VANDERBILT UNIVERSITY
MEDICAL CENTER

DIVISION OF ACUTE CARE SURGERY

Geriatric Trauma Patient Management Guidelines

Rationale: To assure older adults (>65 years of age) receive age appropriate care following trauma

I. Admission Orders:

- Past medical history/Past surgical history within 24h
- Medication reconciliation by Pharm D within 24h
- Admission nurse to obtain FRAILTY Score in Epic
- Reversal plan for anticoagulation
    - If questionable Factor Xa Inhibitor use, can obtain LMW heparin level to detect presence (not amount) of drug.

Drug Class	Anticoagulant	Reversal Plan
Vitamin K antagonist	Warfarin (Coumadin)	• Vitamin K 10mg x 1 (use caution in patients with active VTEs and/or prosthetic heart valves) • FFP – Do not use if evidence of heart failure, pulmonary edema, or Jehovah's Witness • PCC (K-centra) – If not a candidate for FFP or rapid reversal indicated – repeat INR 6 hours post-administration
Factor Xa Inhibitor	Apixaban (Eliquis) Rivaroxaban (Xarelto) Edoxaban (Savaysa) Betrixaban (Bevyxxa)	• PCC (K-centra) – repeat INR 6 hours post-administration
Direct Thrombin Inhibitor	Dabigatran (Pradaxa)	• Praxbind – dosing per eStar advisor

- Additional Labs
    - B12/Vit D/TSH/FT4
    - Hgb A1C
    - Venous lactate (if polytrauma) – if elevated obtain arterial lactate
- EKG
- Obtain orthostatics

II. Admission: ICU vs. Step-down:

- Decision for TICU vs step-down is based on clinical judgment. However, if patient has any of the following, they should be considered for admission to the Trauma ICU:
    - Rib fractures (4 or greater) with increase in O2 requirement >6L NC (see APS PMG)
    - Multiple long bone fractures
    - Severe pelvic fractures

- Hypotension: SBP < 110

III. Geriatric Consultation when step-down status:

- FRAILTY score of 4 or 5
- Polypharmacy – greater than 5 home medications (please see Appendix A)
- Greater than 2 high risk medications
- Recurrent falls and/or persistent delirium
- Concern for new dementia
- Multiple high-risk comorbidities such as:
  - COPD
  - Heart failure
  - Hypertension requiring multiple agents
  - Uncontrolled diabetes
- Hip fractures – consider pre-geriatric assessment prior to OR

IV. Specific Interventions for Geriatric Trauma Patient

- Bedside swallow – if concerned, consult Speech therapy
- Delirium minimization (See Delirium PMG)
  - Avoid benzodiazepines
  - Reduce antipsychotic dosing by 50%
  - Avoid Haldol >5mg or quetiapine >100mg
  - Priority for transfer out of receiving and ICU
  - Avoid anticholinergics
  - Consider narcotic-sparing analgesia regimen (please see Appendix A)
- Consider beginning a medication taper for inappropriate home medications (Appendix A) while inpatient and continued on discharge.
  - **https://medstopper.com/** - assists with developing taper schedule
  - Ensure patient agrees with taper plan

V. Goals of Care – discussion and documentation in medical record within 48hrs of admission

- Code Status – mandatory
- Identify if patient has Advance Directives
- Consider Palliative care consult for:
  - Surrogacy/advanced directive
  - Family conflict concerns
  - Unclear goals of care
  - FRAILTY score of 5
- Consider Hospice Scatter Bed Admission if appropriate
- Consider PM&R consult if IPR is recommended and there is difficulty with placement.

Appendix A

Prescribing Guidelines for Geriatric Polypharmacy

Medication	Prescribing Guidelines
Quetiapine	• Do not use for RASS < +1 for agitation. • Consider melatonin or trazadone first line for sleep • Preferred agent for agitation in patients with Parkinson's or Lewy Body dementia
Olanzapine	• Do not use for RASS < + 1 • Avoid in patients with Parkinson's or Lewy Body dementia
Haloperidol	• Avoid use in TBIs for greater than 3 days • Avoid in patients with Parkinson's or Lewy Body dementia
Gabapentin	• Avoid use unless patient has symptoms of neuropathic pain • May continue if home medication (consider reduced dose if frequent falls).
Famotidine	• Discontinue when appropriate according to PUD Prophylaxis PMG.
PPI	• Choose omeprazole or pantoprazole if a PPI is required.
Diazepam	• Most appropriate for patients < 65 years of age and without significant liver disease.
Lorazepam	• Preferred benzodiazepine (may use for benzodiazepine maintenance if home agent is inappropriate or ETOH withdrawal if patient is excluded from receiving phenobarbital per protocol).
Alprazolam	• Should be restarted if a home medication due to short half-life and risk of withdrawal. • Do not use more than 1 benzodiazepine.
Diphenhydramine	• Use for true allergic reaction only. • Do not use as a sleeping aide.
Ziprasidone	• May use as secondary option for quetiapine or olanzapine failure in frontal lobe TBI patients.
Sleep medications	• Pick ONE only: trazadone, and mirtazapine (max dose 15mg), quetiapine are preferred agents • May use melatonin in addition to above agents. • Consider timing administration for 20:00. • Avoid zolpidem or benzodiazepines

Promethazine	• Avoid if >65 years old.
Odansetron	• Preferred agent for nausea but can prolong QT interval. Monitor QTc if requiring frequent or prolonged dosing.

Muscle Relaxers	• Poorly tolerated in elderly due to anticholinergic effects. Do not use more than 1 muscle relaxer. Do not restart home muscle relaxers unless patient has a documental musculoskeletal disorder or has new onset of specific muscle-spasmodic pain.
	  ○ EXCEPTION: Baclofen- must be restarted due to risk of baclofen withdrawal (may use reduced dose if PO).
	  ○ Consult CPS if the patient has baclofen pump.
	• Tizanidine (preferred): can cause hypotension and works centrally (alpha-2 agonist); needs uptitration from 2mg dosage; do not start at 4mg.

NSAIDs	• Do not use more than 1 type of NSAID. NSAIDs are not contraindicated in TBI patients. • Acetaminophen 1 gram TID as first line. If NSAIDs necessary, limit use 1-2 weeks.

Home Antihypertensive Medications	• **Home Antihypertensive Medications**
	  ○ Restart if BP consistently ≥ 160 systolic or ≥ 100 diastolic and other causes of hypertension have been ruled out (e.g. uncontrolled pain, anxiety, agitation) ·
	  ○ Consider starting at 50% of home dose and uptitrating dose/adding home antihypertensives in stepwise manner.
	  ○ If AKI or K > 5 mmol/L: hold ACEs, ARBs, and potassium sparing diuretics ·
	
	• **New Start Antihypertensive Medications**
	  ○ BP consistently ≥180 systolic or ≥110 diastolic and other causes of hypertension have been ruled out:
	  ▪ Lisinopril 5-10 mg daily OR losartan 25-50 mg daily (preferred if diabetic): avoid if K > 5 mmol/L, CrCl <30 mL/min, AKI, or during perioperative period
	  ▪ Nifedipine XL 30-60 mg daily: Avoid in HFrEF, cannot be administered via DHT, preferred for renal impairment
	  ▪ Chlorthalidone 12.5-25 mg daily (preferred) or HCTZ 12.5-25 mg daily: Monitor for hyponatremia and hypokalemia

	○ Encourage follow up with PCP if SBP 140-179 and/or DBP 90-109 to establish true baseline and appropriate treatment.
Beta Blockers and Diuretics	• Do not restart unless there is clear indication. ○ Beta-blockers: CHF, CAD, arrhythmias ○ Diuretics: CHF, edema, ascites d/t cirrhosis • Consider restarting home thiazide-like diuretics for HTN if BP allows. Do not restart if hyponatremic or AKI present.

Appendix B

Geriatric Polypharmacy: Medications to Avoid

1. Tricyclic antidepressants (examples: amitriptyline, imipramine)

2. Promethazine

3. Hydroxyzine

4. Benztropine

5. Scopolamine

6. Nitrofurantoin (do not use if CrCl <60 ml/min)

7. Alpha-1 blockers: terazosin, doxazosin. Tamsulosin is preferred if able to take PO.

8. Central alpha-agonists: clonidine, guanfacine, methyldopa (clonidine should not be used as first line antihypertensive).

    a. If clonidine is a home med, we should restart at appropriate dose for current vitals and wean as tolerated. Do not abruptly stop if long term.

9. Barbiturates

10. First generation antihistamines (examples: chlorpheniramine, diphenhydramine)

11. Megestrol: poorly tolerated and increased risk of thrombosis

12. Anti-spasmodics (bladder): tolterodine, oxybutynin, dicyclomine

13. Opiates: It is preferred that we do not use morphine/MS Contin in > 65 yo patients. Oxycontin is preferred if a long-acting is needed.

14. Second generation antipsychotics (example: quetiapine, olanzapine): Black Box warning of increasing mortality in elderly with dementia. Avoid long-term use if at all possible.

    a. If absolutely needed, dose within recommended ranges and for no longer than absolutely necessary: olanzapine 2.5-5mg, quetiapine 12.5-100mg, haloperidol 1-5mg.

    b. Consider discontinuing prior to discharge.

15. Benzodiazepines: Elderly have greater sensitivity to benzodiazepines and slower metabolism. Do not use for treatment of insomnia, anxiety, agitation, or delirium.

    a. May be appropriate for seizure disorders, palliative care, benzodiazepine withdrawal,

or peri-procedural anesthesia. Consider trial of low dose olanzapine.

16. Cyclobenzaprine

17. Tramadol

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