Geriatric Critical Care Transport
They are not just old kids

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Disclosures

- None
- Nada
- Nein
- Nyet
Goals for today

• Safely transport/treat us old guys/gals
• Understand the physiologic changes of aging that make #1 difficult
• Avoid the pitfalls we will throw in your pathway
• Be able to take good care of us without necessarily using all the high tech “fun” stuff
• Deal with more “ethical” issues
Why are we talking about this???

- Older patients make up 12% of the population and rapidly growing
- They account for way more of the “sick” patients and that is growing
- United States, approximately 42% to 52% of ICU admissions are geriatric patients
- largest increases in trauma deaths were in patients in their 5th and 6th decades of life
- Why? Because medicine has gotten very good at “fixing” acute killers
- Degenerative/chronic diseases are getting more common
- So we are transporting lots more “acute exacerbation of>>>>”
- Even when it is a “trauma” case is affected by the chronic underlying conditions
• Riding into the golden years: injury patterns and outcomes of advanced-age motorcycle trauma Muratore Am J Surg 2016
So Why are the “age enhanced” difficult??

- No 1 of course
- “The good die young”
- Changes in physiology
- Co Morbidities increase
- Medications they are on
Aging

- Has actually 2 aspects
  - Chronologic
  - Physiologic
- Both of these affect both:
  - Presentation of and
  - Response to treatment of Everything
- Finally the elderly are more prone to complications of both trauma, illness and treatment
Effects of Aging

• “immunosenescence” waning of the ability to prevent infections and response to those infections.

• The ageing immune system is characterised by a decline in stem cells, alterations in T lymphocyte production, blunting of the B-cell led antibody response and reduced phagocytic activity of neutrophils, macrophages and natural killer cells.
  
  • Prevention:
  
  • Skin becomes “fragile” portal of entry
  
  • Immune cells are old and less responsive
Response:

- Aging decreases the tachycardic response
- Blood pressure response is blunted as well
- Heart becomes less responsive to sympathomimetics
- Increasing diastolic failure
- More dependence on atrial “kick”
- Blood vessels become “stiff” so more dependent on BP for flow
Blood Flow

Flow = k(P₁ - P₂) L/R⁴

Young people increase flow by increasing R
Old folks can’t increase R so have to increase P₁
Co-morbidities

• Aging is associated with:
  • Increasing incidence diabetes
  • Increasing cardiac problems especially a-fib
  • Increasing incidence of Mental decline/ dementia (mild to severe)
  • Decreased lung function/More COPD
• **Oh My Gosh The Med List**
• Elderly patients are on multiple medications
• The number of patients and medications is increasing
• Some of these will totally screw your exam/evaluation
• Some of these will worsen whatever is wrong with your patient
• All of these will interact with your medications
When you give almost any medicine to Elderly

• You are performing a one of a kind interaction study
Anticoagulation Antiplatelet drugs

- Increase bleeding
- Increase mortality in trauma (and that includes trauma from procedures) but may be only in head injuries??
- Increase risks of other medications
Antiarrythmics

• A Fib is increasingly common as you get older hence more patients on “rate or rhythm” drugs.

• Many cardiac drugs change/decrease ability to increase heart rate

• Many (if not all) also mess with your ability to increase your BP

• Most are also proarrythmic
  • Reason we stopped treating “asymptomatic PVCs”
  • Ie: Totally screw your ability to monitor the patient.
Blood pressure meds?

- Many drugs lower blood pressure by blunting the ability to vasoconstrict.
  - I.e. when start going into shock can’t compensate
  - Don’t know what “starting” blood pressure was
  - Many are the same “antiarrhythmics” we discussed last slide
- Elderly like infants have trouble increasing stroke volume to compensate
How about some evidence??

• Takao et al Early predictors for massive transfusion in older adult severe trauma patients Injury, Int. J. (2017)
  • Compared ABC, TASH, and PWH scores for massive transfusion risk
  • Found worked well for younger but lousy for older (>64) patients
  • Primarily because VS and SI did not work well
• Conclusion
  • Have a lower threshold for intervention
  • Injuries more predictive than scores
  • FAST results, unstable pelvic fracture, and long bone open fracture of the lower limbs.
  • Pre-injury anticoagulant or antiplatelet agent use and lactate levels were risk factors
Joyce et al, Critical Care and Trauma Considerations in the Geriatric Patient

- Nice review of the literature
- Suggests that age alone is not a risk factor
- “frailty” may be a better predictor
- Better correlation between Frailty and physiology than age & physiology
Frailty?

• Measure of “overall decline” or general multi organ
• Several scores most are somewhat complex and hard to perform in trauma
• Online calculators
• Simplest is the “timed-up-and-go test (TUGT)”.
• Which of course can’t do in most (all) trauma
Delirium

- A killer in critically ill patients
- Worse in Elderly
  - More start out delirious
  - More develop it
- Prevention is best
- Interventions that have been shown to be effective
  - noise reduction,
  - reorientation,
  - cognitive stimulation,
  - return of vision and hearing aids,
  - Proper hydration,
  - avoidance of sleep deprivation, and
  - pain control
Treating Elderly?
As you get older you have:

• Decreased drug clearance
• Decrease level of proteins
• Decreased protein binding
• Decreased lean and increased fat body mass
• Decreased circulating blood volume
So what to do?

- Be aware that your VS may not be reliable except for
- The one you don’t really measure?
- RR may be the most reliable indicator of physiologic stress
- If of course not intubated paralyzed
What to do?

• Decrease that noise
  • Head sets may be even more important
• Treat pain aggressively but carefully
• Monitor ETCO2 as hyperventilation may be first warning sign of bleeding/shock
• ETCO2 will also warn of respiratory decline
• Get off the backboard fast
  • watch for skin breakdown
  • Watch for respiratory compromise
  • Increased risk of aspiration
• Be sure hearing aids glasses come with patient hearing aids mixed blessing in flight but probably better if in and patient can hear
What to do

• Understand that your drugs may work better or worse in this population
• Anticoagulation/antiplatelet is always a consideration
• Drug interactions should always be on your mind
• Drugs (prescribed and non-prescribed) may be contributing
• Be careful to manage fluids closely
  • Too little may be as bad as too much (or worse)
• Manage Oxygen carefully
• Watch out for arrhythmias
AGITATION!!

• First second and third be sure not a “medical” problem.
  • Hypoxia
  • Blocked Foley
  • Pain
  • Restrain/strap too tight
  • Delirium
  • Etc etc etc
Sedation?

- **Intubated patients**
  - Use pain medication (fentanyl/ketamine etc.) ideal fent drip
  - Avoid Benzos if possible
  - Use propofol/dexmedetomidine if need sedation
  - Avoid sedation that is deeper than needed
  - Use a scale such as RASS

- **Non intubated**
  - Be sure not anything on previous slide
  - Probably still should avoid benzos
  - Haldol or if lucky droperidol
OK now what?

- You are getting ready to load and the family/paramedic hands you some papers
- MOLST or POLST etc whatever your state uses
- Now what do you do?
MOLST POLST

• MOLST/POLST:

• These are Medical (or Physician) Orders for Life Sustaining Treatment
  • These are actual orders signed by a physician approved to operate by
  • Problem is they are often confusing and contradictory
    • Clemency et al J post acute and long term care (JAMDA) 2016 Decisions by Default: Incomplete and Contradictory MOLST in Emergency Care
Advance Directives

• Advance directives are something patient wrote or told someone or checkboxes on a form and then got notarized to guide medical treatment
  • These are NOT medical orders but “guides” to produce medical orders
  • Require a doctor to order them (medical control?)
  • Again are often confusing or “don’t fit”
DPOA

• DPOA (Durable Power Of Attorney) is a legal document that gives decision making capacity to another person IF PATIENT IS INCAPACITATED.
• Generally accompanied by advance directive to help the DPOA.
• Surrogate is generally/always appointed by a court due to incompetence (a legal term). Has complete decision making capacity for patient.
What now?

- As the population ages and chronic diseases become more common
- These (hopefully) become more common
- Probably need a “plan” for dealing with these.
DISCLAIMER!!!!

• I have no answers to the questions that follow
Scenarios

• 75 y/o with moderate-severe COPD who decides if heart stops doesn’t want CPR/intubation but would like antibiotics and NIPPV presents with pneumonia to small community hospital

• Lives at home and has been doing well on home O2

• Falls in bath hitting chest having severe pain with breathing

• VS BP 100/89, P 70 RR 33 SAO2 90% tender chest with compression pain

• Has been going downhill more SOB

• Do you fly DNR patients?

• Would you fly this DNR?
Scenario 2

- 90 y/o lady no significant history fell and then complained of headache and passed out.
- Exam responds to painful stimuli only VS BP 195/120 HR 85 RR 20 SAO2 95%,
- EMS presents you with a advance directive that says No CPR advanced procedures or surgery BUT antibiotics and fluids OK
- Family at scene says “DO EVERYTHING”
Conclusions

• There are more of us every day
• We are a tricky group and will bite you if not careful
• VS (except maybe RR) are unreliable for lots of reasons
• We have multiple co-morbidities and take multiple medications to make your life difficult
• We are often on medications that keep us from clotting
• We don’t respond as well as we should to the medications you use to make us better
On the other hand

• If you treat us right we can do surprisingly well
• We can go on to see our great grandkids etc.
• We will be those challenging patients you always wanted
• Oh yes we will challenge your ethical thinking as well as your medications (and there’s no app for that)
• We and our families will be grateful
• And most of us understand that the best of you can’t make us 25 again.
Finally

- You will all get to be an Older child someday
Questions?

• Remember a good question is one I know the answer to