Improving Healthcare Utilization in Injured Older Adults

GERIATRIC TRAUMA INITIATIVES
AT STANFORD HEALTHCARE

JULY 12, 2018

Objectives

Background on Geriatric Trauma Population Needs

- Aging population
- Increasing rates of frail, elderly trauma patients

Stanford Targeted Geriatric Screening Initiatives

- Early identification of baseline frailty can guide care with early prediction and proactive interventions

Current implementation and Next Steps

- Integration Geriatrics with routine trauma care
- Dedicated hospital unit, order sets

Why The Elderly Matter

Elderly = one of the fastest growing segments in US

- 2013 – 45 million over age 65 (25% increase from 2003)
- 2050 - will double to 84 million

Adults > 65: Up 30% of trauma patients, 25% of trauma mortality

Falls, MVCs, burns

Older adults hospitalized for injury are high risk for poor outcomes

- Increased complications and death
- Prolonged LOS
- Readmission
- Discharge to facilities rather than home

Geriatric Trauma = High-Risk population

Ground Levels Falls

Emerging as #1 cause for admission to trauma centers

Falls

- Most common mechanism of injury in elderly
- 5-10x more EMS calls r/t falls than MVCs
- 30% >65 y/o fall each year, 50% > 80 y/o
- 10% result in serious injury- fracture/CHI
- 10-30% multi-trauma
- Leading cause non-fatal injuries in GT
- Problem of under-triage
- 4-7% mortality

Mortality From Ground Level Falls

TABLE 2. Results of Multivariate Regression Analysis to Identify Predictors of Mortality Inpatients After Ground-Level Fall

Variable	Odds Ratio (95% Confidence Internal)
ISS >16	7.761 (6.711–8.975)
GCS score <15	4.983 (4.394–5.650)
Age 70 yr and older	2.753 (2.399–3.159)
Hemothorax or pneumothorax	2.281 (1.357–3.832)
Hepatic, splenic, or renal injury	1.886 (1.180–3.015)
Male gender	1.636 (1.451–1.844)

Bankey, Journal of Trauma, 2010

The Course of Disability before and after a Serious Fall Injury

- Prospective cohort over 14 yrs in 754 community-living persons age >70
- Initially nondisabled in basic ADL
- 130 participants sustained serious fall
- 50% lived alone before fall
- Average age 86, 73% female
- 67% physically “frail”

Gill et al, JAMA 2013, 173: 1780-1786

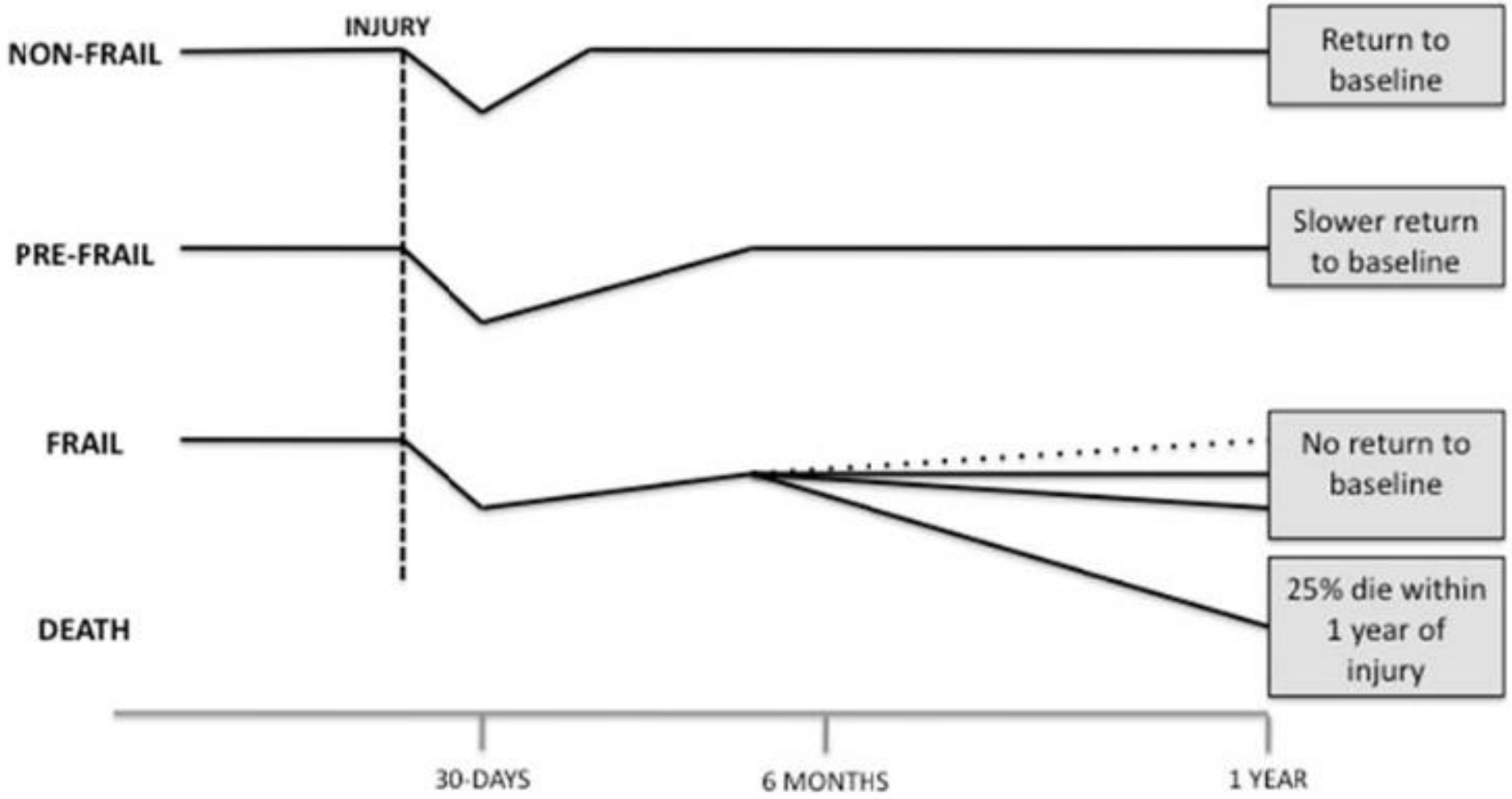
Results:

- **Rapid recovery** observed ONLY for those with **no/mild** disability before fall
- **ONLY 1/3** with moderate disability recovered
- **NO recovery** in those with **severe disability** before fall

Gill et al, JAMA 2013, 173: 1780-1786

Physiologic Reserve and Functional Outcomes

Figure 1. Injured Older Adult Functional Trajectories



J Trauma Acute Care Surg. 2016 Feb;80(2):195-203. doi: 10.1097/TA.0000000000000929.

Preinjury physical frailty and cognitive impairment among geriatric trauma patients determine postinjury functional recovery and survival.

Maxwell CA[1], Mion LC, Mukherjee K, Dietrich MS, Minnick A, May A, Miller RS.

Results

- Few post-injury return to baseline status at 1yr.
- **Cognitive impairment** predicts functional status at 6-months
- **25%** patients die within one year
- Age, injury severity, and pre-injury disability predict mortality within one year.
- **Pre-injury physical frailty**, as a measure of **disability,** is the predominant predictor of mortality at 6-months & 1yr.

How the frail elderly become disabled

Case: 80 year old with emphysema hospitalized with post-ground level fall

- **Perspective 1: Hospital Physician**
- **Perspective 2: Daughter Perspective**

Questions

- Why might these perspectives differ?
- Who has it right?

Case 1: Physician Perspective

80 yo with HTN, emphysema admitted post-fall, w/ dyspnea, fever, mild kidney impairment

Chest Xray: 1 non-displaced rib #, small hemothorax

Treatment: supportive

Outcome: 5 days later, labs normal, CXR resolving, oxygen normal

Disposition: Home

Summary: Successful hospitalization

Case “2”: Daughter Perspective

Mom was getting a little frail but was coping at home

Fall leading to hospitalization
In hospital: poor mobility, deconditioning, ?confused.

D/C home – required ++ assistance

1 year later: NH. Died 2 years later

Summary

Physician: Successful Hospitalization

Daughter: "Everything seemed to fall apart for Mom after she was hospitalized. It was the start of a downward spiral"

What is the daughter seeing that the physician did not see?

Hospitalization Disability Syndrome

- Hospitalization precipitates disability in older persons!
- After discharge, elder no longer able to take care of themselves without assistance
- Generally after hospitalization for medical condition that is not disabling

Perception of “successful medical treatment”

VERY common: 1/3 of elders over age 65

Bad prognosis: Over half the time, does NOT improve!!

Risk of Hospital Disability Syndrome Increases w/ Age

Age	% Decline
70-74	23
75-79	28
80-84	38
85-89	50
90+	63

Covinsky KE; JAGS; 2003;51:451

Risk Factors For Hospital Acquired Disability: The 3 D's

Depression

- 3 fold higher risk for new ADL disability

Dementia

- Mild Cognitive Impairment – 2 fold higher
- Severe Cognitive Impairment – 3 fold higher

Delirium

- 3 fold higher risk

Covinsky KE; JAMA; 2011;1575

Hospital Processes that Promote Disability

The Readmission Circus

Hospitals are obsessed with readmission

But most efforts to reduce readmission will not succeed

- Disease management
- Medicine reconciliation
- Medical Follow-up

Real reasons older patients “fail” at home

- Disability
- Cognitive Impairment—Residual Delirium
- Social
- Caregiver stress

How do we identify early those with underlying frailty who are at greatest risk?

1. Stanford Geriatric Trauma Screen

Methods

Patient selection: All patients >=65 years of age admitted to the Trauma service (including Trauma/SICU) undergo a geriatric trauma screen as part of the standard tertiary trauma survey conducted by the service APPs or SICU resident/fellow. Compliance with screening and referrals will be monitored and tracked.

Screen positive in one or more domains triggers a Geriatrics consultation within 24 hours

GT65 Screen Initiative

Screening Question	Suggested Action
1. In general, do you have problems with your memory? {Yes/No}	OT consult for cognitive evaluation
2. Before this injury, did you need someone to help you with daily activities (such as bathing or dressing) on a regular basis? {Yes/No}	PT consult for functional assessment
3. Do you live alone and not have someone you can count on to help you when you need help? {Yes/No}	Discuss discharge plans with Social Work
4. Have you been in the hospital twice or more in the last year? {Yes/No}	Discuss discharge plans with Case Manager
5. Have you recently lost weight such that your clothing has become looser? {Yes/No}	Nutrition consult & alert PCP for possible further w/u
6. Do you take 5 or more prescription medications on a regular basis? {Yes/No}	Transition of care pharmacist at discharge
7. Do you often feel sad or depressed? {Yes/No}	Consider social work consult and/or screen with PHQ-9. Alert PCP.
8. Do have more than 2 drinks containing alcohol per day? (1 drink/day for women) {Yes/No}	CIWA order set, social work consult
9. Have you had a fall with injury in the last 3 months (including current reason for admission)? {Yes/No}	Discuss Farewell to Falls referral with case manager
10. CAM positive on nursing flowsheet? {Yes/No}	Delirium order set (IP GenDelirium)

Summary of Goals

Identify and manage geriatric trauma patients at high risk for:

- Optimize clinical management of geriatric trauma patients
- Assist trauma managers with registry documentation
- Empower trauma team and encourages multidisciplinary care
- Targets: reduce LOS, ICU readmissions, mortality

Based on TQIP guidelines (ACS and AGS) and published evidence for early integration of geriatric principles in care of geriatric trauma patients

Geriatric Screen Identified Patients With Geriatric Syndromes

- From Feb 1 to Aug 30 2017, geriatric medicine consults were requested for **104 patients**
- Mean **age 84 years (range 66-103)** 52% were female
- Only 3% (3/104) had NO geriatric syndromes

- **23% had delirium (24/104 patients)**
- **51% had cognitive impairment or dementia (53/104)**
  - **Of those, 19 cases were not recognized prior to to geriatrics consult**
- **76% had frequent falls or were admitted after fall with injury**
- **Medication changes recommended in 66%**

Implementation of the Geriatric Screen with the Trauma Tertiary Survey

- Monthly screen adherence ranged from 44% to 100%, and was higher on patients not admitted to the intensive care unit.
- Geriatric Medicine recommendations were followed in 100% of patients
- Screen was concordant with geriatric medicine consult 74% (43/58)

2. Geriatric Trauma Order sets and protocols

- IP Gen Surg/ Trauma Admission order sets (65+ version created and integrated to EPIC)
- Elderly Rib Fracture Pain Protocol (created with combined effort of Trauma, Geriatrics and Pain services)

BACKGROUND:

Geriatric (>65yrs) patients are especially susceptible to rib fractures due to ground level falls, and have twice the mortality of younger patients

MANAGEMENT:

	Recommendations
Non-Pharmacologic Management During Admission	**PAIN SCORES TO BE EVALUATED IN 3 WAYS:** - RESTING - WITH DEEP INSPIRATION - WITH DEEP COUGH **RN to record resting pain scores on arrival and every 4 hours** **MD to record all pain scores daily** **Target: Score less than 4 in all pain categories** 1 2 3 4 5 6 7 8 9 10
	Pulmonary Toilet (bedside nurse and respiratory therapist): - Head of bed 30 degrees (unless contraindicated) - Monitor O2 saturation (target >92%) (continuous in SICU, q6h on floor) - Incentive spirometer or flutter q1h while awake (target >1.5L) - PT evaluation for mobility (within 24 hrs of admission) - Early mobilization ***Strict out of bed (OOB) TID unless unsafe*** - OT evaluation (ADLs, non-pharmacologic pain techniques) - Patient and family education re coughing and deep breathing exercises ***(Distribute educational flyer)*** - ***RN to notify MD if unable to mobilize OOB or participate in breathing exercises during shift***

Indications for Anesthesia Pain Services Consult:

- After 6 hours of multimodal analgesia or lidocaine gtt, poor inspiratory effort **or** pain scores (rest, inspiration, or cough) show no improvement or remain > 4
- >= 4 rib fractures and age>75
- Candidate for epidural placement or alternatives*
- Lidocaine gtt management (prior to ICU discharge or initiated on the floor)
- History of chronic pain or current pain medication use **(*patient should be continued on their baseline analgesic regimen unless contraindicated)**
- Clinical judgement (ex: patients with dementia)

If patient does not meet criteria for APS consult on admission, re-evaluate pain scores in 1 hour

***Epidural Placement or Alternatives*:**
Paravertebral blockade
Intercostal nerve blockade

Contraindications to Epidural Catheter Placement:

- Coagulopathy, or anticoagulated with warfarin, apixaban or rivaroxiban
- Systemic infection
- Spinal cord injury or spinal fracture near area of catheter placement
- Delirious, dementia with active behavioral disturbances or non-cooperative patient
- Body habitus (BMI>40) or unable to position the patient

- Consistent recording of pain scores
- Non-pharmacologic and pharmacologic treatment
- De-escalation prior to discharge
- Multidisciplinary care
- Family & patient engagement

MANAGEMENT (PHARMACOLOGIC):

- Special consideration must be given to modulation of pain in elderly (dosing, side effects, risk of polypharmacy)

Pharmacologic Management on Admission	**Initial management with multimodal analgesia within 1 hour of arrival (should be continued throughout admission):** - Acetaminophen 1000mg PO or IV TID with meals (max 3g/24hr) (if no liver disease) - Opioid (PO oxycodone 2.5-5mg po q4h prn or IV dilaudid 0.2mg IV q3h prn) or via PCA, titrate to effect - For pain < 4 and good inspiratory effort, lidocaine patch to affected area for up to 12hrs per day - For pain > 4 or poor respiratory effort, consider replacing patch with lidocaine IV gtt 1mg/kg of ideal body weight (monitor lidocaine levels q8h) - Celebrex 100mg PO BID *[Max duration: 14 days then discontinue]* **(Hold if: TBI, spinal hematoma, stroke, GFR<40, CHF, recent history of GI bleed, on anticoagulation)** - Early consideration of epidural analgesia, especially for those with uncontrolled pain or who will not tolerate oral analgesia **(Heparin S/C BID or TID may be continued as DVT prophylaxis, but consult APS early and discuss timing. See below for contraindications to epidural placement)**
	Second-line agents (use with caution in the elderly) - Gabapentin 100mg PO qhs and increase as tolerated to max 300mg PO q8h *[**Avoid** if baseline cognitive impairment, confused on admission, IV contrast within last 24 hours, GFR<60]*

De-Escalation Prior To Discharge	Patient must stable for 24 hours on a pain control regimen prior to discharge from the ICU Target discontinuation of PCA and IV-based medications by 48 hours

	Patient may be considered for discharge from hospital only if analgesics have been de-escalated and: - Pain controlled on oral medications for 24 hours - No resting pain score > 4 in previous 24 hours - Completed OT and/or PT evaluations as indicated by safe discharge recommendations in place and pain score <4 during functional mobility and ADLs/IADLs required for discharge

3. Acute Care for Elders Units (ACE Unit)

- Redesigned system of hospital care
- Goal: Reduce rate of functional decline in elderly
- Fits hospital to elderly rather than fit elderly to hospitals
- Nursing driven interventions
- Work best if patients and trained nurses co-located because culture driven

Key ACE Principles

Components of ACE intervention

Prepared Environment

- Carpeting, large clocks, elevated toilet seats

Patient Centered Care

- Daily assessment of functional status
- Protocols (self-care, nutrition, mobility)
- Daily rounds by multidisciplinary team

Planning to go home

Medical care review

- Daily review of medicines

Effects of ACE Unit Intervention

Reduced rate of **disability** at discharge by 33%

Reduced discharges to **nursing homes** by 30%

Reduced average **length of stay** (0.5 days)

67% reduction in **restraint** use

Greater **satisfaction** with care among patients, nurses, physicians

Landefeld CS: NEJM;1995:1338
Counsell SR:JAGS;2000:1572

SHC ACE Pilot Phase I - **Interventions**

- **SHC Surgical Nursing Unit – All patients 65 yo and above (October 1st, 2017 – June 30th, 2018)**

- **Admission Nursing Screening Tool (Tool #1 attached – SPICES ADMIT)**
  - Document as Progress Note in eMR and Follow suggested interventions
  - Use information as baseline for patient's cognition/function

- **Daily Team Rounds (Primary Team, Geriatrics APP, Nursing, CM, SW, Rehab)**
  - 10-11am, concurrent with other teams
  - Nursing focus on SPICES (Sleep, Pain, Immobility, Cognition/Constipation, Enteral Nutrition, Social Support)
  - Those with positive geriatric syndromes seen by a Geriatric APP.

- **Nursing Hand-off – SPICES Tool**
  - SPICES Hand-off tool (Tool #2 attached)

Stanford Programs for Acute Care for Elders (ACE) Admission Assessment (.65ADMITSPICES)

Screening Question	Suggested Action
1. SLEEP: Do you have trouble falling asleep or staying asleep (sleep <4 hours at a time)? Do they take a sleep aid regularly at home? {Yes/No}	Alert TT. Suggest reordering home medication or considering safer alternative (melatonin, trazodone)
2. PAIN: Did you have pain before this hospitalization? {Yes/No}	Verify that current pain medication regimen takes into consideration home medications.
3. POLYPHARMACY: Do you need help taking your medications at home? {Yes/No}	If yes, make sure TT aware and ask for TOC pharmacist consult
4. IMMOBILITY: Before this admission, did you need someone to help you with daily activities such as bathing, dressing, grooming or toileting? {Yes/No}	Make sure patient has order for **OT** evaluation for ADL training; PT evaluation ***if needed*** for gait and stairs Is there an activity order?
5. CONFUSION: Is CAM positive for delirium? {Yes/No} **If not, does patient have problems with memory and/or a Six Item Screen score of 2 or greater?** {Yes/No}	Move patient to a window bed Follow non-pharmacologic delirium prevention measures (see ACE nursing order set) Alert TT to use "IP Gen Delirium" order set for work-up and Management Ask TT to order OT consult for cognitive impairment if patient lives alone and carries no current diagnosis of dementia. Coordinate volunteer companionship for meals (if family not at bedside)
6. CONSTIPATION: Do you struggle with constipation? {Yes/No}	Make sure patient has home bowel regimen if applicable. Plus stimulant laxative (Senna) if on opioids, prn order for suppository/enema if no BM in 72 hours. Promote scheduled toileting out of bed using commode or toilet.
7. ENTERAL NUTRITION: Have you lost weight recently, such that your clothes are loose? Any trouble chewing or swallowing? {Yes/No} **Do you drink beverages containing alcohol regularly? If so, how many?** {Yes/No}	Consider Nursing referral to Nutrition Services for supplement recommendations Perform nursing swallow screen if indicated Look for a diet order SW referral if concern for excess ETOH (more than 1 drink/day or seven/week) and Ask TT to use **non-benzo** CIWA order set
8. SOCIAL SUPPORT: Do you feel sad and depressed most of the time? {Yes/No} **Do you trouble with difficulty with hearing or vision?** **Do you live alone and not have someone to count on for daily help?** {Yes/No}	If yes, order nursing referral to SW for further depression screening, caregiving needs assessment Consider Guest Services to order art, music or pet therapy, amplifier or reading glasses to mitigate acute isolation. Discuss need for increased assistance with CM, SW, TT and Geriatric Medicine at Team Rounds (M-F 10-11am)

Nursing Admission Screen

(Tool #1)

SPICES: An Overall Assessment Tool for Older Adults

Adapted from Fulmer (1991). The Geriatric Nurse Specialist Role: A new model. Nursing Management, 22(3), 91-3.

Stanford Program for Acute Care of Elders (SPACE) ROS for hand off and rounds

Domain	Daily Question
Sleep Issues	How many hours did the patient sleep? Did they receive a sleep aid?
Pain	Is pain well controlled?
Polypharmacy	Did the patient require more than two prn medications over the past shift?
Immobility	How many times has the patient been out of bed in the last 12 hours?
Confusion	Is CAM positive? If not, was SIS completed?
Constipation	When was the last BM? Large or small?
Enteral Nutrition	What percentage of meals has the patient eaten?
Social Support	Does the patient or caregiver have concerns?

Nursing Hand-off Checklist

(Tool #2)

SHC ACE Pilot Phase I – **Outcomes**

- **Oct 1st, 2017 - June 30th, 2018 - ~ 450 patients** qualify as ACE patients (65+ discharged from designated nursing unit)
-
- Average **70% compliance with nursing** interventions.
- **10% reduction in Delirium** Burden (assessed by CAM positivity)
- Improvement in unit-based **nursing - knowledge of and comfort** in dealing with **geriatric syndromes**.

Implications For Hospital and Post-Hospital Care

Hospitalization traditionally focuses on distinct **episode of care**

Good care of the hospitalized patient demands

Detailed understanding of the patient's **functional, cognitive, and social** context **even before admission!**

Future

Geriatric Trauma High Value Clinical Pathway

- Focus on streamlining care for the geriatric trauma population from presentation to the ED to post-discharge.
- Proactive and multi-disciplinary approach with standardized pathways.

GC Take-Home Messages

- Better detection/treatment of geriatric specific concerns and conditions
- GC associated with increased/more thorough advanced planning discussions
- Possible reduction in ICU LOS and readmission
- Proof of concept wrt systems integration; GC is sustainable

Acknowledgements

- Inpatient Geriatric Med Team
- Trauma and SICU team
- C2 Nursing
- SHC Quality/ Safety, High Value team members

Q&A?