Geriatrics: Year in Review

Advances in Internal Medicine

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Methods

• Literature review May 2009–April 2010
• Potential to change, inform or confirm practice
• Methodologically sound
• Reviewed in ACP Journal Club, Geriatrics Journal Club or Journal Watch
• Avoid overlap with other presenters

Life Expectancy 1850 - 2007

Christensen K, et al.
Lancet 2009;374:1196-1208

School of Medicine
“The Aging Century”

- Visits to physicians in many IM and surgical specialties are already disproportionate for patients aged 65 years or older:
  - General primary care: 28%
  - Internal medicine: 43%
  - IM subspecialties: 44%
  - Cardiology: 60%

- The proportion of visits by older patients increases by 1% annually

- 10% of 80-year-olds die in less than 2 years, but nearly 50% live a decade or more longer

Topics

- Dementia
  - MCI, Driving, Late stage
- Syncope
  - Predictors, Adverse Drug Reaction
- BNP
- Spinal Procedures
  - Vertebroplasty, Complex Spinal Fusion
- Advance Care Planning

A 76 year old woman with HTN and stress incontinence comes to clinic for a routine check up. As you walk toward the exam room, an older man introduces himself as her husband and says, “She doesn’t see it but she’s losing her memory.” The patient herself does not raise the issue of her memory and when you ask if she’s noticed any changes, she says she’s fine. She continues to drive, does the grocery shopping, cooking and cleaning for herself and her husband, and volunteers at her church.

- What do you do?
- Is this just normal aging?
Mild Cognitive Impairment

Flowchart for the diagnosis of mild cognitive impairment (MCI) and its subtypes:

Age-related Cognitive Change
- Most common complaint: word (name) finding
- Primary problem in long term memory is recall (accessing the info), not recognition
- More trouble with difficult tasks when distracted
- Slower information processing
- Some decline in process-oriented aspects of short term memory
How to diagnose MCI?

- The Mini-cog
  - 3 item recall + Clock Drawing Test (CDT)
    - Give 3 items and ask pt to repeat and remember them
    - Diver using CDT
    - Ask for recall of 3 words
  - Scoring
    - 1 point for each recalled word
    - CDT Normal if the patient places the correct time (1 point) and the clock appears grossly normal (1)
- MCI
  - Pt misses 1-2 words on recall OR 1 recall + 1 clock OR nl memory abnl clock and other MCI criteria

Why diagnose MCI?

- Increase risk of progression to dementia
  - 6-10% per year vs 1-2% in those without MCI
- Increased need for follow up
  - Functional status
  - Behavior
  - Driving
- Treatment of depression
- Participation in trials of disease modifying agents
- Safety of patient and others
- Planning for the future
81 yo man with h/o CABG + MVR, prostate CA, massive GIB, HTN, hypothyroidism and mild dementia comes in for f/u. His daughter sends an email saying she doesn't think he can drive safely anymore. The patient says he's had no accidents and really only drives short distances to pick up groceries or go to the bank. For the last couple of years, his wife has done the night and highway driving.

- Is he safe to drive?
- How do you make that determination?

Safety: Driving and Dementia

- Practice Parameter update: Evaluation and management of driving risk in dementia
- Systematic literature review
  - Recommendations mostly based upon level B or C evidence
  - No single test or attribute that accurately predicts risk
  - Even patients with mild dementia are at high risk for unsafe driving
- Article provides
  - Risk algorithm
  - Patient and caregiver questionnaires

Dementia and Driving

- Patient is at increased risk for unsafe driving if:
  - Clinical Dementia Rating scale score ≥ 0.5 (A)
  - Caregiver rates patient’s driving ability as marginal or unsafe (B)
  - Pt has a history of crashes or traffic citations (C)
  - Pt has reduced driving mileage or self-reported situational avoidance (C)
  - Mini-Mental State Examination scores ≤24 (C)
  - Pt exhibits aggressive or impulsive personality characteristics (C)
- Your responsibility
  - Laws vary by state
Alzheimer’s is, in fact, like an insidious fog, barely noticeable until everything around has disappeared. After that, it is no longer possible to believe that a world outside fog exists.

John Bayley, *Elegy for Iris*, 1999

Advanced Dementia

- 7th leading cause of death
- The clinical course of advanced dementia has not been well studied
- The study
  - 18-month, multicenter, prospective study of 323 nursing home residents with advanced dementia
  - Goal: describe their clinical course with attention to
    - hospital utilization
    - quality of life
    - use of palliative care

Mitchell SL et al. *NEJM* 2009;361:1
529-38
Clinical Course of Advanced Dementia

• Eligibility criteria
  - Age ≥60 + dementia
  - Cognitive Performance scale 5-6 (≈ MMSE of 5)
  - Global Deterioration scale stage 7 (range 1-7)
  - Availability of an English-speaking health care proxy

• Survival and clinical complications
  - 55% died; adjusted mean survival 478 days
  - Complications common:
    • Pneumonia 41%, febrile episode 53%
    • Eating problem 66%
    • Sentinel event in 9%, rare in last 3 mos life

• Distressing symptoms
  - Dyspnea (>5 d.) 46%
  - Pain (> 5 d) 40%
  - Agitation 30%

• Burdensome interventions in final 3 months
  - Parenteral therapy 29%
  - Hospitalized 12%
    • Pneumonia 68%
    • Other infection 14%
  - Emergency Department visit 3%
  - Tube feeding 7%
Clinical Course of Advanced Dementia

- Hospice referral
  - Overall 22%
  - Among those who died:
    - 30% referred
      - 0-7d: 26%
      - 8-90d: 30%
      - 91-180d: 17%
      - >181d: 26%

- Health care proxies
  - 18% had received prognostic information from physicians.
  - 32% were informed by their physicians of probable complications

Bottom Line

- Advanced dementia is a terminal illness
  - Few patients died from acute events or other terminal diseases
  - Life expectancy was similar to metastatic cancer and stage IV heart failure

- Physicians do a poor job of communicating prognosis
  - Although the goal was comfort for 96%, physical suffering was common
  - When proxies were aware of prognosis, patients were less likely to receive burdensome care (OR=12)
  - Infections and eating problems can be used to inform prognosis
Topics

- Dementia
- Syncope
- BNP
- Spinal Procedures
- Advanced care planning

Syncope Diagnosis

- 1-3% of all emergency department visits and up to 6% of hospital admissions
- <50% of patients admitted to hospital leave with a definitive diagnosis
  - $2 billion/year in costs for admissions
- U.S. admission rates vary from 55-85%
  - Australia <30%
  - Canada <20%
  - No difference in outcomes
- Syncope algorithms have increased correct dx but have not decreased use of low yield tests
Syncope Diagnosis

- Retrospective chart review of 2106 consecutive patients aged 65 and older (mean 79 y. o.) admitted to one acute hospital for syncope

- Study aims
  - Determine the frequency, yield, and costs of evaluation of syncope in older adults
  - Calculate cost per test affecting dx or tx
  - Determine whether the San Francisco Syncope Rule (SFSR) improves test yield

Yield of Diagnostic Tests for Syncope

- Etiology of syncope
  - No Etiology 47%
  - Vasovagal 22%
  - Orthostatic hypotension 13%
  - Arrhythmia 12%
  - Dehydration 8%

Test Impact on Diagnosis and Treatment

- ECG
  - Use 99%  Dx 3%  Tx 7%
- Telemetry
  - Use 99%  Dx 5%  Tx 12%
- Cardiac enzymes
  - Use 95%  Dx 0.5%  Tx 1%
- Head CT
  - Use 63%  Dx 0.5%  Tx 2%
- Postural BP
  - Use 38%  Dx 15-21%  Tx 25-30%
**Bottom Line**

- Head CT, carotid U/S, EEG only if neuro findings on H & P
  - very costly ($20,000-33,000)
  - even more costly if cost per test that impacted diagnosis was considered ($66,000-99,000)
- Postural BP for all elderly syncope patients
  - most helpful and most cost effective ($17-21)
- Use SFSR to decide about enzymes, tel, echo
  - significant ↑ diagnostic yield and cost-effectiveness
- Costly, low yield testing remains common

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**More Syncope**

- Retrospective chart review
- Aim: to determine clinical variables that correlated with the occurrence of serious events within 30 days in patients > 60 y. o.
- 2584 patients at 3 EDs in CA who presented with syncope or near syncope without a serious underlying cause

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**Predictors of serious outcome**

<table>
<thead>
<tr>
<th>Positive predictors</th>
<th>Negative predictor</th>
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<tbody>
<tr>
<td>SBP &lt; 90</td>
<td>Near-syncope</td>
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<tr>
<td>Complaints of SOB</td>
<td></td>
</tr>
<tr>
<td>History of CHF</td>
<td></td>
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<tr>
<td>ECG w/ new Arr, not SR</td>
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<tr>
<td>Hmatcrit &lt;30</td>
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</table>

- Score | Risk
1 – 0   | 2.5%
1 – 2   | 6.3%
3 – 6   | 20%

- Essentially refines SFSR but needs validation
An 82 yo woman with DAT, T2DM and CAD comes to your office following an emergency room visit for syncope. She is found to have transient bradycardia. You review her medication list to consider whether any of her drugs could have contributed. You decide to stop which of the following medications.

- A. Simvastatin
- B. Donepezil
- C. Lisinopril
- D. Metformin

Acetylcholinesterase Inhibitors

- Widely prescribed for dementia
  - $6 billion worldwide 2008
  - Benefits are limited

- AChI cause bradycardia thru vagal mediation

- Case reports of AChI associated syncope for years
  - Is the relationship causal?
AchI and Syncope

- Retrospective cohort study—mean f/u 10 months
- 81,300 community-dwelling older adults with dementia and no syncope in previous year
  - Mean age 80y, 62% women
  - 19,800 new AchI users & 61,500 non users
- Outcomes
  - First hospital visit for
    - syncope
    - bradycardia
    - permanent pacemaker insertion
    - hip fx

Results

Bottom Line

- Modest but significant increased risk
- AchI’s have modest effect on cognitive performance on standardized testing
- Little to no evidence that AchI’s affect meaningful pt outcomes (function, SNF placement, etc.)
- Recommendation:
  - Use caution when considering AchI’s in all pts, especially those with h/o syncope, bradycardia, or being treated for HTN with AV node affecting rx
  - Consider stopping AchI’s in pts who demonstrate no clear benefit
The great secret that all old people share is that you really haven't changed in seventy or eighty years. Your body changes, but you don't change at all. And that, of course, causes great confusion.

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It's 2 AM. The ED calls because Mrs. B, a 94 y. o. patient of yours, has presented with new onset SOB and they need PMH. You turn on your computer and securely access Mrs. B's record which reveals she has no significant PMH. She lives independently and comes in "for a check up" every 2 years "so someone will know me when I die."

• The ED doc says Mrs. B is in SR at 92bpm with bilateral rales and bibasilar infiltrates on CXR. Her BNP is 672 but the ED doc is going with dx of pneumonia since all "seriously old" patients have high BNPs.
How useful is BNP in the very old?

- Two studies
  - Retrospective analysis 335 VA ED visits for SOB
  - 42 month prospective, observational, population-based study of 274 nonagenarians (Leiden 85+)

- Study questions
  - How do patient characteristics other than CHF affect BNP levels?
  - Is BNP a specific marker of cardiac disease in very elderly people independent of the presence of non-cardiac diagnoses?

Improving the utility of BNP

- 4 factors altered BNP levels
- BNP cut-offs w/ 91% sensitivity for each factor:
  - 150 pg/mL in patients with AF
  - 449 pg/mL in patients with Cr ≥ 2mg/dL
  - 25 pg/mL in patients with BMIs 35 kg/m^2
  - 184 pg/mL in patients aged 75

- Use of cut offs significantly improve dx with BNP x for BMI
- Regression model developed for pts with >1 factor

BNP in Nonagenarians

- BNP does not correlate with markers of poor health or functional status

![Graph showing BNP levels in different functional statuses]
**BNP in Nonagenarians**

- BNP does correlate with specific cardiac diseases

**Bottom Line**

- Strong correlation between BNP and cardiac disease even in the old and very old
- Using a higher cut off improves sensitivity
- BNP levels useful independent of overall health and functional status
- Additional finding in Leiden Study
  - Elevated BNP is a marker for mortality in patients with (HR = 2.8) and without (HR= 3.5) cardiac diagnoses
  - What are we missing?

*You know you're getting old when everything hurts. And what doesn't hurt doesn't work.*

Hy Gardner
Topics

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75 yo woman with osteoporosis has sudden onset low back pain while lifting a heavy box. Plain films shows a new L1 compression fracture.

Which of the following may NOT be effective in relieving her pain?

- A. Calcitonin
- B. NSAIDS
- C. Vertebroplasty
- D. Opioids

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Vertebroplasty

- Vertebroplasty procedures have doubled in the past 6 years
- Benefit claims:
  - Pain relief
  - Improved functional capacity
  - Limitation of spinal deformity
- RCTs to date have compared vertebroplasty to non-surgical therapy

Weinstein J NEJM 2009; 361:619-621

Vertebroplasty

- Two studies in the NEJM in August 2009
- Both compared vertebroplasty to a sham procedure
- Combined total of 202 patients studied
  - 1-3 fx, <12 months pain, VP or sham
- Primary Outcomes
  - Overall pain/disability
  - Pain at 1, 3 and 6 months

Study Limitations

- **Buchbinder**
  - 30% of potentially eligible subjects declined to participate (selection bias?)
  - Relatively small sample size (71)

- **Kallmes**
  - Allowed crossover at 1 month
  - No comparison to other medical treatment
**Bottom Line**

- Randomization to a sham procedure shed additional light on the effects of vertebroplasty.
- Vertebroplasty is not without its hazards.
- These results should at least add to our discussion with patients about the risks and benefits of this procedure.

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**Spinal Stenosis: Do No Harm**

- Lumbar decompression can be better than conservative care in SS with radicular pain.
- Increase in rates of complex v. simple fusions.
- Study of Medicare data 2002-7
  - 15x increase in complex fusions (1% → 15%).
- 2007 cohort of 32,000 patients
  - CF higher complications (5.2% v. 2.1%).
  - CF 2x higher mortality (0.6% v. 0.3%).
  - CF 3x the cost.
  - Surgeon reimbursement: up to 10x.
- Prospective trials needed; caution for now.

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And in the end, it's not the years in your life that count. It’s the life in your years.

- Abraham Lincoln
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Advance Care Planning

• Prospective RCT in single university hospital in Australia
• 309 medical inpatients ≥ 80 yo followed 6 mos
  – Facilitated ACP vs. usual care
  – Trained RNs and allied health workers facilitated
  – Intervention based on “Respecting Choices”
    • reflect on goals, values, religious and cultural beliefs
    • consider future medical treatment preferences
    • appoint a surrogate
    • document wishes for end of life care
• Doctors participated prn so pts understood their illness, tx options and likely prognosis

Advance Care Planning

- ACP done by 125 intervention patients (81%) and 1 control patient
  - 84% expressed wishes, appointed surrogate or both
- 56 patients dead at 6 months

<table>
<thead>
<tr>
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<th>EOL wishes known and followed</th>
<th>Impact of events scale</th>
<th>Family very satisfied with death</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention</td>
<td>86% (25/29)</td>
<td>5</td>
<td>63% (24/39)</td>
</tr>
<tr>
<td>Control</td>
<td>50% (13/27)</td>
<td>15</td>
<td>48% (13/27)</td>
</tr>
<tr>
<td>p</td>
<td>&lt;0.001</td>
<td>p=0.001</td>
<td>P=0.02</td>
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Qualitative Data:

Control group quotes

He should have had more say. He couldn’t do the rehabilitation. He knew he was dying, but the doctors didn’t seem to get it.

Mum didn’t want heroics. She knew she was dying. I was horrified when I heard she got 45 minutes of CPR. She did not want it. All anyone had to do was ask. I feel very hurt and hurt for mum and my sister.

Intervention group quotes

We felt really comfortable making decisions because we had discussed it with him.

We had a clear plan so could just relax and enjoy time with dad.
**Bottom Line**

- Code discussions ≠ ACP
- Most pts welcome ACP and expect health professionals to initiate it
  - Increased satisfaction with hospital stay (p<0.001)
- ACP increases
  - Chances that wishes will be known and followed
  - Patient satisfaction with care on hospital admission
  - Family’s sense of patient’s satisfaction with death
- Most pts did not want life prolongation
  - No difference in survival rates at 6 months
  - Large potential savings in suffering and $  

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**Thank you**

- C. Bree Johnston
  - Professor
  - UCSF Division of Geriatrics
- G. Michael Harper
  - Associate Professor
  - UCSF Division of Geriatrics
- William J. Hall
  - Paul H. Fine Professor in Medicine
  - University of Rochester
Getting old is a fascinating thing. The older you get, the older you want to get.