EQUIPPED for Age-Friendly Prescribing in the ED

How to Prescribe Age-Friendly Medications for Older Adults: Lessons Learned from EQUIPPED

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Disclosure

- Funding for this project from
  - VA Health Services Research & Development
  - AHRQ
  - BCBS Rhode Island
  - VA Office of Geriatrics & Extended Care, Office of Rural Health
  - John A. Hartford Foundation

Objectives

1. Summarize key principles to safely prescribe medications to older adults.
2. Describe the EQUIPPED program methods and initial outcomes.
3. Share lessons learned on systems-based approaches for safely prescribing medications for older adults.

EQUIPPED

BACKGROUND

30.9% of adults 75 years and older visited an ED in 2019

26% of 65+ adults

The majority of older adults evaluated in the ED are not admitted to the hospital

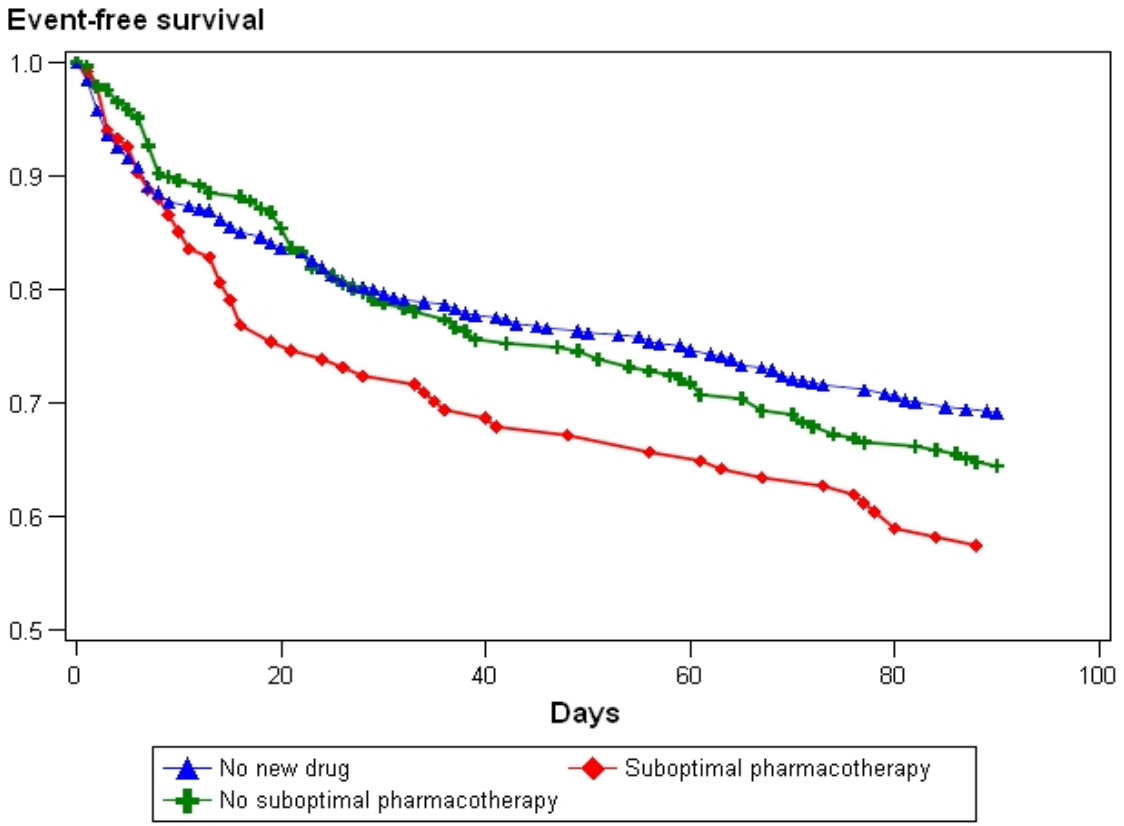
45-65% of older adults are prescribed at least one new medication at the time of ED discharge

Health, United States 2020–2021 (cdc.gov)
Hastings, Smith et al. J Am Geriatr Soc 2013; 61:1515-1521.
Aminzadeh and Dalziel. Ann of Emerg Med, 2002;39:3,238-247

BACKGROUND

Time until first adverse event

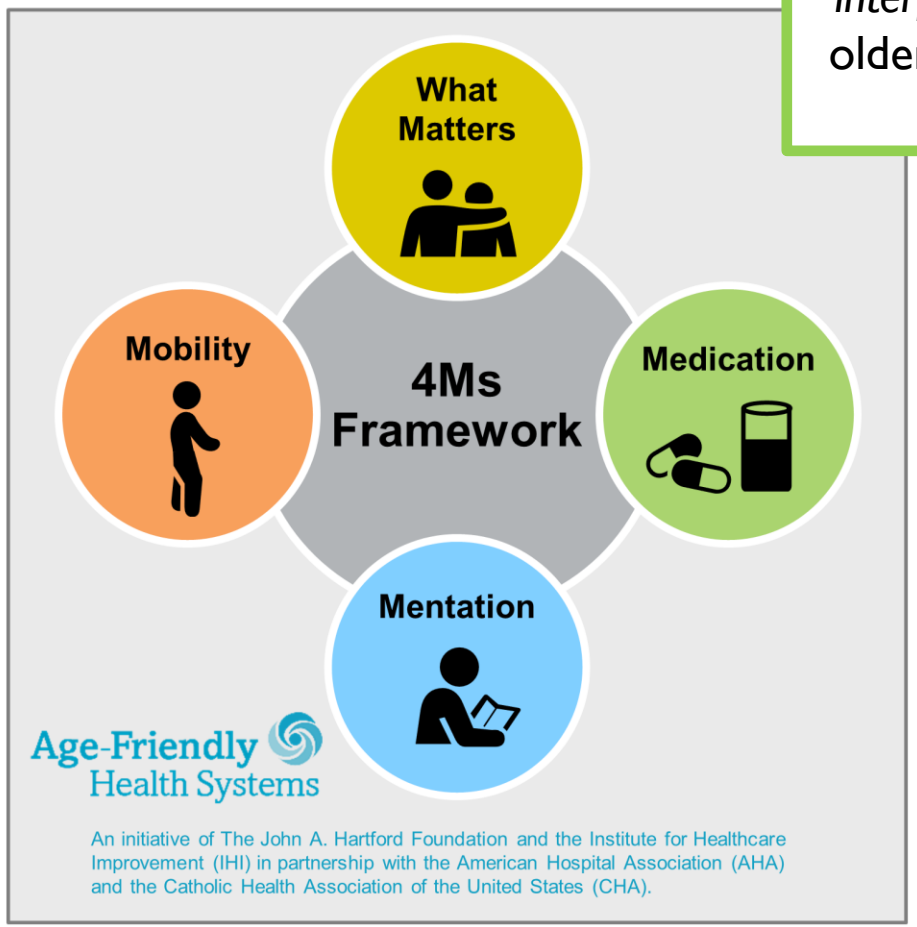
- **No new drug**
- **No suboptimal pharmacotherapy**
- **Suboptimal pharmacotherapy**



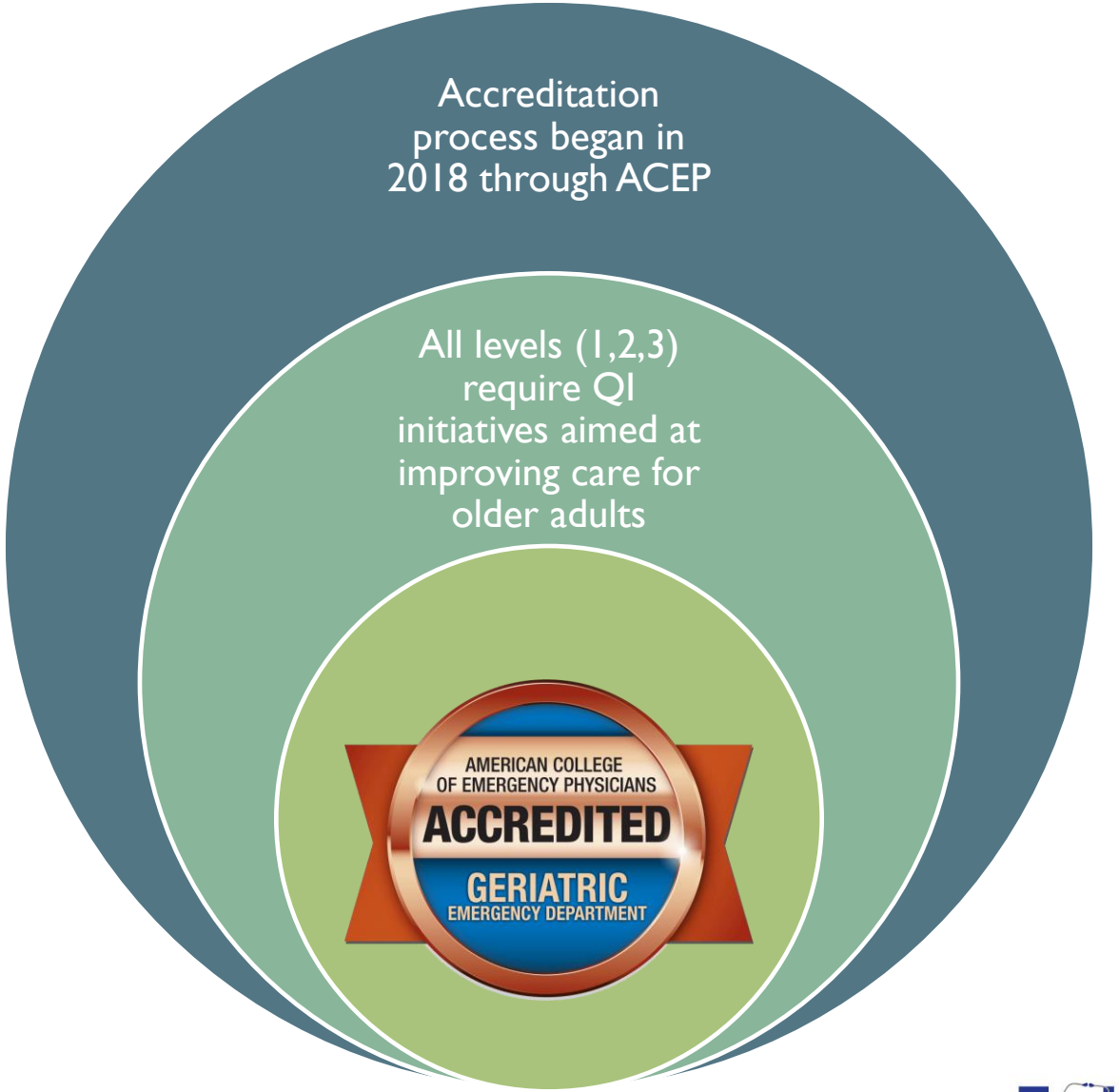
Hastings, J Am Geriatr Soc, 2008

AGE-FRIENDLY HEALTH SYSTEMS

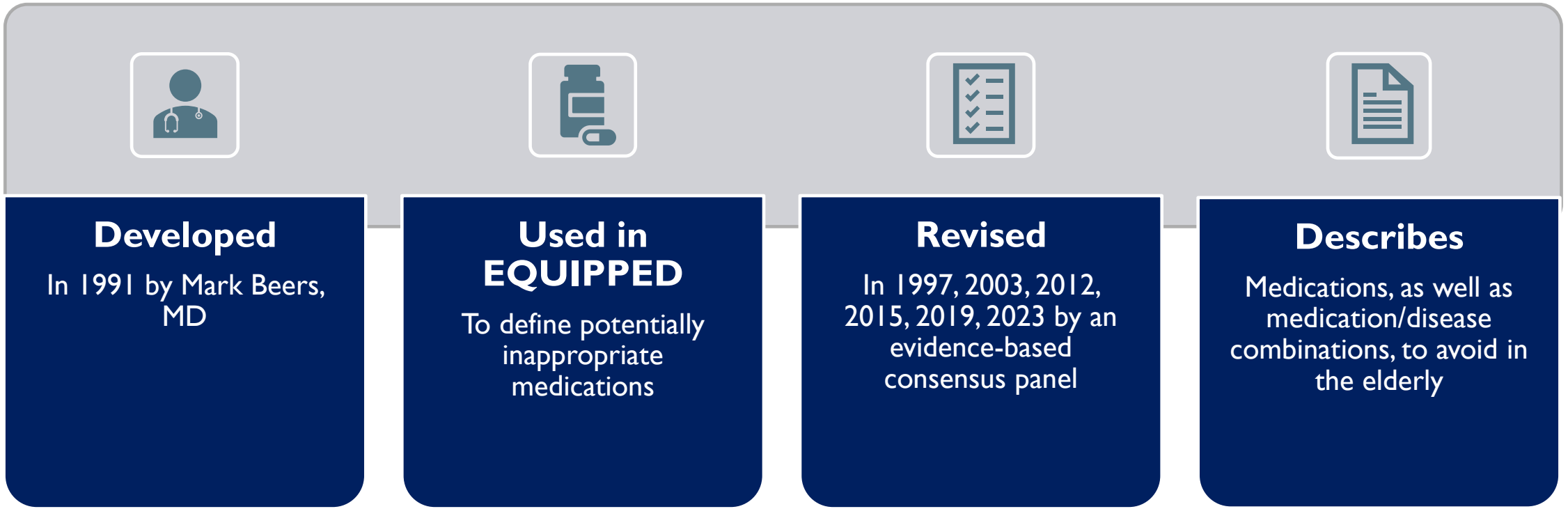
If medication is necessary, use **Age-Friendly medications** that *do not interfere* with **What Matters** to the older adult, **Mobility**, or **Mentation** *across settings of care.*



GERIATRIC EMERGENCY DEPARTMENTS



THE BEERS CRITERIA



THE BEERS CRITERIA

- Most widely cited criteria to assess inappropriate prescribing
- Initially proposed for long-term care
- Now promoted for all sites of geriatric care
- Evaluated as a proxy for quality of prescribing
- Examples include most muscle relaxants, chronic NSAIDS, many anticholinergic medications

Lund et al, Ann Pharmacother, 2011

EQUIPPED Aim Statement

Primary Goal

To decrease the proportion of potentially inappropriate medications (PIMs)* prescribed to Veterans aged 65 years of age and older at the time of discharge from the ED to 5% or less

Stevens, J Am Geriatr Soc, 2015

*PIMs defined by the American Geriatrics Society Beers Criteria® and adapted for the ED

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Influencing Prescribing Behavior: 3 Core Components

EDUCATION

Didactic education and academic detailing focused on reducing potentially inappropriate medications

CLINICAL DECISION SUPPORT

Discharge medication order sets designed to promote safer prescribing and provide alternatives to potentially inappropriate medications

INDIVIDUAL PROVIDER FEEDBACK

Providers receive monthly prescribing feedback reports that include individual prescribing habits, peer benchmarking, and alternate prescribing recommendations

Providers meet with the site champion at least once for 1:1 academic detailing

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The EQUIPPED program

Collaborative between Geriatric Research, Education and Clinical Sites (GRECCs) at 3 VAMCs
Now expanded to 20 VA sites (8 new sites in FY20) and 5 civilian hospital systems

Focus
Medication Safety
QI Benchmark: Beers Criteria

Target
ED Providers

Funding
VHA Office of Geriatrics and Extended Care
VHA Office of Rural Health & AHRQ
VA HSR&D
BCBS-Rhode Island

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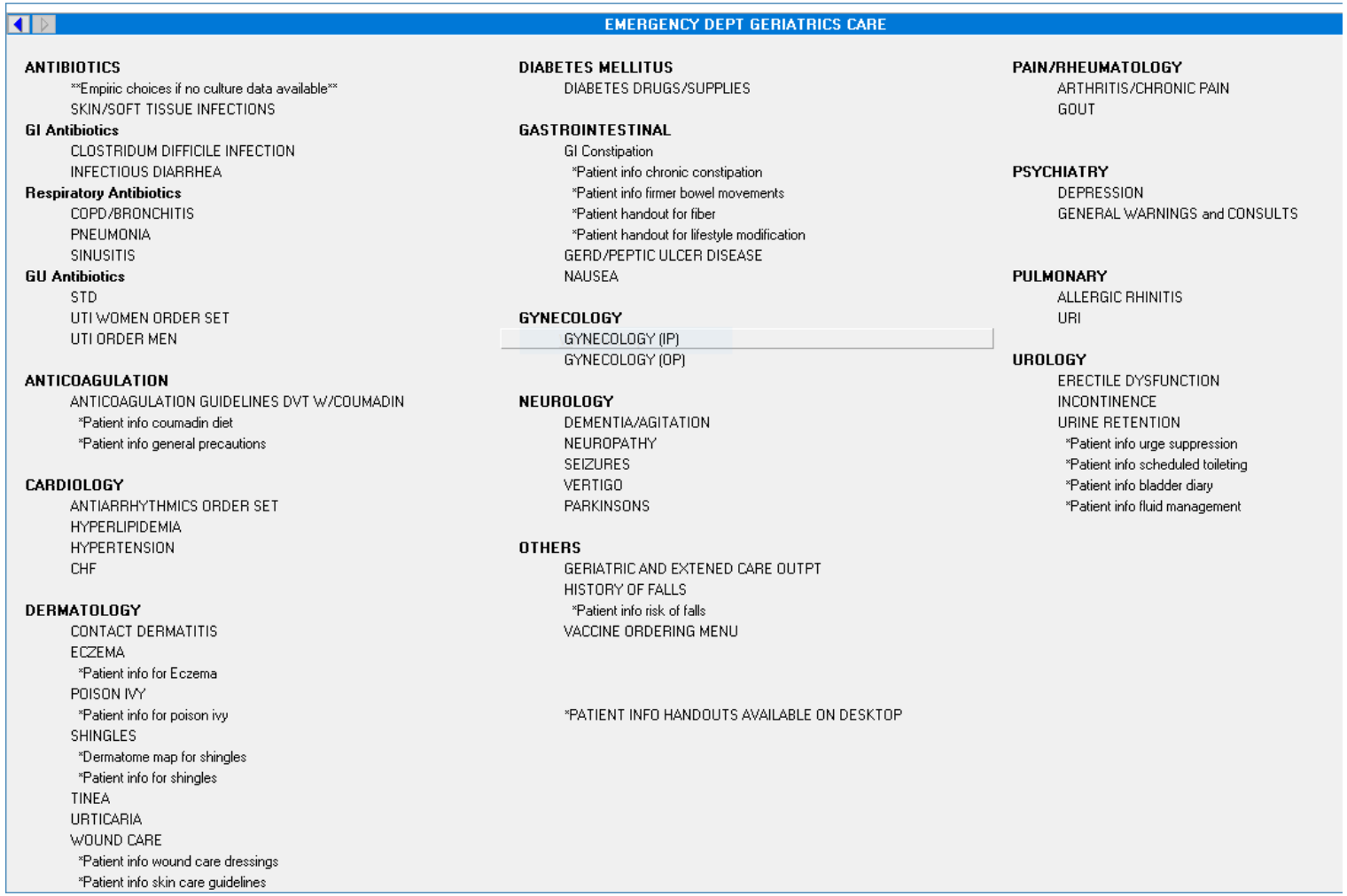
Clinical Decision Support: Discharge Order Sets

Electronic Decision Support Tools

Discharge medication order sets

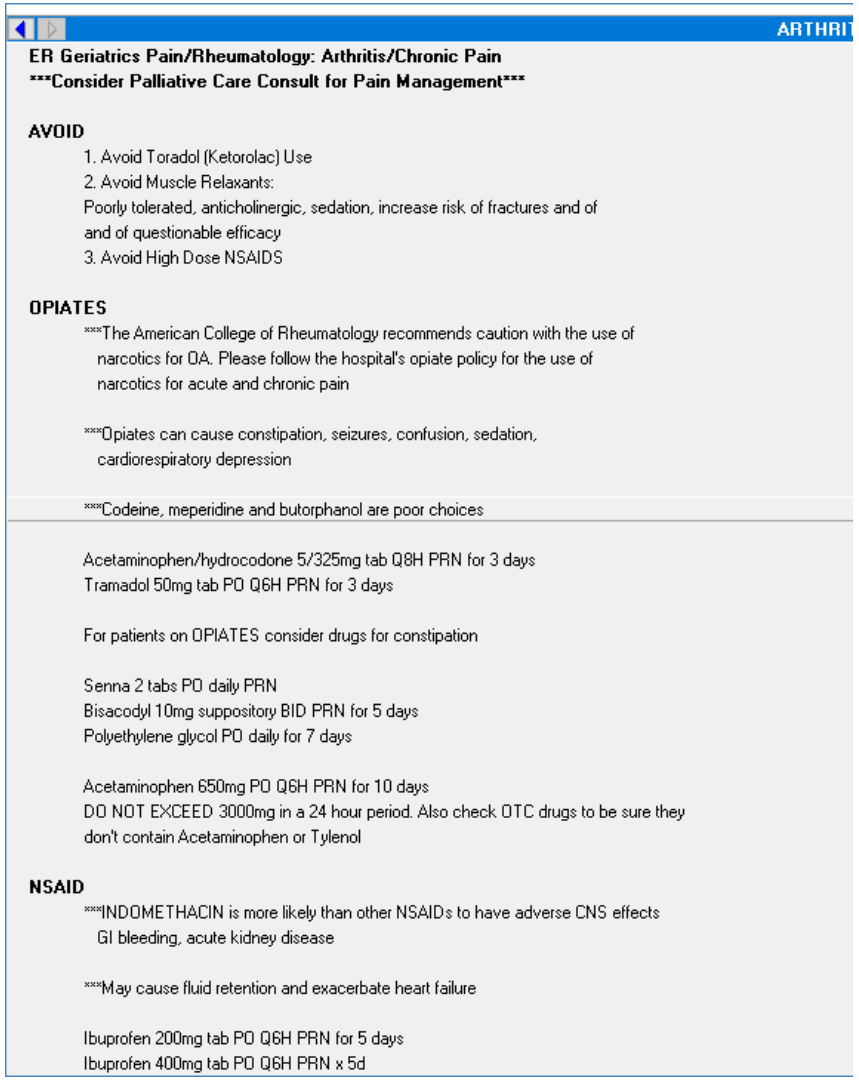
- Point of prescribing education
- Links to online geriatric content

Avoid drug alert messages that require acknowledgement



Stevens, J Am Geriatr Soc, 2015

Clinical Decision Support: Discharge Order Sets



ARTHRI

ER Geriatrics Pain/Rheumatology: Arthritis/Chronic Pain
*****Consider Palliative Care Consult for Pain Management*****

AVOID

1. Avoid Toradol (Ketorolac) Use
2. Avoid Muscle Relaxants:
Poorly tolerated, anticholinergic, sedation, increase risk of fractures and of
and of questionable efficacy
3. Avoid High Dose NSAIDS

OPIATES

***The American College of Rheumatology recommends caution with the use of narcotics for OA. Please follow the hospital's opiate policy for the use of narcotics for acute and chronic pain

***Opiates can cause constipation, seizures, confusion, sedation, cardiorespiratory depression

***Codeine, meperidine and butorphanol are poor choices

Acetaminophen/hydrocodone 5/325mg tab Q8H PRN for 3 days
Tramadol 50mg tab PO Q6H PRN for 3 days

For patients on OPIATES consider drugs for constipation

Senna 2 tabs PO daily PRN
Bisacodyl 10mg suppository BID PRN for 5 days
Polyethylene glycol PO daily for 7 days

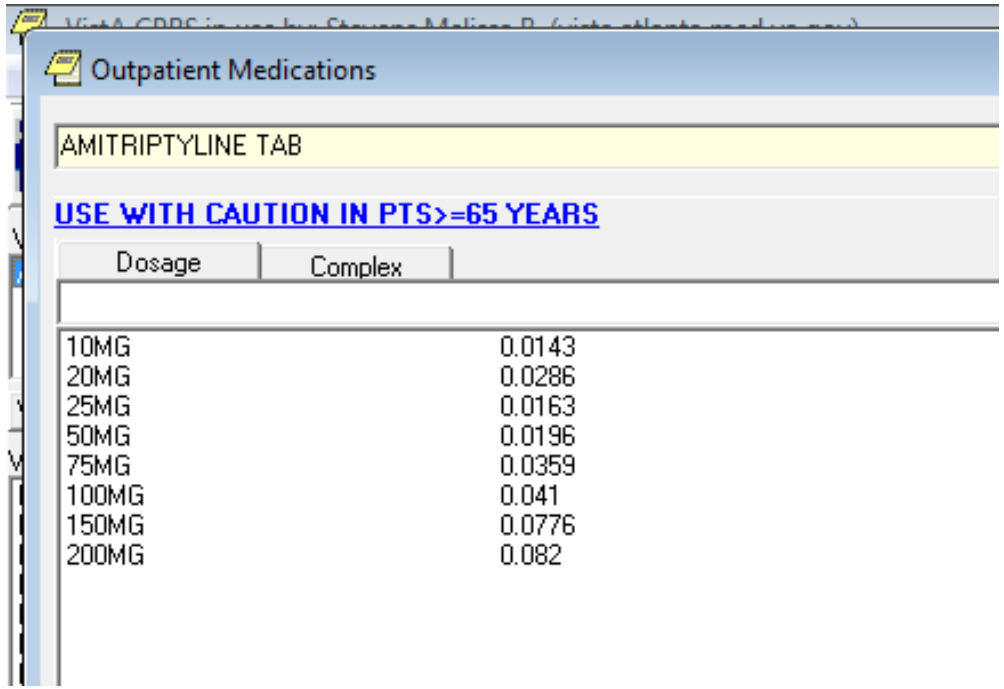
Acetaminophen 650mg PO Q6H PRN for 10 days
DO NOT EXCEED 3000mg in a 24 hour period. Also check OTC drugs to be sure they don't contain Acetaminophen or Tylenol

NSAID

***INDOMETHACIN is more likely than other NSAIDs to have adverse CNS effects GI bleeding, acute kidney disease

***May cause fluid retention and exacerbate heart failure

Ibuprofen 200mg tab PO Q6H PRN for 5 days
Ibuprofen 400mg tab PO Q6H PRN x 5d



Outpatient Medications

AMITRIPTYLINE TAB

USE WITH CAUTION IN PTS>=65 YEARS

Dosage	Complex
10MG	0.0143
20MG	0.0286
25MG	0.0163
50MG	0.0196
75MG	0.0359
100MG	0.041
150MG	0.0776
200MG	0.082

Stevens, J Am Geriatr Soc, 2015

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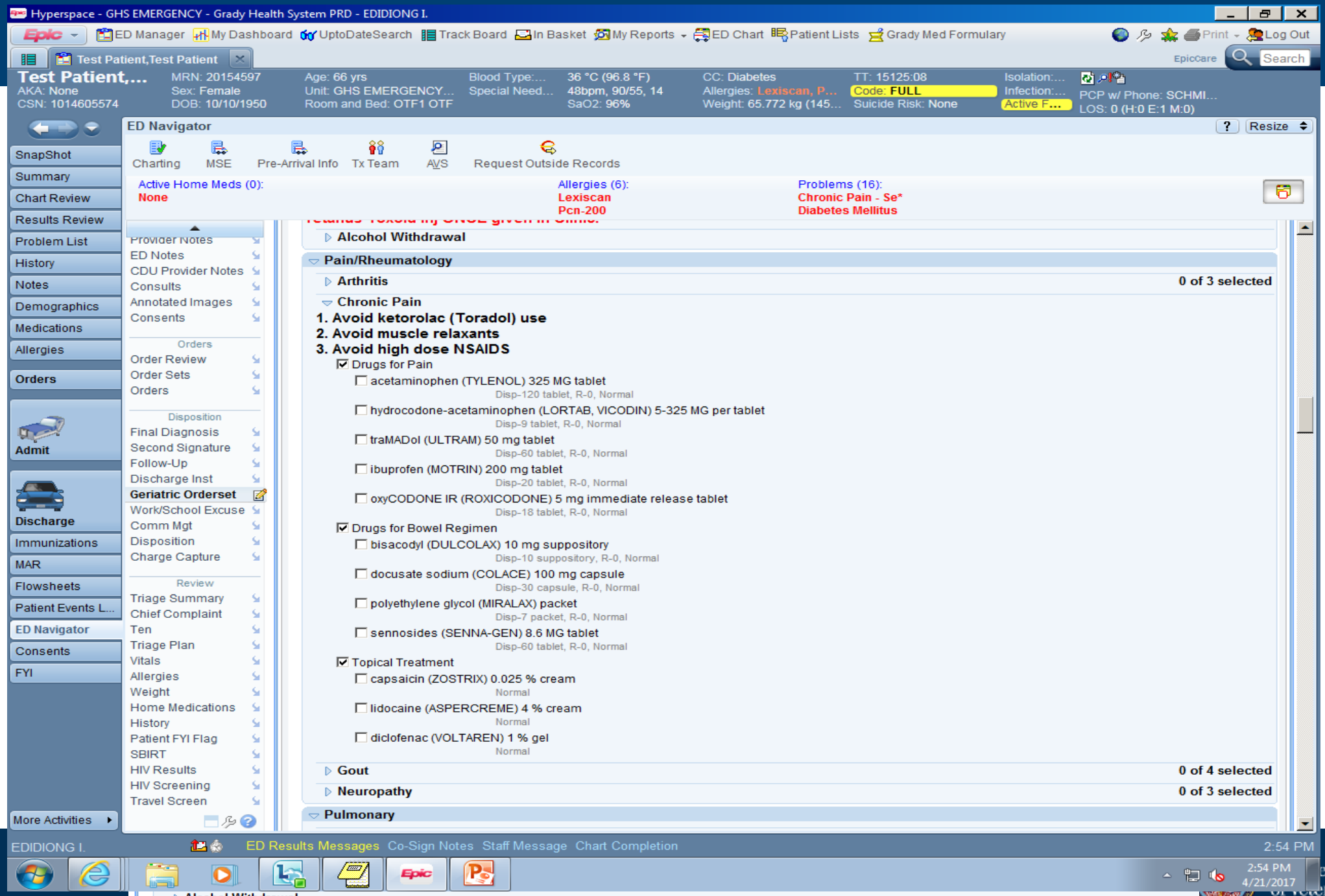
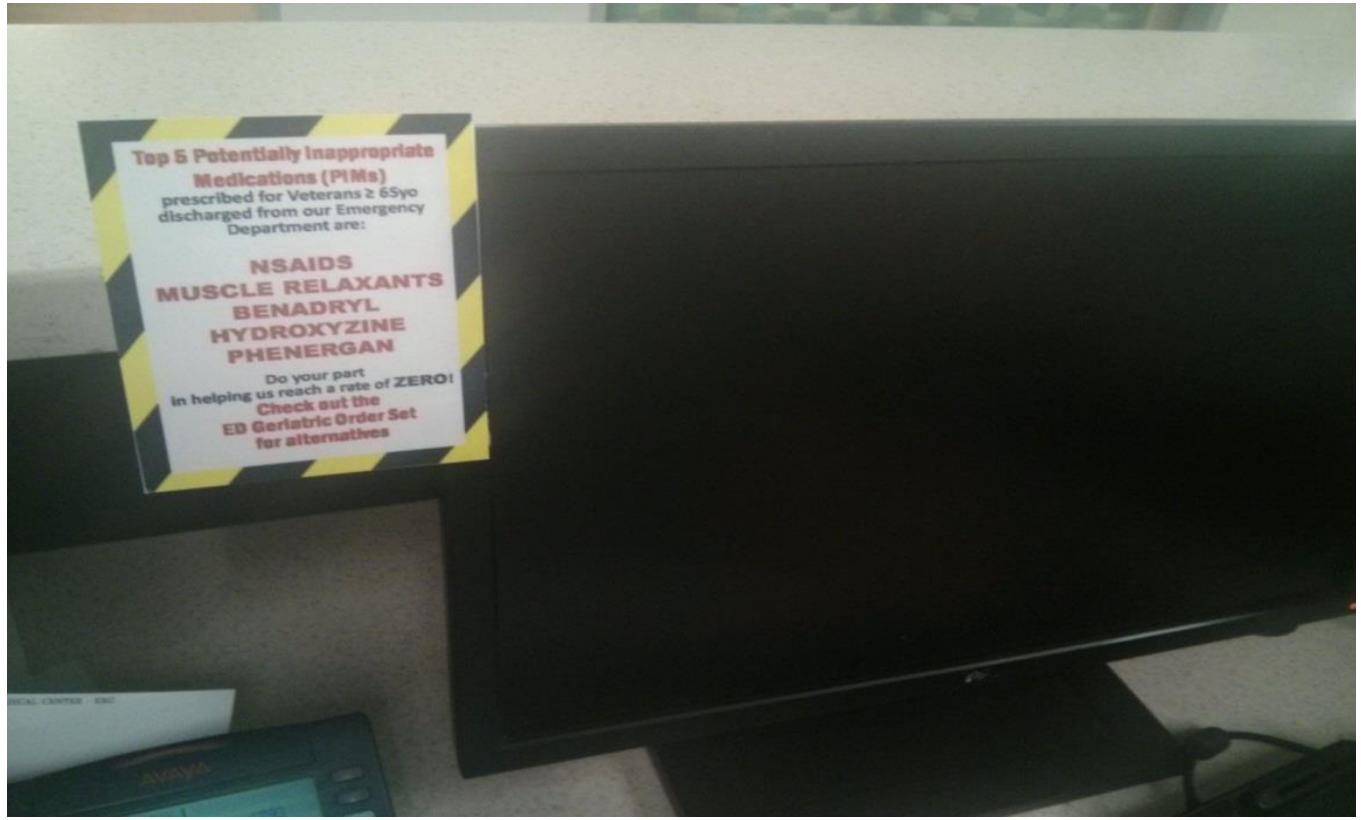
Discharge Order Set – Cerner Site

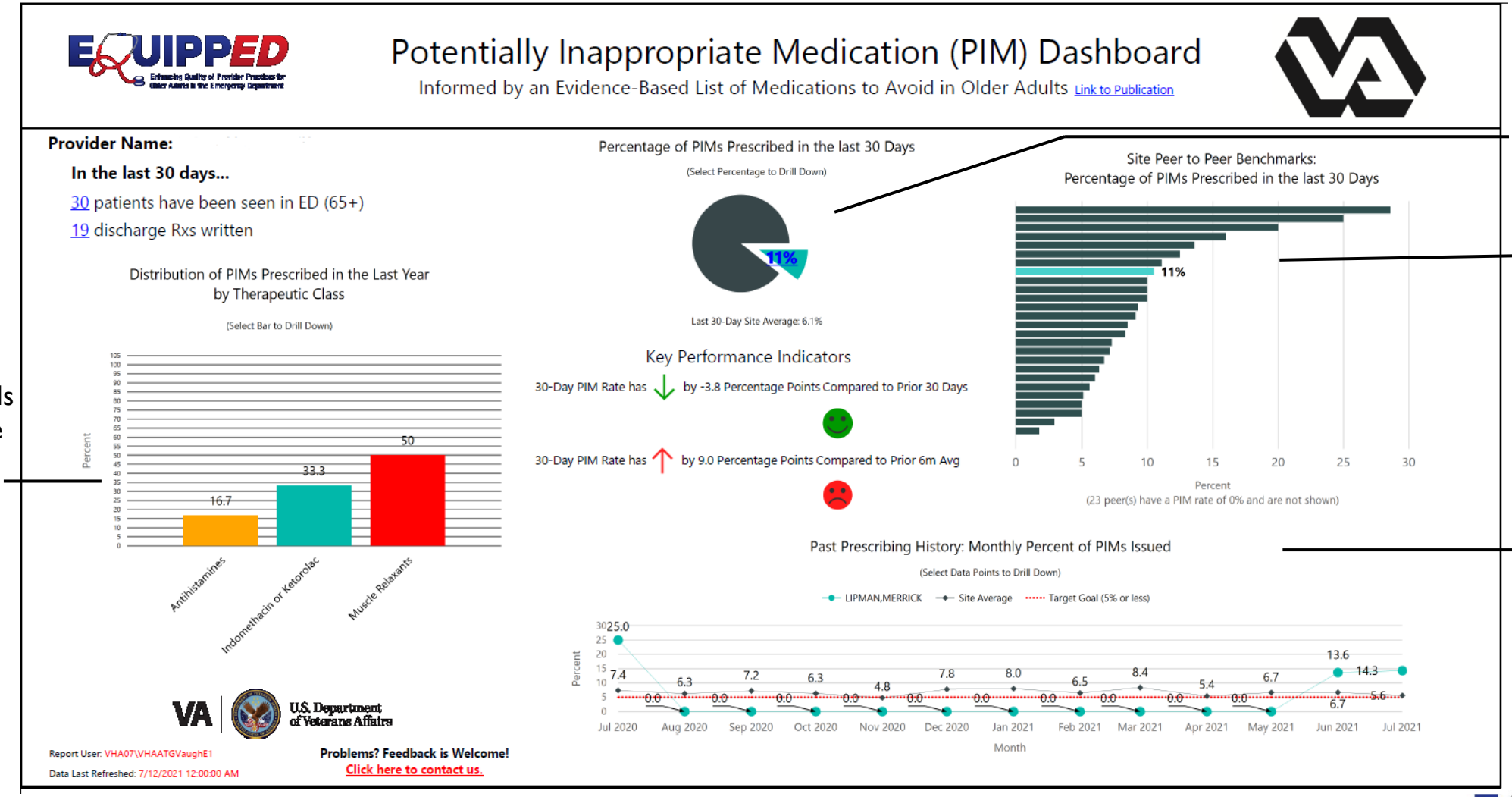
Topical Medications		
☐	lidocaine topical (lidocaine 4% topical cream)	See Directions, Topical, TID, # 30 gm, Apply to affected area. Avoid application on sensitive areas, wash hands with soap and water after ...
☐	lidocaine topical (Lidoderm 5% topical film)	See Directions, Topical, qDay, PRN pain-mild, # 14 patch(es), Apply 1 patch to affected area up to 12 hours per day and remove, maxim...
	Out of pocket cost >$100, consider social work consult if necessary.	
☐	diclofenac topical (Diclofenac 1% topical gel)	See Directions, Topical, q6hr, PRN pain-mild, # 100 gm, Apply 2 grams to the skin over affected area. Not to exceed 8g in any single join...
Oral Medications		
	Acetaminophen	
☐	acetaminophen (acetaminophen 325 mg oral tablet)	= 2 tab(s), PO, q6hr, PRN pain-mild, # 28 tab(s), X 7 day(s) Do not combine with other acetaminophen products or exceed more than 3000 mg in 24 hours.
	NSAIDS	
☐	ibuprofen (ibuprofen 200 mg oral tablet)	= 1 tab(s), PO, q6hr, PRN pain-mild, # 12 tab(s)
	Avoid use with GFR < 30 ml/min, h/o recent MI, HTN, and HF.	
	Muscle relaxant	
	Do not use in ESRD on peritoneal dialysis.	
	Avoid in lieu of topical agents or superficial heat/ice.	
☐	baclofen (baclofen 5 mg oral tablet)	= 1 tab(s), PO, TID, PRN pain-mild, # 9 tab(s)
	For CrCl > 80 mL/min	
☐	baclofen (baclofen 5 mg oral tablet)	= 1 tab(s), PO, BID, PRN pain-mild, # 6 tab(s)
	For CrCl 51-80 mL/min	
☐	baclofen (baclofen 5 mg oral tablet)	= 0.5 tab(s), PO, TID, PRN pain-mild, # 5 tab(s)
	For CrCl 30-50 mL/min	
☐	baclofen (baclofen 5 mg oral tablet)	= 0.5 tab(s), PO, BID, PRN pain-mild, # 3 tab(s)
	For CrCl < 30 mL/min	
	Opioid pain management	
	If prescribing opiate pain medication, consider prescribing prophylactic medication to treat constipation. Do not combine with other acetaminophen products or exceed more than 3000 mg in 24 hours.	
☐	acetaminophen-hydrocodone (Norco 5 mg-325 mg o...	= 0.5 tab(s), PO, q6hr, PRN pain-severe, # 9 tab(s), May increase to 1 tab po q 6 hr for uncontrolled pain.
☐	oxyCODONE (oxyCODONE 5 mg oral tablet)	= 0.5 tab(s), PO, q8hr, PRN pain-severe, # 9 tab(s), May increase to 1 tab po q 8 hr for uncontrolled pain.
	Constipation	
	Please use shortest effective dose and duration of treatment. Polyethylene glycol can be combined with prune juice or sennosides.	
☐	polyethylene glycol 3350 (MiraLax oral powder for rec...	= 1 packet(s) 17 gm, PO, qDay, # 14 packet(s), Dissolve one packet in 4-8 oz of liquid.
☐	bisacodyl (Dulcolax Laxative 10 mg rectal suppository)	= 1 supp, PR, Once, # 2 supp, May repeat in 24 hours if no BM.
☐	senna (Senokot 8.6 mg oral tablet)	= 2 tab(s), PO, qHS, # 60 tab(s), X 30 day(s)


Hyperspace - GHS EMERGENCY - Grady Health System PRD - EDIDIONG I.
ED Manager
My Dashboard
UptoDateSearch
Track Board
In Basket
My Reports
ED Chart
Patient Lists
Grady Med Formulary
Print
Log Out
Test Patient,Test Patient
Search
Test Patient,...
MRN: 20154597
Age: 66 yrs
Blood Type:...
36 °C (96.8 °F)
CC: Diabetes
TT: 15125:08
Isolation:...
AKA: None
Sex: Female
Unit: GHS EMERGENCY...
Special Need...
48bpm, 90/55, 14
Allergies: Lexiscan, P...
Code: FULL
Infection:...
CSN: 1014605574
DOB: 10/10/1950
Room and Bed: OTF1 OTF
SaO2: 96%
Weight: 65.772 kg (145...
Suicide Risk: None
Active F...
PCP w/ Phone: SCHMI...
LOS: 0 (H:0 E:1 M:0)
ED Navigator
Resize
Charting
MSE
Pre-Arrival Info
Tx Team
AVS
Request Outside Records
Active Home Meds (0):
None
Allergies (6):
Lexiscan
Pcn-200
Problems (16):
Chronic Pain - Se*
Diabetes Mellitus
SnapShot
Summary
Chart Review
Results Review
Problem List
History
Notes
Demographics
Medications
Allergies
Orders
Admit
Discharge
Immunizations
MAR
Flowsheets
Patient Events L...
ED Navigator
Consents
FYI
More Activities
Provider Notes
ED Notes
CDU Provider Notes
Consults
Annotated Images
Consents
Orders
Order Review
Order Sets
Orders
Disposition
Final Diagnosis
Second Signature
Follow-Up
Discharge Inst
Geriatric Orderset
Work/School Excuse
Comm Mgt
Disposition
Charge Capture
Review
Triage Summary
Chief Complaint
Ten
Triage Plan
Vitals
Allergies
Weight
Home Medications
History
Patient FYI Flag
SBIRT
HIV Results
HIV Screening
Travel Screen
Alcohol Withdrawal
Pain/Rheumatology
Arthritis
0 of 3 selected
Chronic Pain
1. Avoid ketorolac (Toradol) use
2. Avoid muscle relaxants
3. Avoid high dose NSAIDS
Drugs for Pain
acetaminophen (TYLENOL) 325 MG tablet
Disp-120 tablet, R-0, Normal
hydrocodone-acetaminophen (LORTAB, VICODIN) 5-325 MG per tablet
Disp-9 tablet, R-0, Normal
traMADol (ULTRAM) 50 mg tablet
Disp-60 tablet, R-0, Normal
ibuprofen (MOTRIN) 200 mg tablet
Disp-20 tablet, R-0, Normal
oxyCODONE IR (ROXICODONE) 5 mg immediate release tablet
Disp-18 tablet, R-0, Normal
Drugs for Bowel Regimen
bisacodyl (DULCOLAX) 10 mg suppository
Disp-10 suppository, R-0, Normal
docusate sodium (COLACE) 100 mg capsule
Disp-30 capsule, R-0, Normal
polyethylene glycol (MIRALAX) packet
Disp-7 packet, R-0, Normal
sennosides (SENNA-GEN) 8.6 MG tablet
Disp-60 tablet, R-0, Normal
Topical Treatment
capsaicin (ZOSTRIX) 0.025 % cream
Normal
lidocaine (ASPERCREME) 4 % cream
Normal
diclofenac (VOLTAREN) 1 % gel
Normal
Gout
0 of 4 selected
Neuropathy
0 of 3 selected
Pulmonary
EDIDIONG I.
ED Results Messages
Co-Sign Notes
Staff Message
Chart Completion
2:54 PM
4/21/2017
Alcohol Withdrawal

Adaptation of Clinical Decision Support



EQUIPPED Provider Feedback



Percent of PIMs written in the last year, organized by drug class

Monthly PIM Percentage

Peer Benchmarking

Monthly Prescribing Trends

Stevens, J Am Geriatr Soc, 2015
Burningham Z Clin Ther, 2020

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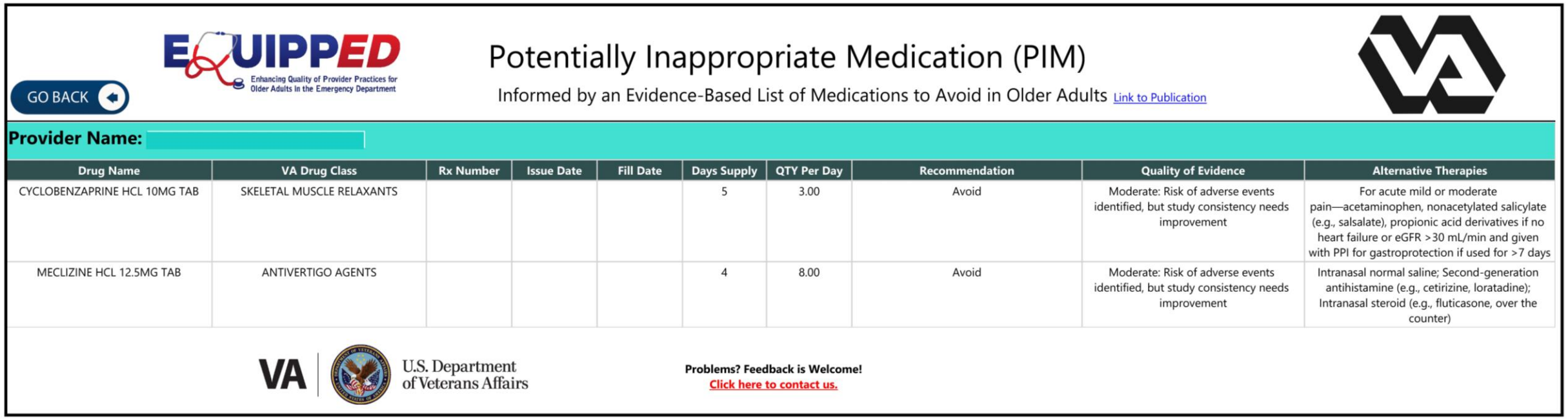
EQUIPPED Provider Feedback



GO BACK

EQUIPPED
Enhancing Quality of Provider Practices for Older Adults in the Emergency Department

Potentially Inappropriate Medication (PIM)

Informed by an Evidence-Based List of Medications to Avoid in Older Adults Link to Publication

Provider Name:

Drug Name	VA Drug Class	Rx Number	Issue Date	Fill Date	Days Supply	QTY Per Day	Recommendation	Quality of Evidence	Alternative Therapies
CYCLOBENZAPRINE HCL 10MG TAB	SKELETAL MUSCLE RELAXANTS				5	3.00	Avoid	Moderate: Risk of adverse events identified, but study consistency needs improvement	For acute mild or moderate pain—acetaminophen, nonacetylated salicylate (e.g., salsalate), propionic acid derivatives if no heart failure or eGFR >30 mL/min and given with PPI for gastroprotection if used for >7 days
MECLIZINE HCL 12.5MG TAB	ANTIVERTIGO AGENTS				4	8.00	Avoid	Moderate: Risk of adverse events identified, but study consistency needs improvement	Intranasal normal saline; Second-generation antihistamine (e.g., cetirizine, loratadine); Intranasal steroid (e.g., fluticasone, over the counter)

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Problems? Feedback is Welcome!
Click here to contact us.

If the provider has prescribed any PIMs that month, the feedback form will include the list of specific drugs prescribed

Stevens, J Am Geriatr Soc, 2015

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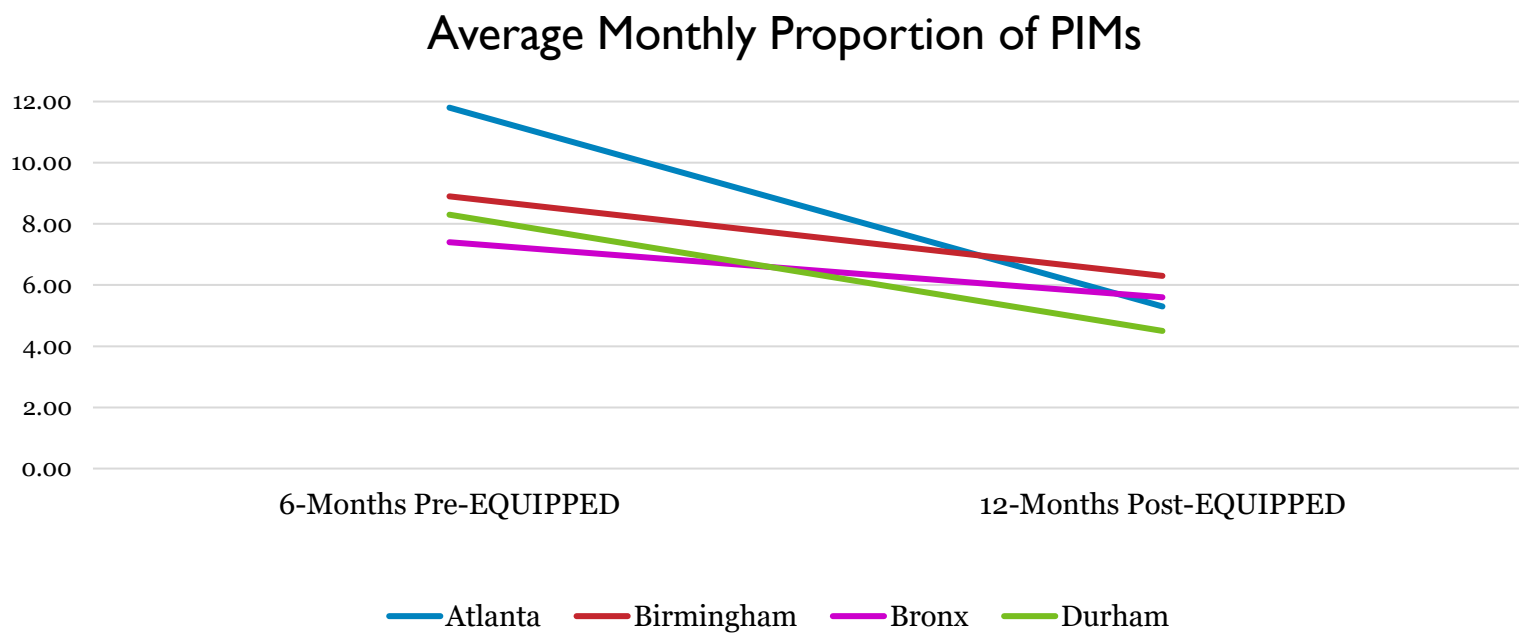
EQUIPPED VA Outcomes

Site	Pre-EQUiPPED	Post-EQUiPPED	p value*
Atlanta	11.8 (SD 1.8)	5.3 (SD 1.5)	<0.0001
Birmingham	8.9 (SD 1.9)	6.3 (SD 1.4)	0.0025
Bronx	7.4 (SD 1.7)	5.6 (SD 1.0)	0.04
Durham	8.3 (SD 0.8)	4.5 (SD 1.0)	<0.0001

**p-value: Poisson regression including offset term for site's total number of prescriptions*



6.5%
Change in average monthly proportion of PIMs pre and post EQUIPPED in Atlanta

2.6%
Change in average monthly proportion of PIMs pre and post EQUIPPED in Birmingham

1.8%
Change in average monthly proportion of PIMs pre and post EQUIPPED in Bronx

3.8%
Change in average monthly proportion of PIMs pre and post EQUIPPED in Durham

Stevens, J Am Geriatr Soc, 2017

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SPREAD

VA EQUIPPED Implementation

VA HSR&D Implementation study funded FY19

FY20 expansion to 8 additional VA sites

Non-VA EQUIPPED Implementation

- AHRQ R18 funding 2016-2019 Expansion to Epic sites, affiliates of VA GRECCs
  - Grady, Mount Sinai Hospital, Duke
- AHRQ R18: 2019-2021 (PI: Vandenberg)
  - Scaling EQUIPPED: Expansion to EUH and at 3 Mount Sinai sites

BCBS Rhode Island 2019 expansion (PI: E. Goldberg)

Evaluation Framework

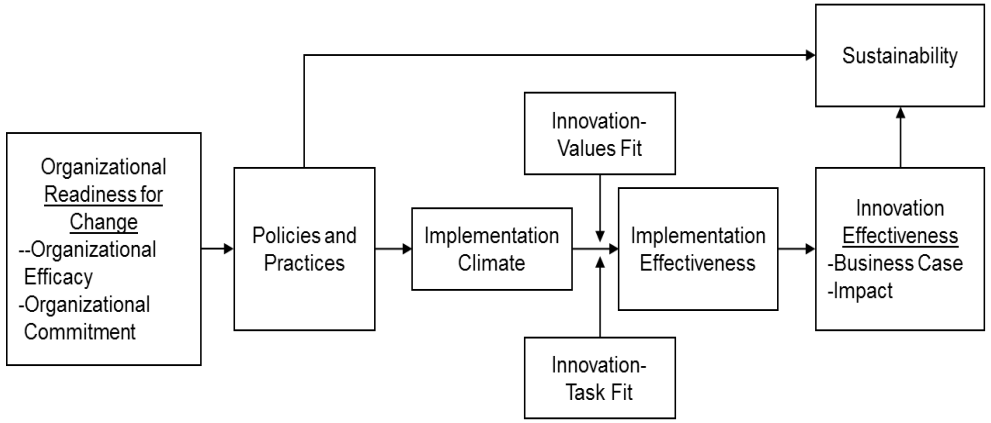
- Implementation Scientist Michelle Kegler, PhD (Emory)
- RE-AIM
  - Reach
  - Effectiveness
  - Adoption
  - Implementation
  - Maintenance

- Consolidated Framework for Implementation Research
  - Understand implementation facilitators and barriers

Glasgow RE et al. Am J Public Health 1999
Klein K, Sorra J, Acad Manag Rev. 1996

- Implementation Scientist George Jackson, PhD (Duke/Durham)
- Organizational Theory of Implementation Effectiveness
  - Organizational Readiness for Change as a key factor

Components of the Organizational Theory of Implementation Effectiveness (OTIE)

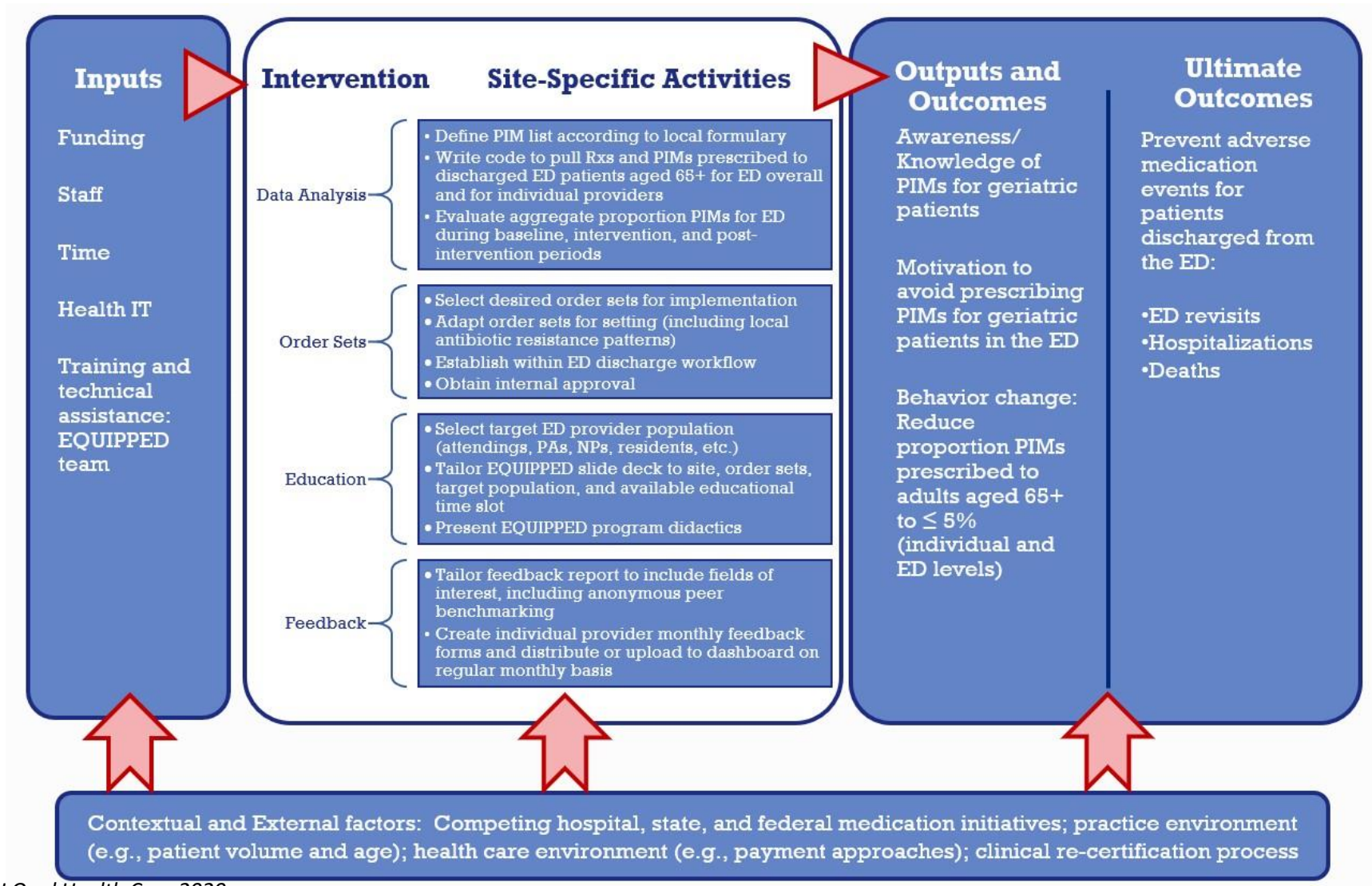


Methods for Implementation Evaluation

- Focus group with implementation team
- Provider surveys
- Evaluation of prescribing data
- Evaluation of meeting notes
- Combined measure to determine provider education
  - Gathered through attendance records and survey responses

Stevens et al. *J Am Geriatr Soc,* 2017
Kegler et al. *Front Health Services Research* 2022

Toolkit to Assess Readiness for EQUIPPED



Vandenberg AE et al. Int J Qual Health Care 2020

EQUIPPED Export Results

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DOI: 10.1111/jgs.17955

CLINICAL INVESTIGATION

Journal of the American Geriatrics Society

Enhancing the quality of prescribing practices for older adults discharged from the emergency department in Rhode Island

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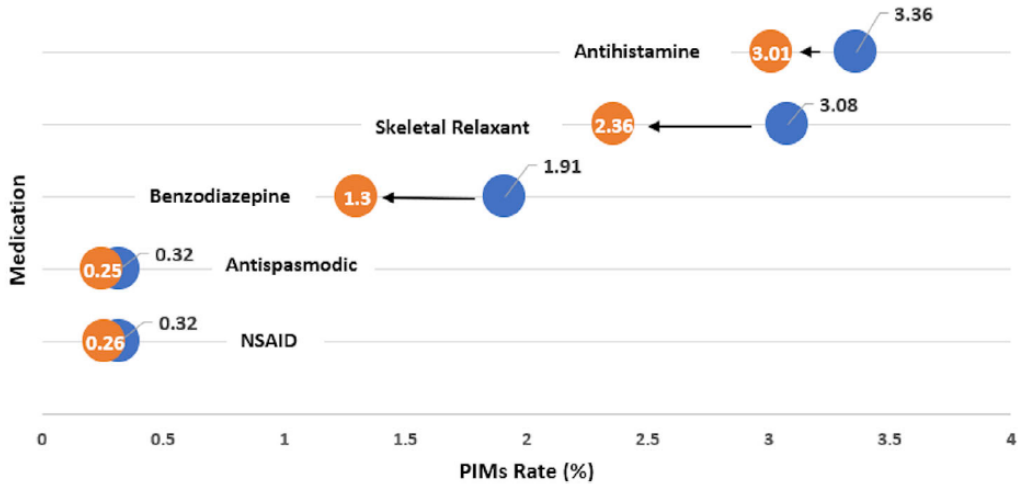
TABLE 1 Characteristics of clinicians ($n = 247$)

Characteristic	n (%)
Credentials	
Attending physician	119 (48.2%)
Resident physician	67 (27.1%)
Advanced practice provider	61 (24.7%)
Participated in intervention	
Yes	224 (90.7%)
No	23 (9.3%)
Clinician prescribed at least one PIM	
Yes	228 (92.3%)
No	19 (7.7%)

Change of potentially inappropriate medications (PIMs) rates by drug class between pre-implementation and post-implementation periods



BMJ Open Quality

Early prescribing outcomes after exporting the EQUIPPED medication safety improvement programme

Camille P Vaughan,[1,2] Ula Hwang,[3,4] Ann E Vandenberg,[1] Traci Leong,[5] Daniel Wu,[1] Melissa B Stevens,[1,2] Carolyn Clevenger,[6] Stephanie Eucker,[7] Nick Genes,[8] Wennie Huang,[7] Edidiong Ikpe-Ekpo,[9] Denise Nassisi,[8] Laura Previl,[7] Sandra Rodriguez,[10] Martine Sanon,[8] David Schlientz,[7] Debbie Vigliotti,[11] S Nicole Hastings[7,12]

Table 1 Aggregate pre-EQUIPPED and post-EQUIPPED PIM prescribing and specific PIM drug classes at each implementation site

	Pre-EQUIPPED (%) (95% CI for All PIMs)*	Post-EQUIPPED (%) (95% CI for All PIMs)*	P value†
Site 1			
All PIMs	5.6 (5.0 to 6.3)	5.1 (4.7 to 5.5)	0.02
Benzodiazepine	16.6	9.5	0.04
Skeletal muscle relaxant	34.4	36.9	0.44
Antihistamine	15.8	13.4	0.15
Site 2			
All PIMs	5.8 (5.0 to 6.6)	5.4 (4.8 to 6.0)	0.62
Benzodiazepine	16.9	10.0	0.09
Skeletal muscle relaxant	21.9	21.3	0.84
Antihistamine	49.3	49.2	0.57
Site 3			
All PIMs	7.3 (6.4 to 9.2)	7.5 (6.6 to 8.4)	0.64
Benzodiazepine	17.3	12.0	0.05
Skeletal muscle relaxant	24.5	14.5	0.04
Antihistamine	38.2	43.2	0.52

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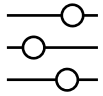
Informing EQUIPPED Dissemination

- Promising early results of EQUIPPED

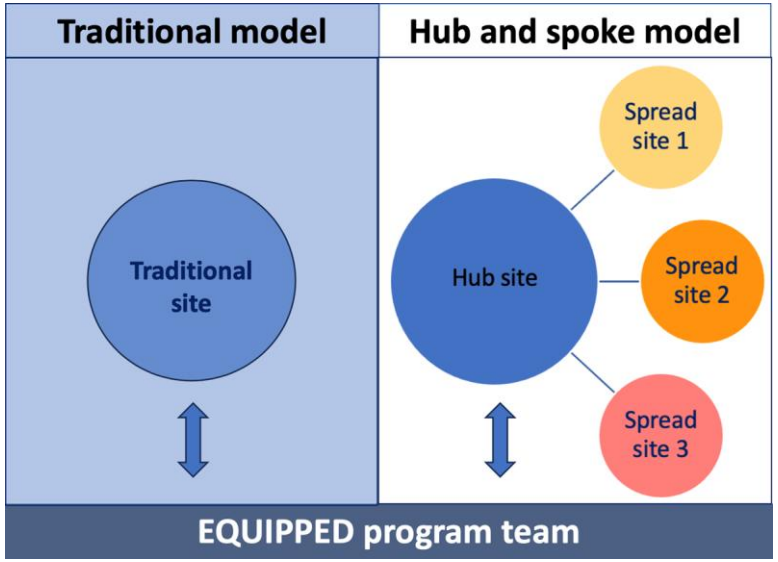

Time constraints


Building order sets is often a rate-limiting step


Challenges reaching all prescribers

- Study Question: Could EQUIPPED be implemented in a hub and spoke model more efficiently and still be effective?

Prescribing Outcomes from EQUIPPED2 (AHRQ: Vandenberg (PI)



Received: 31 July 2023 | Revised: 9 November 2023 | Accepted: 9 December 2023
DOI: 10.1111/jgs.18746

MODELS OF GERIATRIC CARE, QUALITY IMPROVEMENT, AND PROGRAM DISSEMINATION

Journal of the American Geriatrics Society

Scaling the EQUIPPED medication safety program: Traditional and hub-and-spoke implementation models

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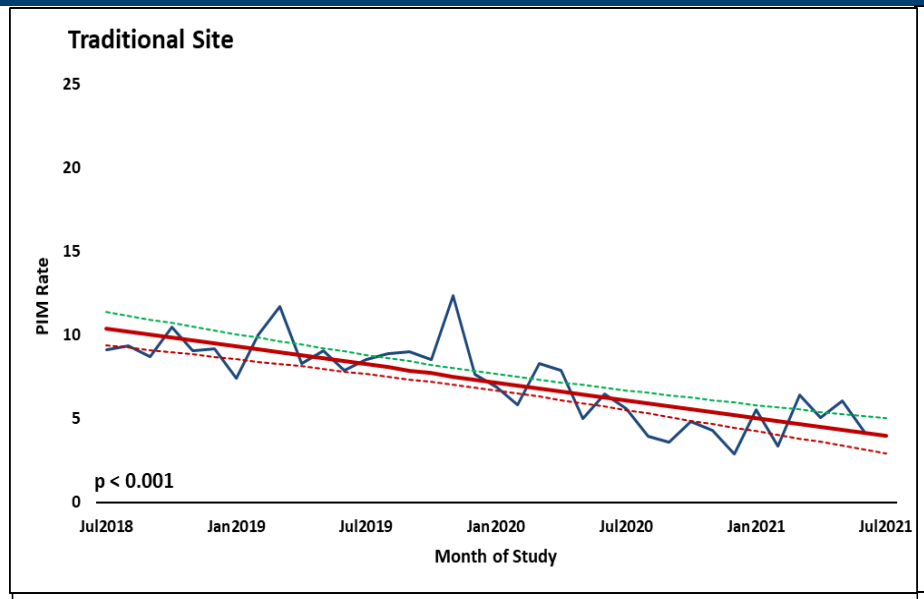
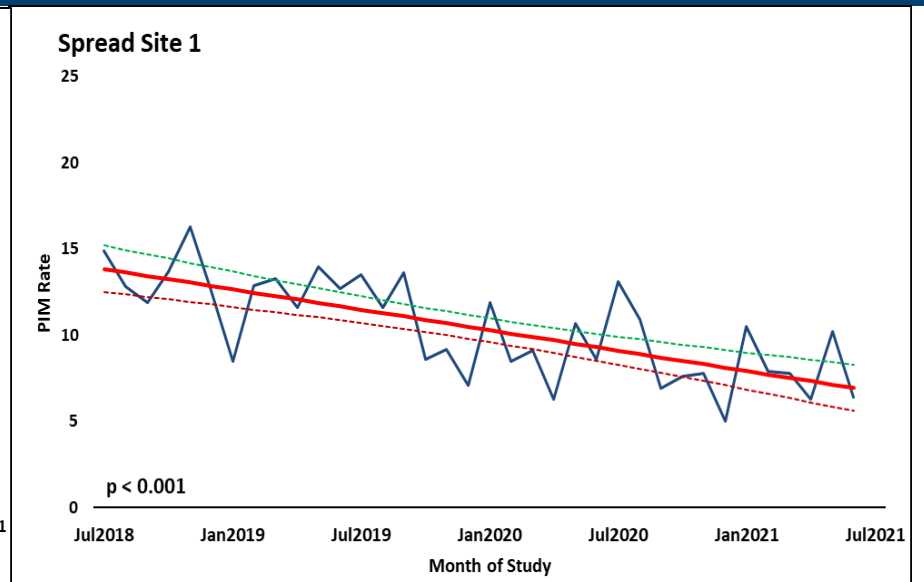
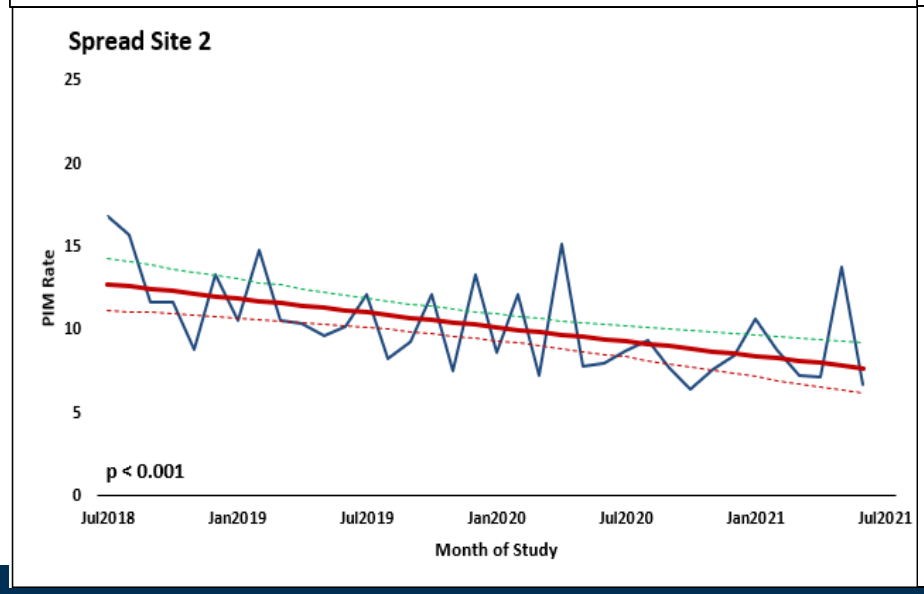
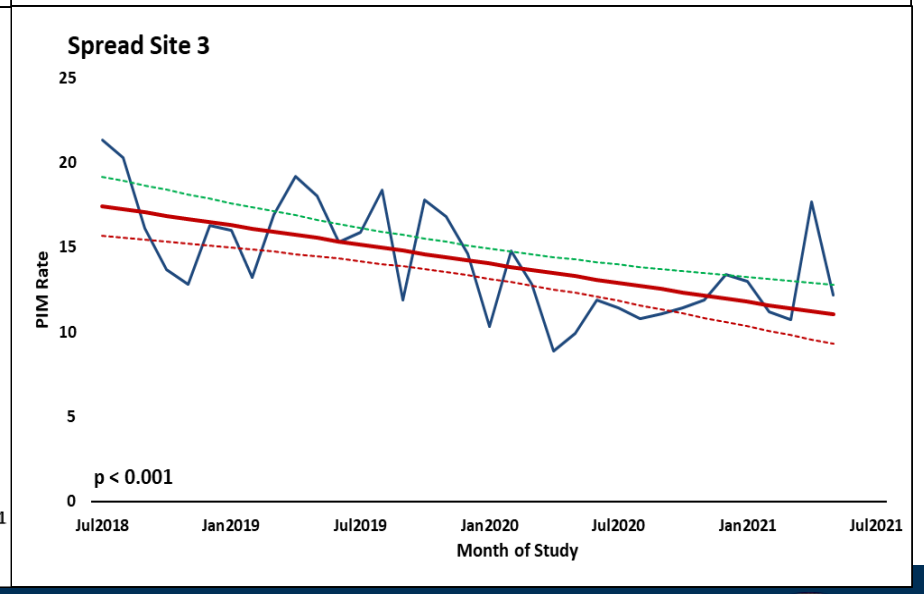
	% of all PIMs at baseline	Pre-EQUIPPED (%) (95% CI for all medications)*	Post-EQUIPPED (%) (95% CI for all medications)*	Pre- to Post change p-value**
Traditional: Site 1				
All PIMs	100	8.86 (8.12-9.60)	3.59 (3.59-9.60)	< 0.0001
Skeletal Muscle Relaxant	37.8 (33.6-42.2)	3.34 (2.89-3.84)	.85 (.59-1.18)	<.0001
Anticholinergic Antihistamine	20.8 (17.3-24.6)	1.8 (1.5-2.2)	1.4 (1.1-1.8)	.1272
Benzodiazepine	15 (12.03-18.34)	1.3 (1.05-1.65)	.33 (.18-.56)	<.0001
Anticholinergic Antispasmodic	10.2 (7.72-13.13)	.9 (.67-1.18)	.74 (.5-1.06)	.473
GI Motility	8 (5.82-10.73)	.7 (.51-.96)	.4 (.22-.63)	.0562
Spread: Site 1				
All PIMs	100	12.20 (11.20-13.19)	7.13 (6.14-8.14)	< .0001
Anticholinergic Antihistamine	32.3 (28.3-36.5)	3.9 (3.4-4.5)	3.4 (2.7-4.1)	.2578
Non-Steroidal Anti-Inflammatory Drugs	29.1 (25.2-33.2)	3.5 (3.0-4.1)	2.0 (1.5-2.6)	.0004
Skeletal Muscle Relaxant	27.1 (23.3-31.2)	3.3 (2.8-3.9)	1.1 (.8-1.6)	<.0001
Benzodiazepine	8.7 (6.46 -11.51)	1.1 (0.77-1.4)	.3 (0.17-0.66)	.0021
GI Motility	1.2 (0.52-0.02)	.1 (0.06-0.31)	.1 (0.01-0.27)	.7186
Spread: Site 2				
All PIMs	100	11.30 (10.14-12.56)	7.48 (6.35-8.78)	.04466
Anticholinergic Antihistamine	32.2 (26.99-37.72)	3.6 (2.96-4.42)	3.9 (3.08-4.90)	.7068
Non-Steroidal Anti-Inflammatory Drugs	30.9 (25.77-36.37)	3.5 (2.83-4.25)	2.0 (1.46-2.78)	.0059
Skeletal Muscle Relaxant	22.5 (18.03-27.61)	2.5 (1.98-3.21)	0.77 (0.45-1.27)	<.0001
Benzodiazepine	9.4 (6.41-13.15)	1.1 (0.72-1.52)	.33 (0.14-0.72)	.0098
GI Motility	2.68 (1.19-5.09)	.3 (.13-.59)	0	.0246
Spread: Site 3				
All PIMs	100	16.16 (14.91-17.40)	11.67 (10.30-13.04)	<.0001
Skeletal Muscle Relaxant	33.3 (29.41-37.48)	5.4 (4.64-6.18)	3.2 (2.51-4.05)	.0003
Anticholinergic Antihistamine	40.4 (36.27- 44.62)	6.5 (5.70- 7.39)	4.9 (4.05- 5.92)	.0183
Benzodiazepine	8.0 (5.85-10.50)	1.3 (0.94-1.72)	.33 (0.15-0.67)	.0006
GI Motility	8.0 (5.85-10.50)	1.3 (0.94-1.72)	.76 (0.46-1.21)	.0897
Non-Steroidal Anti-Inflammatory Drugs	5.6 (3.81-7.80)	0.9 (0.61-1.27)	.95 (0.60-1.45)	.9613

Generalized time series from baseline through post-intervention periods by site









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Champion and Provider Engagement

Spoke site chief: EQUIPPED “delivered on a platter”

Implementation barriers at the spoke sites:

- Fragmented communication among hub personnel and spoke champions
- Sporadic delivery of provider feedback reports to spoke champions
- Lack of site-tailored top PIMs as part of messaging
- Lack of tailoring of order sets to local site clinical issues
- Champions and providers: Lack of face-to-face contact with providers during the COVID-19 pandemic as a barrier to delivering 1:1 feedback

Implementation barriers at the traditional site:

- Health system's unclear and multi-stage committee structure for EMR change approval
- Champions and providers: Lack of face-to-face contact with providers during the COVID-19 pandemic as a barrier to delivering 1:1 feedback

Informing EQUIPPED Dissemination

- Promising early results of EQUIPPED
- Personnel effort to provide academic detailing-based audit and feedback may be challenging


Time constraints


Lack of geriatric prescribing expertise


Challenges reaching all prescribers

- Clinical dashboards have become more available
- Study Question: Could EQUIPPED audit and feedback be delivered in a more automated way and still be effective?

VA HSR&D AWARD (FY19-22)

8 VA Emergency Departments

Randomly assigned to receive EQUIPPED with Academic Detailing or Dashboard Audit and Feedback

Dashboard Feedback

Monthly provider feedback via an electronic dashboard with audit, feedback and peer benchmarking

Academic Detailing Feedback

One-to-one (1:1) in-person academic detailing from a professional colleague that includes in-person audit, feedback, and peer benchmarking and provide on-site engagement

Aims

1. To compare the effectiveness of active vs passive feedback EQUIPPED intervention by comparing the monthly proportion of PIM prescribing as % of individual prescriptions) in each arm.
2. To evaluate the effectiveness of the active vs passive feedback EQUIPPED interventions using semi-structured qualitative telephone interviews and quantitative survey data.
3. Using micro-costing methods, we will calculate the difference in the detailed cost of the passive vs. active feedback versions of EQUIPPED.

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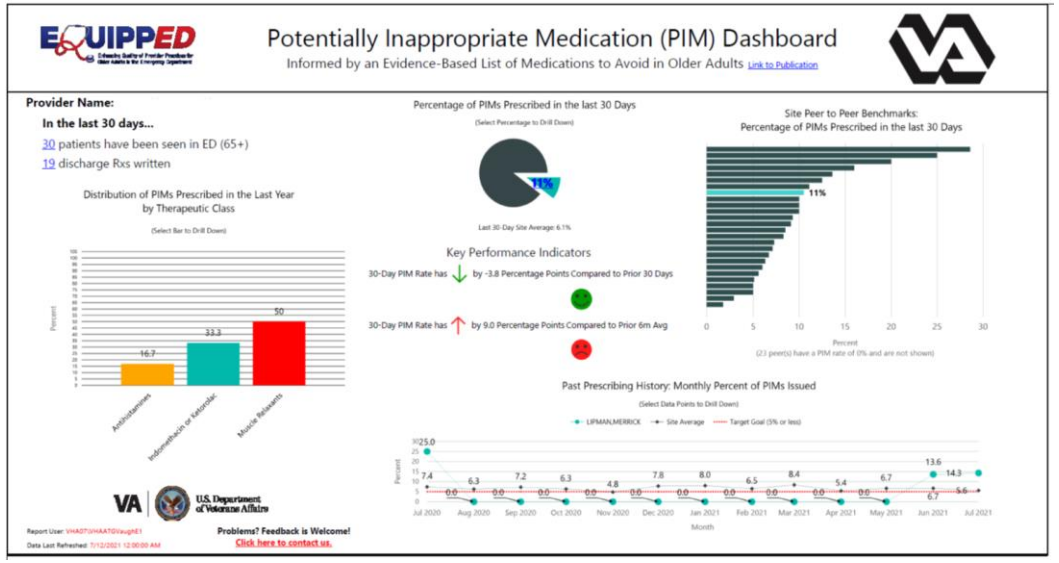
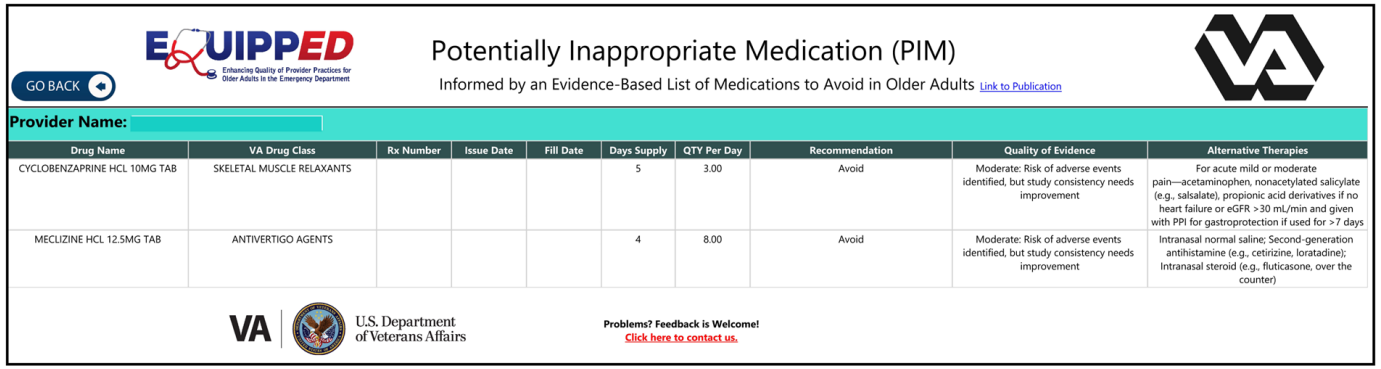
VA HSRD Dashboard Audit and Feedback

- Automated, personalized email to individual prescriber on the first Tuesday of the month
- Provided monthly PIM % relative to baseline and target of < 5%
- Provided link to the dashboard for patient-specific information





Drug Name	VA Drug Class	Rx Number	Issue Date	Fill Date	Days Supply	QTY Per Day	Recommendation	Quality of Evidence	Alternative Therapies
CYCLOBENZAPRINE HCL 10MG TAB	SKELETAL MUSCLE RELAXANTS				5	3.00	Avoid	Moderate: Risk of adverse events identified, but study consistency needs improvement	For acute mild or moderate pain—acetaminophen, nonacetylated salicylate (e.g., salsalate), propionic acid derivatives if no heart failure or eGFR >30 mL/min and given with PPI for gastroprotection if used for >7 days
MECLIZINE HCL 12.5MG TAB	ANTIVERTIGO AGENTS				4	8.00	Avoid	Moderate: Risk of adverse events identified, but study consistency needs improvement	Intranasal normal saline; Second-generation antihistamine (e.g., cetirizine, loratadine); Intranasal steroid (e.g., fluticasone, over the counter)

Burningham Z et al. Clin Therapeutics 2020

EQUIPPED

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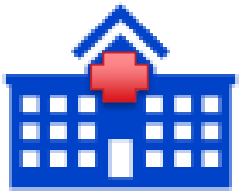
Baseline Characteristics of 8 Implementation Sites

Academic Detailing
n=4



Group baseline PIM%
8.01%

	Academic Detailing			
	Site A	**Site B**	**Site C**	**Site D**
Total number of Encounters FY '21	12,149	21,278	17,387	11,914
% FY21 Encounters Veterans >=65 yrs old	7,223 (59%)	10,321 (48%)	10,064 (58%)	6,845 (57%)
% of admissions FY21 Veterans >=65 yrs old	45.82%	21.55%	26.43%	41.22%
Six-month baseline PIM prescribing %	**5.50%**	**8.90%**	**9.65%**	**7.49%**
Site Champion Title	Associate Director for Clinical Affairs GRECC	Section Chief Emergency Medicine	ED Clinician	Director of Geriatric Emergency Medicine

Dashboard
n=4

Group baseline PIM%
8.04%

	Dashboard			
	Site E	**Site F**	**Site G**	**Site H**
Total number of Encounters FY '21	39,162	25,505	20,220	18,445
% FY21 Encounters Veterans >=65 yrs old	16,841 (43%)	11,007 (43%)	11,937 (59%)	9,750 (54%)
% of admissions FY21 Veterans >=65 yrs old	34.77%	18.13%	42.95%	29.49%
Six-month baseline PIM prescribing %	**7.83%**	**8.42%**	**6.63%**	**10.49%**
Site Champion Title	Section Chief of Quality, Training and Education	Director of the Geriatric ED	Associate Director Clinical GRECC	Chief Emergency Medicine Service

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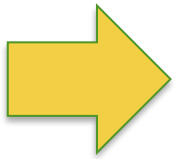
Prescribing Outcomes 12 months after Implementation

OVERALL RESULTS	Total Discharge Prescriptions for Veterans 65 years and older	Total PIM Prescriptions for Veterans 65 years and older	% PIMs	Within group$^{\alpha}$ and Between group$^{\beta}$ p-value
ACADEMIC DETAILING				
Baseline	17,744	1,421	8.01	
Implementation	16,909	1,220	7.22	
Post-implementation	23,648	1,672	7.07	0.0006$^{\alpha}$
DASHBOARD				
Baseline	26,936	2,166	8.04	
Implementation	16,503	1,280	7.76	
Post-implementation	36,795	2,979	8.10	0.81$^{\alpha}$
				<0.0001$^{\beta}$



Dashboard sites had 14% higher odds of prescribing PIMs 12 months after implementation of EQUIPPED audit and feedback OR=1.14 (95% CI 1.08-1.22)

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Exploratory Analysis

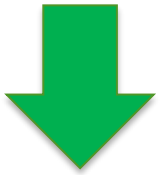
- Providers to receive audit and feedback determine by site Champion at baseline
  - More likely to be staff providers than moonlighters or resident trainees

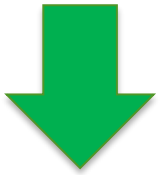
- Academic Detailing sites: 79/638 (12.4%) received audit and feedback
- Dashboard sites: 86/548 (15.7%) received audit and feedback

- Prescribers receiving feedback accounted for ~60% of prescriptions in both groups
- *Did prescribing results differ based on receipt of audit and feedback?*

Analysis Limited to Prescribers Receiving Feedback

OVERALL RESULTS	Total Discharge Prescriptions for Veterans 65 years and older	Total PIM Prescriptions for Veterans 65 years and older	% PIMs	Within group[α] and Between group[β] p-value
ACADEMIC DETAILING				
Baseline	10,280	824	8.02	
Implementation	9,991	772	7.22	
Post-implementation	14,576	981	6.73	0.0002[α]
DASHBOARD				
Baseline	15,958	1,317	8.25	
Implementation	9,105	617	6.78	
Post-implementation	21,639	1,383	6.39	<0.0001[α]
				0.22[β]





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Additional Implementation Considerations (preliminary findings)

Factors Facilitating Implementation

- All sites have large populations of geriatric patients in the ED
- At the start of the process, all sites were committed to implementing EQUIPPED
- Initial leadership engagement (agreement signed by facility director, ED director, and site champion)
- All sites reported training providers before EQUIPPED started
  - 6 sites specifically reported providers were well prepared
- EQUIPPED supported criteria for Geriatric Emergency Department Accreditation from the American College of Emergency Physicians (6 of 8 sites)
- 4 sites applied or supplemental funding from the VA Office of Geriatrics and Extended Care
- Centralized facilitation team and tools that were reviewed by national and local experts
- Order sets could be adapted based on local needs and provider preferences

Bottom Line

- Generally high degree of reported organizational readiness for change (change viewed as important and feasible)
- Generally reported that EQUIPPED is in line with organizational goals
- Facilitation and tools are available

Additional Implementation Considerations (preliminary findings)

Barriers to Implementation and Impact of COVID-19 Pandemic

- All sites implemented EQUIPPED during the COVID-19 pandemic
- Some sites reported that lower patient volumes during the early part of COVID allowed more time to start new projects
- Some site champions noted that that patients that did come to the ED were of higher acuity and fewer were discharged
- Individuals pulled to different duties (e.g., clinical application coordinators need to make changes to the electronic health record).
- Engaging frontline staff during COVID was challenging (e.g. low response rates for surveys of providers).
  - Learning new ways of caring for patients across the board.
  - Life challenges faced as a result of COVID.
  - Important both in relation to delivery of feedback and discussions related to the balance between guideline concordant care and clinical judgement.

Conclusions

- Academic detailing approach more effective at group level
- Dashboard approach may be reasonable w/limited resources
  - Consider automatic prescriber enrollment during onboarding
- Results suggest EQUIPPED well-suited for ED setting of care

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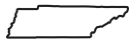

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