30.5%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Obesity*</td>
<td>30.5%</td>
<td>34.4%</td>
<td>35.7%</td>
</tr>
<tr>
<td>Current cigarette smokers†</td>
<td>23.1%</td>
<td>20.8%</td>
<td>19.3%</td>
</tr>
<tr>
<td>Did not meet physical activity guidelines‡</td>
<td>54.7%</td>
<td>No data</td>
<td>49.1%</td>
</tr>
<tr>
<td>Binge drinking§</td>
<td>14.9%¶</td>
<td>15.4%</td>
<td></td>
</tr>
</tbody>
</table>

Opportunities for Intervention

<table>
<thead>
<tr>
<th>B</th>
<th>Blood pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>Exercise</td>
</tr>
<tr>
<td>S</td>
<td>Smoking cessation</td>
</tr>
<tr>
<td>D</td>
<td>Driving safety</td>
</tr>
<tr>
<td>I</td>
<td>Immunizations</td>
</tr>
<tr>
<td>N</td>
<td>Nutrition</td>
</tr>
<tr>
<td>E</td>
<td>Environment</td>
</tr>
<tr>
<td>'S'</td>
<td>'Screening for cancer</td>
</tr>
<tr>
<td>B</td>
<td>Booze (EtOH problems)</td>
</tr>
<tr>
<td>O</td>
<td>Oral health</td>
</tr>
<tr>
<td>O</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>M</td>
<td>Mobility - prevent falls</td>
</tr>
<tr>
<td>E</td>
<td>Emotional health</td>
</tr>
<tr>
<td>R</td>
<td>Rx - drug safety</td>
</tr>
<tr>
<td>S</td>
<td>Social networks</td>
</tr>
</tbody>
</table>
Blood Pressure

Control (140/90) is quality of care measure

- All forms of HTN demand treatment
- Health professional education
- Non-pharmacologic means (exercise, salt, weight, EtOH, stress) addressed first
- Diuretics and $\beta$-blockers produce optimal outcomes in many older patients
- But what about the very old, >80?
Exercise

- Activity (vs. exercise) provides some benefits for those unable to exercise due to disease.
- Exercise most beneficial for CV and other organs.
- Aerobic debt 30 minutes every day (does not have to be all at once) - weight bearing ideal.
- Physician education on prescribing exercise.
- Strategies to make convenient sites for exercise available.
Muscle Strength in Men >90 after Resistance Training

Vigorous Physical Activity (3X/wk) Declines with Advancing Age
Benefits of Exercise

- Decreased incidence, mortality of CV Disease
- Improved profile of blood lipids (HDL)
- Amelioration of glucose intolerance and Diabetes
- Decreased incidence, mortality of many Cancers
- Increased Bone Mineral Density, fewer fractures
- Reduced incidence of Depression
- Improved physical functional status
- Improved cognitive functional status
Smoking Cessation

- Benefits accrue rapidly after quitting at any age - old have lowest relapse rate
- Patches for older smokers too
- Quitting in early lung CA prolongs survival
- Education - quitting at any age lowers all risks
- Smoke-free sites
- No tobacco advertising
- Counseling covered by Medicare
Driving Safety

- Driver re-education programs
- Counseling on seat belt use
- Referring high risk patients for driving evaluation
  - Cognitive impairment
  - Physical impairment
    - Lower extremity weakness, head turning
    - Coordination, balance
- Identify patients who are not safe to drive
Immunizations

- Pneumococcal vaccine (all, plus new Prevnar) - it works, once is enough (for healthy), with flu is OK (other arm); reduces infections, pneumonia and death

- Influenza vaccine (all) – annual, cost-effective; high dose gives higher ab titers (?protection – new data from Brown School of Public Health Gerontology Center)

  During 10 flu seasons, vaccination of elders in the community in an HMO resulted in a 27% reduction in PNA hospitalization and a 48% reduction in deaths
Nutrition

- Routine screening of nutritional status
- Diet history, follow weight longitudinally
- Mediterranean diet proven effective in large RCT: Reduced CV endpoints (MI, stroke, CV death), diabetes, invasive breast CA, hip fracture, memory loss
- Professional education
- Early intervention in frail or high-risk (NH, hospital)
- Vitamins and supplements?
Mediterranean Diet Prevents Cardiovascular Disease in PREDIMED - a Randomized Trial
What is the Mediterranean Diet?

- A variety of fresh vegetables (dark green, red/orange, legumes) and fruits, especially whole fruits
- Grains, at least half of which are whole grains
- Lots of Extra Virgin Olive Oil (EVOO)
- Fat-free or low-fat dairy and fortified soy beverages
- Protein - seafood, lean meats/poultry, eggs, nuts, seeds, and soy products
- Limited saturated/trans fats, added sugars, sodium
- <10% calories from added sugars; <10% calories from saturated fats; <2300 mg/d sodium
- Moderate alcohol (red wine) - 1 drink/day women, 2 for men

Benefits of Mediterranean Diet

- Decreased incidence, mortality of CV Disease (Stroke, AMI, Cardiovascular death)
- Amelioration of glucose intolerance and Diabetes
- Improved profile of blood lipids (HDL)
- Improved cognition
- Decreased incidence invasive breast Cancer
- Fewer hip fractures
- Weight loss
Environment (World, Home)

- The world
  - Advocate cleanup - water, air, ground
  - Stop pollution

- Home safety
  - Fire, smoke, CO detectors
  - Emergency exits
  - Remove toxins
  - Remove guns
Screening for Cancer

- Patient education
  - Do self-exam of skin, breast and mouth
  - Get colon cancer screen and mammogram
- Annual exam by healthcare provider - skin, breast, mouth, rectum, prostate (?)
- Annual mammogram - Medicare covers without deductible
- Annual fecal occult blood (2 smears, each of 3 consecutive stools) - saves lives
- Flexible sig or colonoscopy @ 50; F/U by results
Booze - Alcohol Use Problems

- Lifelong drinkers grown old
- Previous pattern produces problems due to change in physiology
- New drinking in old age
- Strategies
  - Screening sensitivity; if inexplicable, think of alcohol
  - CAGE validated in elders, but misses 50% - open-ended questions
  - Brief intervention strategy
Oral Health

- No coverage for preventive or restorative care
- Education on self-care - brushing, flossing, fluoride
- Minimize tobacco and alcohol
- Funding for older persons' dental care, especially in NH
- Fluoridated water
- Cancer screening – look, feel with dentures out
Osteoporosis Prevention

Medicare covers BMD screening (women)

- 1500 mg calcium intake + 800 U vitamin D
- Exercise for better bone density and balance/gait
- Avoid smoking, alcohol, corticosteroids
- Bisphosphonates, SERMs
- Maximize peak bone mass (<35) - Calcium, D, exercise
Mobility - Falls Prevention

- Mobility assessment, intervention
- Minimize drugs - psychoactive, antihypertensives
- Evaluate and remedy physical environment
  - Rugs, thresholds
  - Lighting
  - Grab bars
  - Stairways
- Exercise and balance training (especially for women)
Emotional Health

- Stress reduction
  - Include stress assessment for elders
  - Stress reduction techniques

- Depression
  - Professional awareness
  - Detection programs
  - Treatment initiatives - eligibility for services
Rx - Therapeutic Drug Safety

Polymedicine, pharmacokinetics/dynamics, special toxicities (cognitive, functional) – not just at start

- Inventory all drugs, screen the inventory
- Use the best drug in its class
- Identify indication, delete if duplicate or egregious SE
- Set and monitor therapeutic goals
- Educate the patient, ask about new drugs
- Address adherence, review regimen periodically for benefit and harm
- Consider new symptoms as side effects
Social Networks

- Public and professional education on riskiness of isolation, benefits of friendships
- Creation of sites
- Attend facilitating sites
- Encouragement to make friends
- Case finding of isolation
Adjusted Hazard Ratios (HR) for Mortality for Specific & Total Social Networks

Welcome to Medicare visit in 1st year of enrollment
  + Review of risk factors, functional status
  + Screening height, weight, BP, visual acuity, EKG
  + Lipid profile; FBS, OGTT or 2-hour PP alone
  + Education, counseling, and referral based on above results

Mammogram Q 12 months >40

Screening pelvic exam every 2 years

FOB annually, sigmoid Q 4 yrs, colon Q 10 yrs

Smoking cessation counseling (2 codes)
Medicare Preventive Services

- Flu vaccine annually, PN vaccine at least once >65, hepatitis B vaccine (for high risk, eg, ESRD)
- BMD for women Q 2 years
- Digital rectal exam and PSA annually
- Affordable Care Act of 2010
  - No co-pay for annual wellness exam that includes health risk assessment and personalized prevention plan
  - No co-pay for any MCR preventive service with class A or B evidence by USPSTF standards