Lights, Sirens, and Geritol: Geriatrics in EMS

Dustin J. Calhoun, MD
Assistant Professor
University of Cincinnati
Department of Emergency Medicine
Division of EMS

Epidemiology

- 2000 to 2010:
  - Age group < 18 increased 3%
  - Age group ≥ 65 increased 12.8%
  - Age group ≥ 85 increased 31.8%
- ≥ 65 year olds make up 12.9% of US pop
- 35% of total US health care dollars
- ~6% of ED visits in 2003
- 43% of ED admissions

Increased population age due to:

- Increased mean survival rate
- Decreased birth rate
- Increase in the standard of living and the level of health care

Geriatric Patients

- The study and treatment of diseases of the elderly
- Usually refers to patients age 65 or greater
- 36% of EMS calls involve geriatric patients
- Shift of care to outpatient setting leads to great exposure to EMS

Geriatric Patients

Many social issues to consider when treating the elderly patient:

- Poor social situations can foster environments where illness can occur
- Difficulties with income, can lead to difficulties obtaining meds, poor nutrition
- Emotional issues (depression) may be related to solitude, lack of personal contact, loss of family/friends
- Geriatric patient may be anxious, aware of own morbidity and mortality

Geriatric Patients

Often have issues with living situations:

- ~50% of those age 85 or older live alone (vast majority female)
- Variety of residences (independent, dependent, nursing home, institution)
- Have to sort out decision making situations (competency, multiple caregivers, DNR status, etc.)

Geriatric Patients

Many don't seek help:

- Do not want to be treated as helpless
- Do not want to burden others
- Fear of loss on independence
- Feel their situation is inevitable
- Geriatric illness often accompanied by AMS

Geriatric Pearls

- Signs and symptoms in the elderly may be absent or altered (ie, absence of fever)
- Generalized or vague complaints (weakness, dizziness, sick)
- Atypical presentations, such as depression presenting as dementia or agitation
- Decreased level of function may indicate untreated illness
- An abrupt decline in any system is not "normal aging"

"When I asked if she was critical I didn't mean verbally!"

General Assessment: History

- Distinguishing the problem is important, complaint may initially seem trivial/vague
- Chief complaint may not be primary problem
- Patient my have one CC while caregivers state another
- Chronic problems may confuse acute issues
- How are they different from baseline?

General Assessment: History

- Talk with patient first
- Talk with other caregivers as well
- Confused / sleepy doesn't mean senile / deaf
- Bring meds or UTD list to hospital
- Remember difficulties with communication: vision, hearing (low pitch is better) and speech difficulties
- Get documentation of PMHx and CC from SNFs

Physical Exam

- Use it to determine chronic problems from acute
- Be thorough, but remember patient may not tolerate exam as well
- Look at the backside
- Blunted physiologic responses
  - Beta-blocks may prevent tachycardia
  - 30% with serious infection have no fever

Management

- Manage as you would any other patient
- ABC's
- Monitor cardiac, neuro, respiratory status and vitals closely
- May want to avoid lights and sirens when possible to reduce anxiety

For some reason, these new birds didn't seem as interested in William's bird seed.

Medication Concerns

- Polypharmacy (increased adverse reactions and drug-drug interactions)
  - >30% of prescription drugs in the US
  - >40% take more than 5 drugs
  - >10% take more than 10 drugs
  - 12-30% have drug issue as contributor to admit
- Non-compliance (income, memory loss, physical constraints, complicated regimen)

Medication Concerns

- Altered pharmacokinetics
  - Decreased renal function
  - Decreased GI motility
  - Decreased hepatic blood flow
  - Increased adipose tissue
- Start low…go slow
  - Narcotics, sedative-hypnotics, muscle relaxers, NSAIDS, antihistamines

Medication Concerns

- Most often implicated in outpatient medication reactions
  - CV meds
  - Diuretics
  - non-opioid pain meds
  - Hypoglycemics
  - anti-coagulants

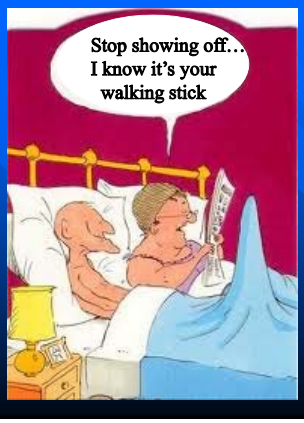
Beers Criteria List

Table

Drugs and Classes Potentially Inappropriate for Use in the Elderly

Amiodarone
Amitriptyline (H)
Amphetamines (excluding methylphenidate hydrochloride and anorexics)
Barbiturates (H)
Benzodiazepines, long-acting (chlordiazepoxide [H], diazepam [H], flurazepam [H], oxazepam [H], temazepam)
Chlorpheniramine
Chlorpropamide (H)
Cimetidine
Clonidine
Clorazepate
Cyproheptadine
Desiccated thyroid
Digoxin >0.125 mg/day (H)
Diphenhydramine (H)
Dipyridamole, short-acting (L)
Disopyramide (H)
Doxazosin
Doxepin (H)
Ergot mesyloids (L)
Estrogens
Ethacrynic acid
Ferrous sulfate >325 mg/day
Fluoxetine
Gastrointestinal antispasmodics (belladonna alkaloids, clidinium-chlordiazepoxide, dicyclomine, hyoscyamine, propantheline—all [H])
Guanadrel
Guanethidine
Hydroxyzine
Indomethacin (L)
Isoxsuprine
Ketorolac
Meperidine (H)
Meprobamate
Mesoridazine
Methyldopa and methyldopa/hydrochlorothiazide (H)
Methyltestosterone
Mineral oil
Muscle relaxants (carisoprodol, chlorzoxazone, cyclobenzaprine, dantrolene, methocarbamol, orphenadrine—all [L])
Nifedipine, short-acting
Nitrofurantoin
NSAIDs, long-term use of full-dose, longer half-life, non-COX-selective types (naproxen, oxaprozin, and piroxicam)
Oxybutynin, short-acting
Pentazocine (H)
Perphenazine-amitriptyline
Promethazine
Propoxyphene
Reserpine (L)
Stimulant laxatives, long-term use except with opiate analgesics (bisacodyl, cascara sagrada, and Neoloid)
Thioridazine
Ticlopidine (H)
Trimethobenzamide (H)
Tripelennamine

H = high-severity-impact medication; L = low-severity-impact medication.
H and L ratings are taken from Fick DM, Cooper JW, Wade WE, et al. Updating the Beers Criteria for potentially inappropriate medication use in older adults: results of a US consensus panel of experts. *Arch Intern Med*. 2003;163:2716-2724.



Disease in the Elderly

- Heart disease is the leading cause of hospitalization and death
- Cancer is the second most common
- Fractures are the fifth leading cause of hospitalization
- Generally decreased body system function predisposes to numerous problems

Changes with age, a systematic approach

Respiratory

- Decreased overall pulmonary function
  - Decreased vital capacity, diffusion, and drive
- Decreased compliance, decreased elasticity, decreased muscle strength, spinal kyphosis
- Poor ciliary function
- Potential for rapid decompensation
- Position of patient important, supplemental oxygen
- Monitor for respiratory fatigue
- Caution with beta agonists and IVF's

Cardiovascular

- Decreased response to endogenous catecholamines
  - Less inotropy, less chronotropy
- Less compliant myocardium from hypertrophy
- Increased susceptibility to ischemia with stress
- Increased risk of dysrhythmias
- HTN, aortic dissection, AAA, mesenteric ischemia, stroke
- IV, O2, monitor, and EKG for these patients

Neurologic

- Atrophy of brain
  - Decreased brain volume, increased risk of subdural hematomas secondary to stretching of the bridging veins
- Inefficient BBB = increased risk of meningitis
- Autonomic instability = BP variation and orthostasis
- Check for weakness, stroke scale
- Stroke is time senstive
- Caution when attempting to lower blood pressure, do not want to decrease cerebral perfusion pressure.

Endocrine

- Increased incidence of diabetes mellitus and thyroid dysfunction
- Hormonal deficiencies in post-menopausal women
- Endocrine disorders difficult to diagnose in the field, may present as mental status changes (remember finger sticks!)

Gastrointestinal

- Decreased saliva production, GI motility, gastric mucos, and taste buds
- May lead to malnutrition, aspiration
- Decreased liver function, decreased effectiveness in detoxification and decrease in clotting proteins
- Higher incidence of GI bleeding (carcinomas, ulcers, varices, etc.)

Thermoregulatory

- Blunted mechanisms/response
- Decreased sweat output per gland, decreased number of glands, higher core temp needed to sweat
- Decreased shivering
- Drugs can affect response
- Environmental issues with patients living alone

Integumentary

- Decreased collagen
- Increased susceptibility to tearing with increased healing time
- Increased risk of secondary infection, carcinomas, decubitus ulcers
- Look at the backside, no one else may have!

Musculoskeletal

- Osteoporosis is loss of mineral from bone
- Change in posture, loss of height, increase in thoracic kyphosis
- Increased susceptibility to fractures (ie hip)
- Impaired balance and mobility
- Many injuries can be splinted as found

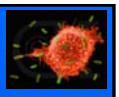
Renal

- Up to 40% loss of functioning nephrons
- Decreased renal blood flow (meds, atherosclerosis, renal artery stenosis)
- Decreased thirst response
- Increased waste products (uremia) and electrolyte abnormalities (hyperkalemia, hyperphosphotemia)
- Fluid overload vs decreased total body water
- Decreased erythropoetin can contribute to anemia
- Altered renin system alters BP control

Genitourinary

- Incontinence
- Decreased bladder emptying
- Increased urinary frequency
- UTI's can be cause or result from above
- May be a cause of falls, impairment of activity

Immune System



- Diminished immune response
  - Decreased function of T cells
  - Decreased antibody titers
- Increased susceptibility to infection
- Increased risk of neoplasm
- Reactivation of latent infection
- Longer duration and severity
- Vaccinations for the elderly important
- Caution in transmitting infectious disease

Hematologic

- Decreased circulating blood volume
- Decreased production of RBC's
- Nutritional deficiencies can lead to anemia (iron, folate, vitamin B12)
- Chronic disease can lead to anemia

Maybe the world requires such balance

Specific Disorders

- Sundowning Syndrome
  - occurs in elderly demented patients, who become highly agitated and disoriented after dark when visual sensory input is diminished and the environment becomes unfamiliar.
- Atypical presentation of AMI increases with age: SOB, syncope, flu, N/V, weak, confused
- Pneumonia often lacks any respiratory sx
- UTI often cause severe AMS
- 2/3 with abd pain get admitted, 1/5 go right to OR
- Falls: definitely mechanical or not?

Specific Disorders

- Major causes of AMS:
  - Infection (uti, pneumonia, meningitis, sepsis)
  - Medical illness (liver/kidney failure)
  - Hypoxia
  - Hypoglycemia
  - Neurologic causes (SAH, intracranial hematoma, CVA)
  - Drug intoxication/withdrawal (EtOH, benzos)
- Long spine boards cause ulcers

SB213 2012	SB213 Guideline for Assessment/Transport of Geriatric Trauma Patients Academy of Medicine of Cincinnati - Protocols for SW Ohio	SB213 2012
ALL	I. TRAUMA PATIENTS 70 YEARS OF AGE OR OLDER SHOULD BE DEFINED AS GERIATRIC TRAUMA. A. The criteria listed below are in addition to the Adult Trauma Triage Guidelines. Geriatric trauma patients should be triaged for evaluation in a trauma center for: 1. Glasgow Coma Score less than 14 with known or suspected traumatic brain injury 2. Systolic blood pressure less than 100 mmHg 3. Falls with from any height, including standing falls, with evidence of traumatic brain injury 4. Pedestrian struck by motor vehicle 5. Known or suspected proximal long bone fracture sustained in a motor vehicle crash 6. Injury sustained in two or more body regions	

Case #1

- Called to residence of an 80 y.o. with SOB

Primary Survey

- Respirations 34
- SpO2 of 85% on RA
- Diffuse inspiratory/expiratory wheezing

History and Physical

- After primary survey and treatment with 2 nebs he gives past history
- Always has baseline SOB
- Ran out of "inhalers" today, thinks oxygen tank may be low
- Unable to ambulate secondary to shortness of breath, feels weak
- Cough, maybe a big worse than usual

PMH

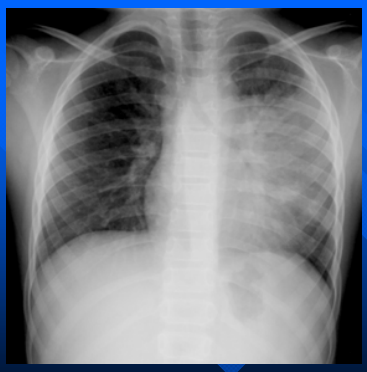
- CAD
- COPD
- HTN

Meds

- Home O2
- Inhalers
- BP meds
- Aspirin

Management

- Continue supplemental O2 en route
- One more albuterol nebulizer given
- Patient appears more comfortable, SpO2 of 91%



Hospital Course

- Temperature of 100.8
- Patient given Solu-Medrol, nebs continued
- CXR reveals infiltrate consistent with acute pneumonia
- Admitted and discharged home several days later in good condition

COPD

- Disease of chronic airflow obstruction
- Among 10 leading causes of death in U.S.
- Cigarette smoking, pollutant exposure, genetic predisposition
- Emphysema and/or chronic bronchitis
- Airway inflammation, sputum production, destruction of alveoli

COPD

- Cough, sputum production, dyspnea, pursed-lipped breathing, wheezing
- Leads to hypoxia, hypercarbia, altered acid-base status and respiratory decline
- Treatment is prevention and avoidance of exacerbating factors/infections
- Oxygen, beta-agonists, steroids, antibiotics

Pneumonia

- Infection of the lung caused by bacteria and/or viruses
- 4th leading cause of death in people age 65 or older
- Nursing home patients particularly susceptible (mobility, exposure)
- Often colonized with bacteria (*Psuedomonas)*

Pneumonia

- Pneumonia acquired by respiratory droplets/contact
- Community-acquired, nosocomial, aspiration
- C/o dyspnea, fevers, chills, sweats, sputum production, abdominal pain, altered mental status
- Respiratory support, antibiotics

Case #2

- Called to a nursing home for a 81y.o. Caucasian female status post fall out of bed

HPI

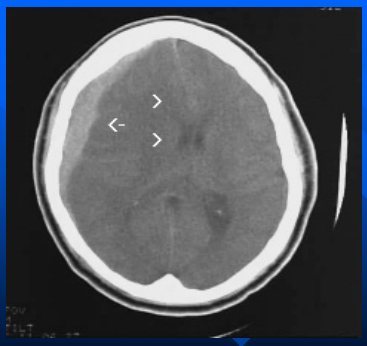
- Patient found on floor next to bed, no one witnessed fall
- Down for unknown period of time
- Patient confused, unable to give good history

Physical exam

- Vital signs BP 170/100, P 65, R 16
- Patent airway, breath sounds clear, distal pulses in all 4 extremities
- Multiple bruises around face, right side chest wall tenderness
- Opens eyes to voice, confused speech, moves 3 extremities spontaneously
- Right leg externally rotated and shortened

Field Management

- Supplemental oxygen given
- IV established
- Placed on monitor, sinus bradycardia
- C-spine collar and back board
- Right hip splinted
- Transported without change in status



Hospital Course

- Multiple trauma
- Head CT shows subdural hematoma
- Multiple rib fractures
- Right comminuted femoral intertrochanteric hip fracture
- Patient with gradual decline in hospital, died 4 days later

Follow-up

- Multiple trauma patient from same nursing home several weeks later
- Patient found to be victim of abuse from staff member

Review

- Polypharmacy is a problem: bring the drugs
- Get a clear CC and baseline
- Tachycardia and fever may not be there
- Belly pain is scary
- MI may not look like MI: get the EKG
- They're not all senile and deaf
- Look for abuse, point it out
- Get them off the board

Questions?

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Resources

- Adult Protective Services (Department of Human Services), 24 hours: 421-LIFE (5433)
- Talbert House Victim Service Center, 8-4:30: 241-4484