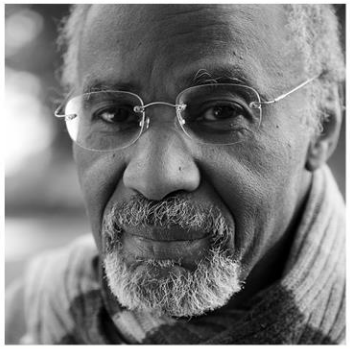


# Preventing Older Adult Falls: Evaluating the integration of Clinical Falls Prevention and the Electronic Health Record

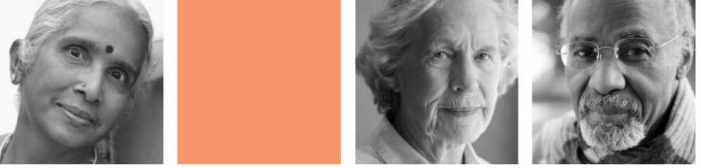
## American Evaluation Association 2016 Meeting

## October 29, 2016

*This evaluation was funded by the Centers for Disease Control and Prevention*

STEADI Stopping Elderly Accidents, Deaths & Injuries

*Disclaimer: The findings and conclusions in this presentation are those of the author and do not necessarily represent the official position of the CDC*



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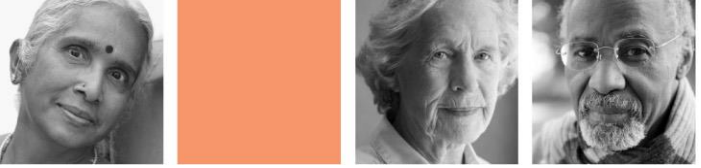


# Panel overview

1. Implementing Older Adult Falls Prevention in the Electronic Health Record in a Large Health System

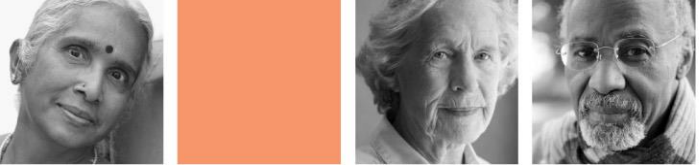
   Gwen Bergen, PhD

2. Fall Prevention among Older Adults:  Process Evaluation of a Primary Care Practice Change Incorporating Fall Risk Assessment and Referral in the Electronic Health Record

   Chelsea Reome, MPA

3. Fall Prevention among Older Adults:  Outcome Evaluation of a Primary Care Practice Change Incorporating Fall Risk Assessment and Referral in the Electronic Health Record

   Yvonne Johnston, DrPH, MPH, MS, RN, FNP



# Fall Prevention among Older Adults: Process Evaluation of a Primary Care Practice Change Incorporating Fall Risk Assessment and Referral in the Electronic Health Record

**Chelsea Reome**, MPA
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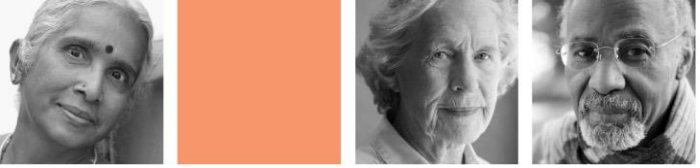
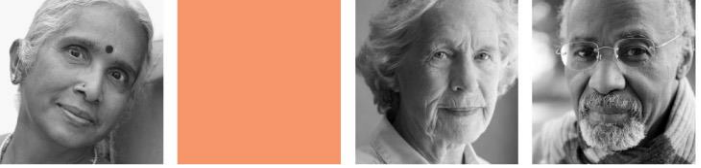


# Objectives

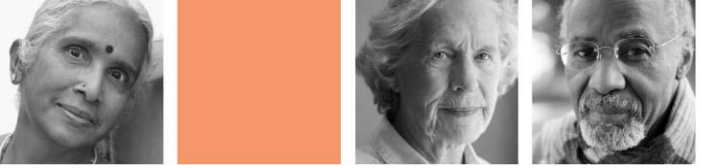
- Describe incorporation of STEADI into the EHR in 14 UHS primary care practices in Broome County, NY,
- Explain the facilitators and barriers faced at various stages by each practice and by the system as a whole.



# Data Sources for Process Measures

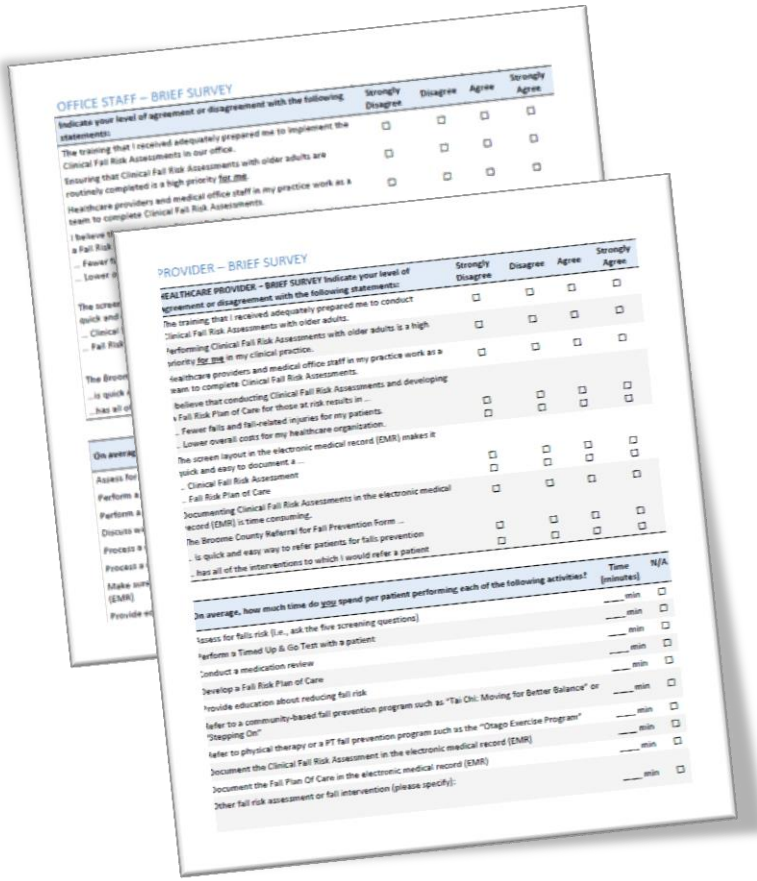
- Survey
  - Providers (n=31)
  - Clinical Staff (n=58)
- Intercept Interviews
  - Providers (n=27)
  - Clinical Staff (n=50)

- Structured Interviews
  - Administrators (n=3)
  - IT Personnel (n=3)
  - Lead Providers (n=3)
  - STEADI Champions (n=2)
  - Unit Coordinators (n=9)



# Survey

- Questions in five categories:
  - Attitudes and beliefs
  - Time to complete components of screening
  - Facilitators and barriers
  - Feedback received
  - Demographic information



# Intercept Interviews

HEALTHCARE PROVIDER- INTERCEPT INTERVIEW

This document describes the intercept interviews to be conducted with healthcare providers (physicians, nurse practitioners, physicians' assistants and nurses). The questions are designed to assess organizational structures and processes associated with implementing and maintaining the CFRA in primary care practices. The information obtained from these interviews will inform possible changes to improve delivery of the CFRA and increase its effectiveness. One day for intercept interviews will be scheduled with each of the twelve (12) primary care practices. On the scheduled day, program evaluation personnel will travel to the site and conduct intercept interviews with each healthcare provider individually as they have time throughout the day. The total time commitment is should not exceed five (5) minutes.

OFFICE STAFF- INTERCEPT INTERVIEWS

This document describes the intercept interviews to be conducted with medical office staff (receptionists, Care Coordinators, etc.). The questions are designed to assess organizational structures and processes associated with implementing and maintaining the CFRA in primary care practices. The information obtained from these interviews will inform possible changes to improve delivery of the CFRA and increase its effectiveness. One day for intercept interviews will be scheduled with each of the twelve (12) primary care practices. On the scheduled day, program evaluation personnel will travel to the site and conduct intercept interviews with all office staff members individually as they have time throughout the day. The total time commitment is should not exceed five (5) minutes. Questions are provided below.

Introduction

Hello, my name is Chelsea Reome. I am a Health Program Specialist at the Broome County Health Department. Thank you for taking the time to meet with me. Today we will be completing a survey if you haven't done so already, and a brief interview. Neither should take more than five minutes. Have you completed a survey yet? If no, here is a survey for you to complete before we begin the interview. By agreeing to complete the survey and interview, you are providing your consent to participate in this program evaluation.

We value your input regarding the clinical fall risk assessment currently used in your practice location. Your experience will be valuable for improving the process at UHS and elsewhere. You may skip any questions you feel uncomfortable answering. All of your responses will be kept confidential and we will not report anything about you individually.

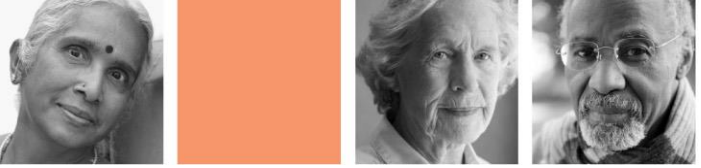
Implementation

- You have been given a draft work flow diagram of how we think the STEADI Program works in the UHS physician practice. Can you walk through how the work flow actually occurs in your practice group? [If there are differences: Why were these adaptations or changes made? How did it improve flow?] Where in this process do things tend to get held up? What do you think would make this process work smoother?
- We are interested in getting more information about when the TUG test is not documented in the EMR. What do you think are the main reasons for it not being documented or completed? [Prompt: patient could not perform, no time, patient refused, etc. (get percentages of each if possible)]

Maintenance

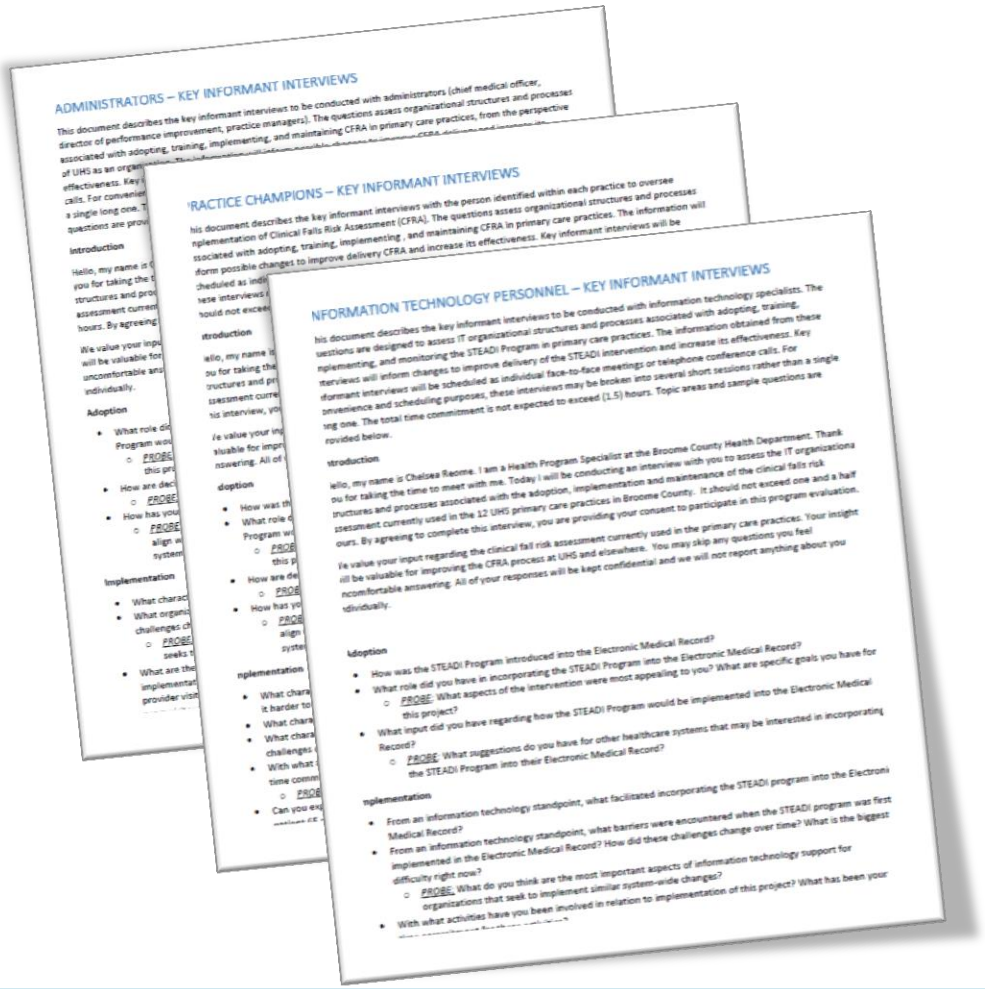
- What do you suggest doing to improve the STEADI Program and/or reduce fall risk among older adults in your clinical practice?
- What suggestions do you have for other primary care practices that may be interested in adopting the STEADI Program?

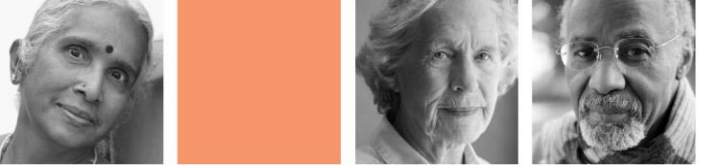
- Five questions asked of providers and clinical staff
  - Workflow & tasks
  - Instances when patient is unable to complete TUG test
  - Why TUG test goes undocumented in EHR
  - Recommendations for improvements in your office
  - Suggestions for other offices in adopting STEADI



# Structured Interviews with Key Stakeholders

- All key informants asked about their role in:
  - adoption
  - implementation
  - maintenance
  - facilitators & barriers



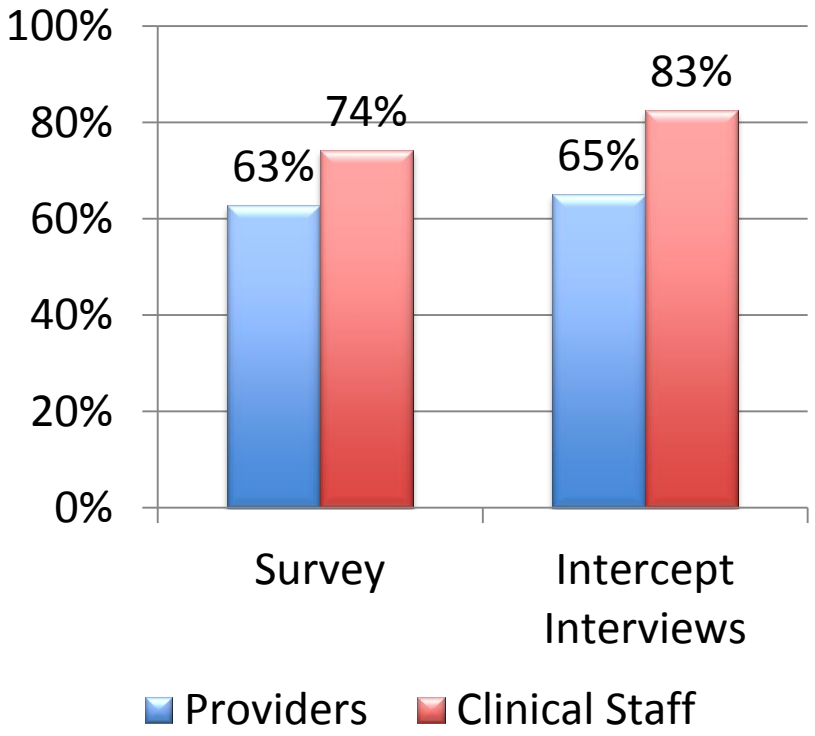


# Process Evaluation Methods

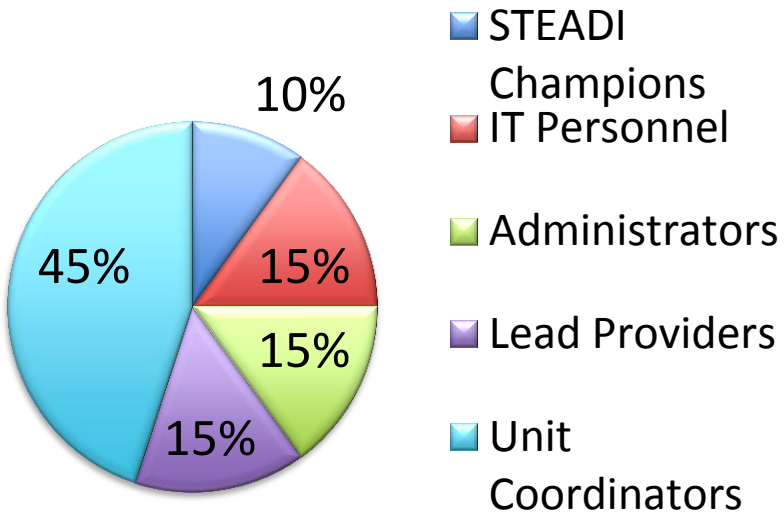
- Timeframe
  - June 2016-July 2016
- Key Personnel
- Procedure
  - Surveys completed in person or online
  - Intercept interviews conducted in person
  - Structured interviews conducted in person or via phone
- Qualitative data analysis
  - Surveys: frequency of answers for each question reported
  - Interviews:  content analysis performed; themes selected; frequency of themes reported

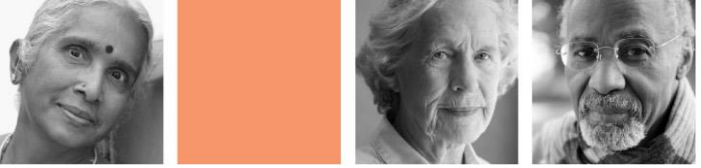
# Distribution of Responses

**Percent of Providers & Clinical Staff who Participated**

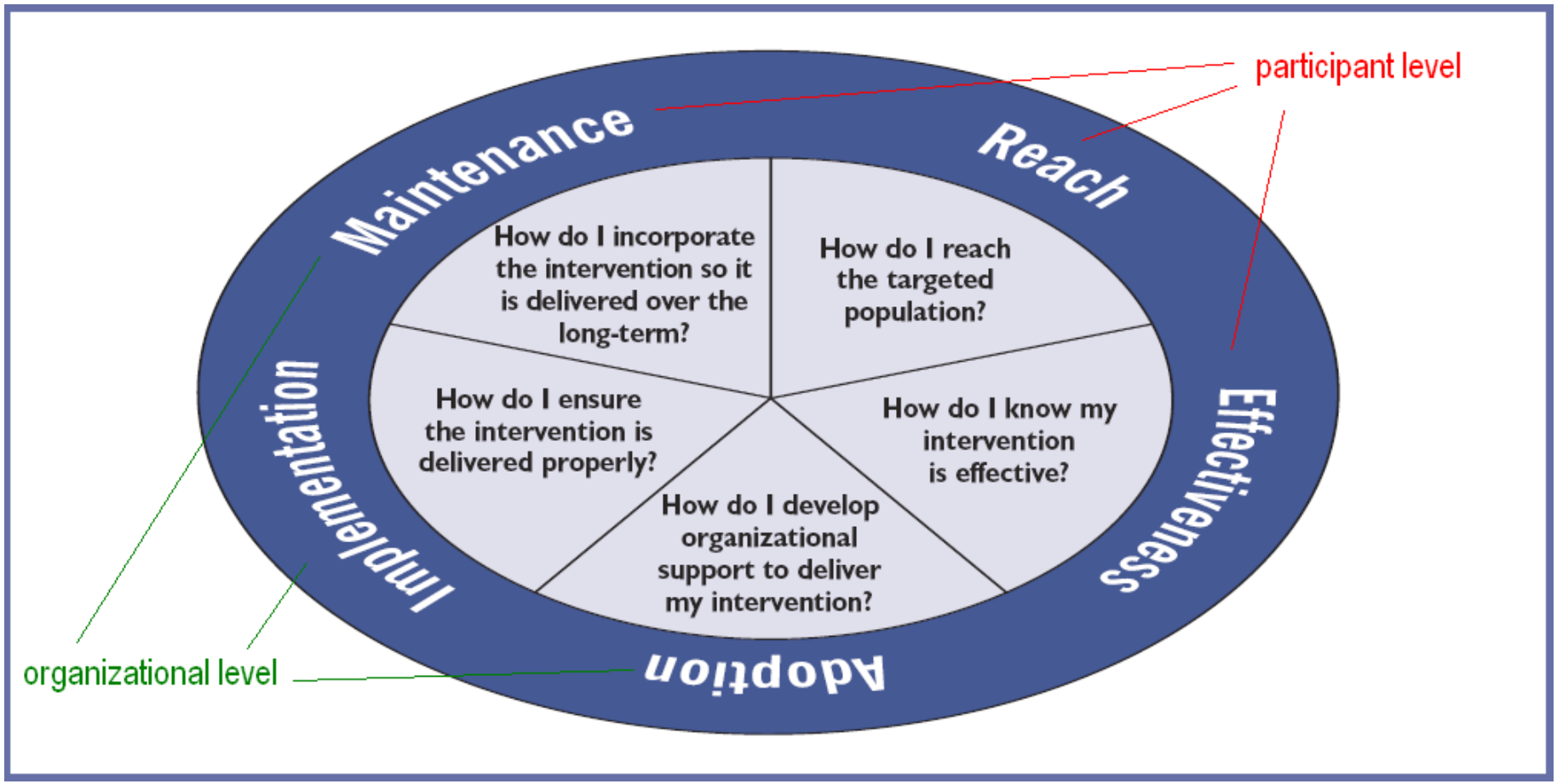


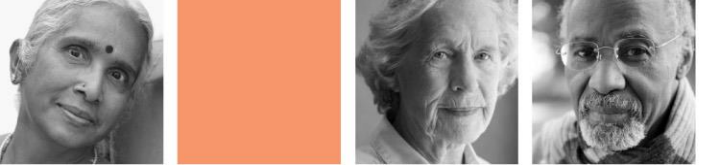

**Structured Interviews by Key Informant Type**





# RE-AIM Framework





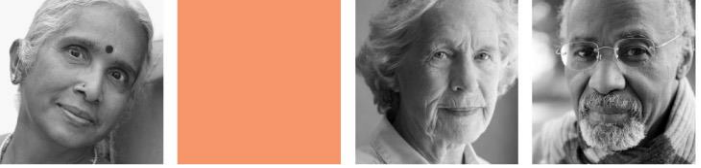
# Adoption: Facilitators

## Providers & Clinical Staff

- 71% of providers and 93% of clinical staff felt their training in STEADI was adequate

## Key Informants

- Leadership of UHS
  - Structure
  - Decision-making processes
- Ability to adapt intervention for UHS needs
- Strong physician Champion



# Adoption: Barriers

## Providers & Clinical Staff

- Attitudinal barriers
  - "Just one more thing to do"
  - Adapting workflow

## Key Informants

- Generating buy-in from physicians
  - Contested some screening elements
  - Demanded more evidence for screening elements/ interventions
- Process of integrating STEADI into EHR

# Implementation: Facilitators

## Providers & Clinical Staff

- Professional/ personal commitment
  - 68% of providers
  - 60% of clinical staff
- Coordination of office workflow
  - 60% of providers
  - 47% of clinical staff
- On-screen computer prompts
  - 45% of providers
  - 55% of clinical staff

## Key Informants

- Data warehouse
- Unit Coordinator leadership

# Implementation: Barriers

## Providers & Clinical Staff

- Competing demands of other work
  - 68% of providers
  - 26% of clinical staff
- Complexity of patient care needs
  - 65% of providers
  - 21% of clinical staff

## Key Informants

- Referral process & programs
- Customizing EHR
- Pulling data from EHR for regular reporting

# Maintenance: Facilitators

**Providers & Clinical Staff**

- Screening modules in EHR
- Frequency of organizational feedback
  - 55% of providers
  - 49% of clinical staff

**Key Informants**

- Dedicated Champion remains visible
- Falls added to system-wide performance measures

# Maintenance: Barriers

**Providers & Clinical Staff**

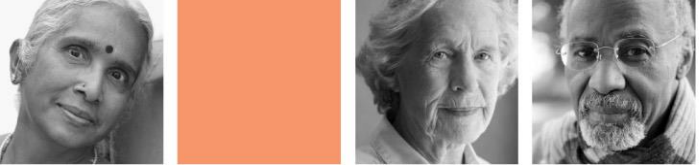
- Patient access to referral programs
- Inconsistency of 30-day follow-up
- Training new staff & physicians

**Key Informants**

- Patient access to referral programs
- Communication between offices & administration

# Conclusion

- Incentives & patient feedback can improve attitudinal barriers
- Clinical staff support & EHR modules facilitate workflow
- Performance measurement & uniform training contribute to sustainability
- Link between outcomes and screening unknown to providers & clinical staff
  - Increase patient access to referral programs
  - Monitor and disseminate outcomes



# Thank you!

Chelsea Reome

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PREVENTION, PROTECTION, PROMOTION
BROOME
HEALTH DEPT.
COUNTY
PARTNERS IN THE PUBLIC HEALTH OF BROOME COUNTY

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

# Fall Prevention among Older Adults: Outcome Evaluation of a Primary Care Practice Change Incorporating Fall Risk Assessment and Referral in the Electronic Health Record

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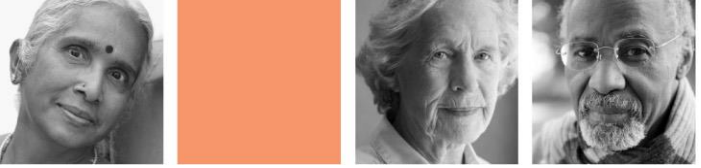
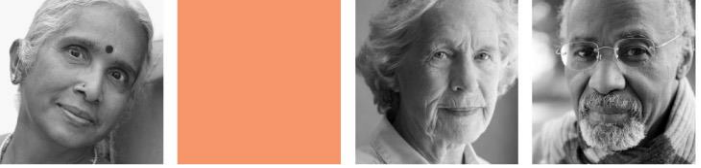
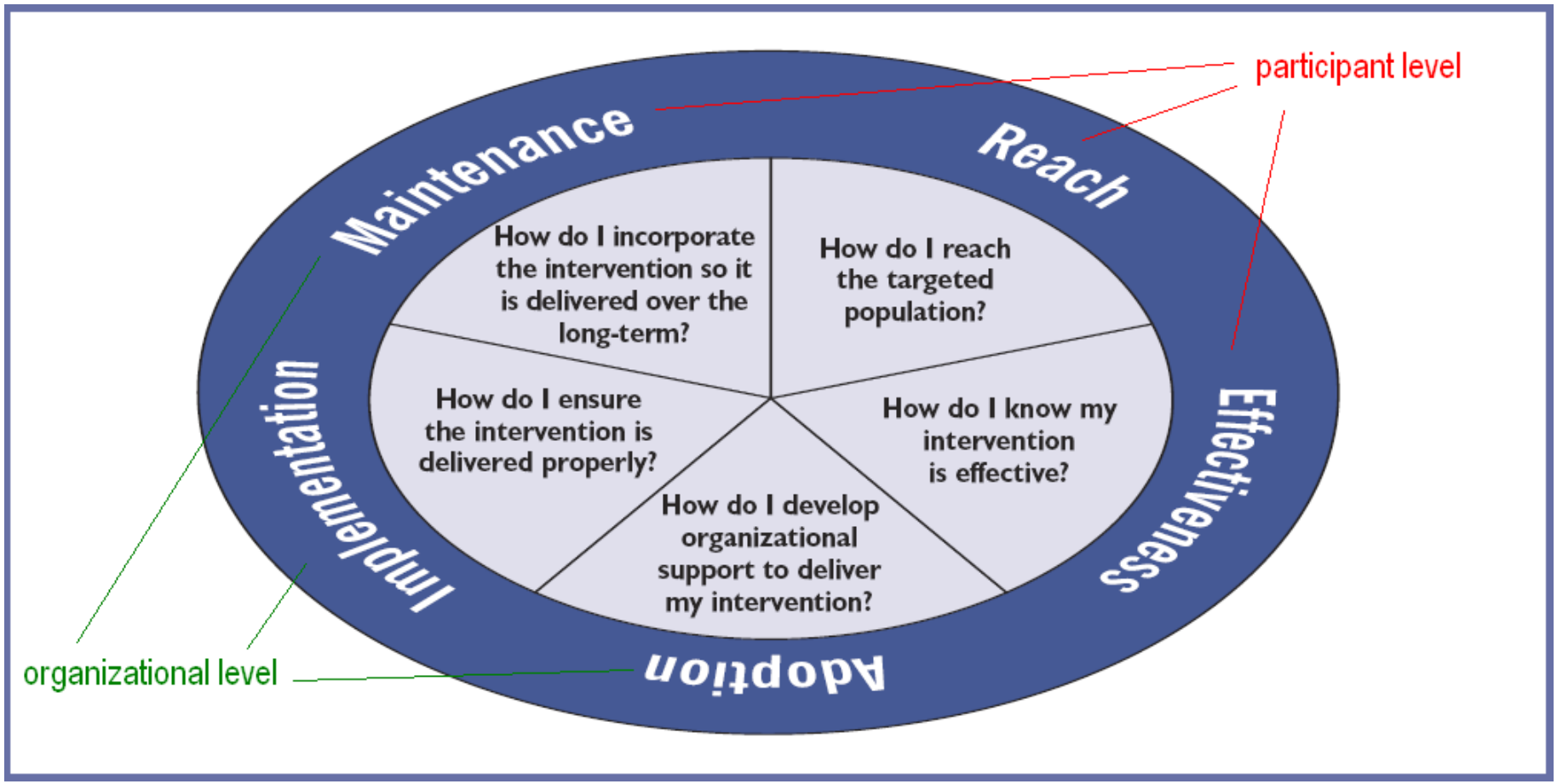


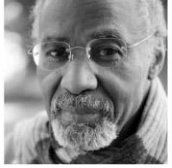
# Objectives

- Describe the methods for health outcome evaluation of the United Health Services fall risk assessment and referral project within primary care practices using the Electronic Health Record (EHR)
- Present the preliminary results from the health outcomes evaluation

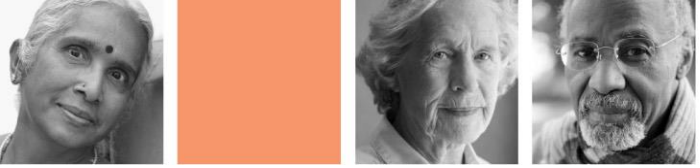


# RE-AIM Framework



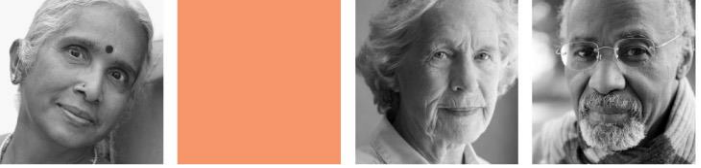


# METHODS



# Population Cohort

- Patients age 65 or older
  - At least one Primary Care Provider (PCP) visit
    - *With or without Fall Risk Assessment (FRA) screening*
  - Visit(s) occurred exclusively in one of 14 primary care practice locations serving Broome County, NY (core sites)

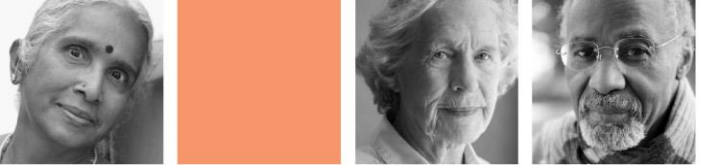


# Analyses

- Frequencies
  - % screened – total and by demographics, location
  - % at risk
  - % referred
- Comparisons
  - Rate of medically treated falls pre- and post-screening
- Multivariate logistic regression
  - Outcome – Medically treated falls post-screening

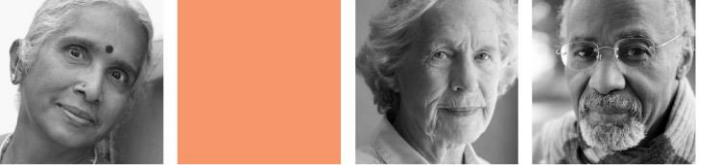
# Data Sources for Independent Measures: Electronic Health Record

- Outpatient visit data
  - Demographics
  - Screening/risk assessment variables
  - Referrals for treatment



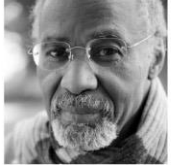
# Outcomes

- Fall risk assessment and interventions
  - *Screening*: Fall Risk Assessment (FRA) questions, Timed Up and Go (TUG) Test
  - *Fall Plan of Care (interventions)*: Education materials, Community- or hospital-based program referrals, assistive devices, vitamin D
- Fall-related emergency department (ED) visits
  - Accidental falls with principal diagnosis of injury coded E880-E888 (excludes E887, fracture cause unspecified)
- Fall-related hospitalizations
  - Accidental falls with principal diagnosis of injury coded E880-E888 (excludes E887, fracture cause unspecified)

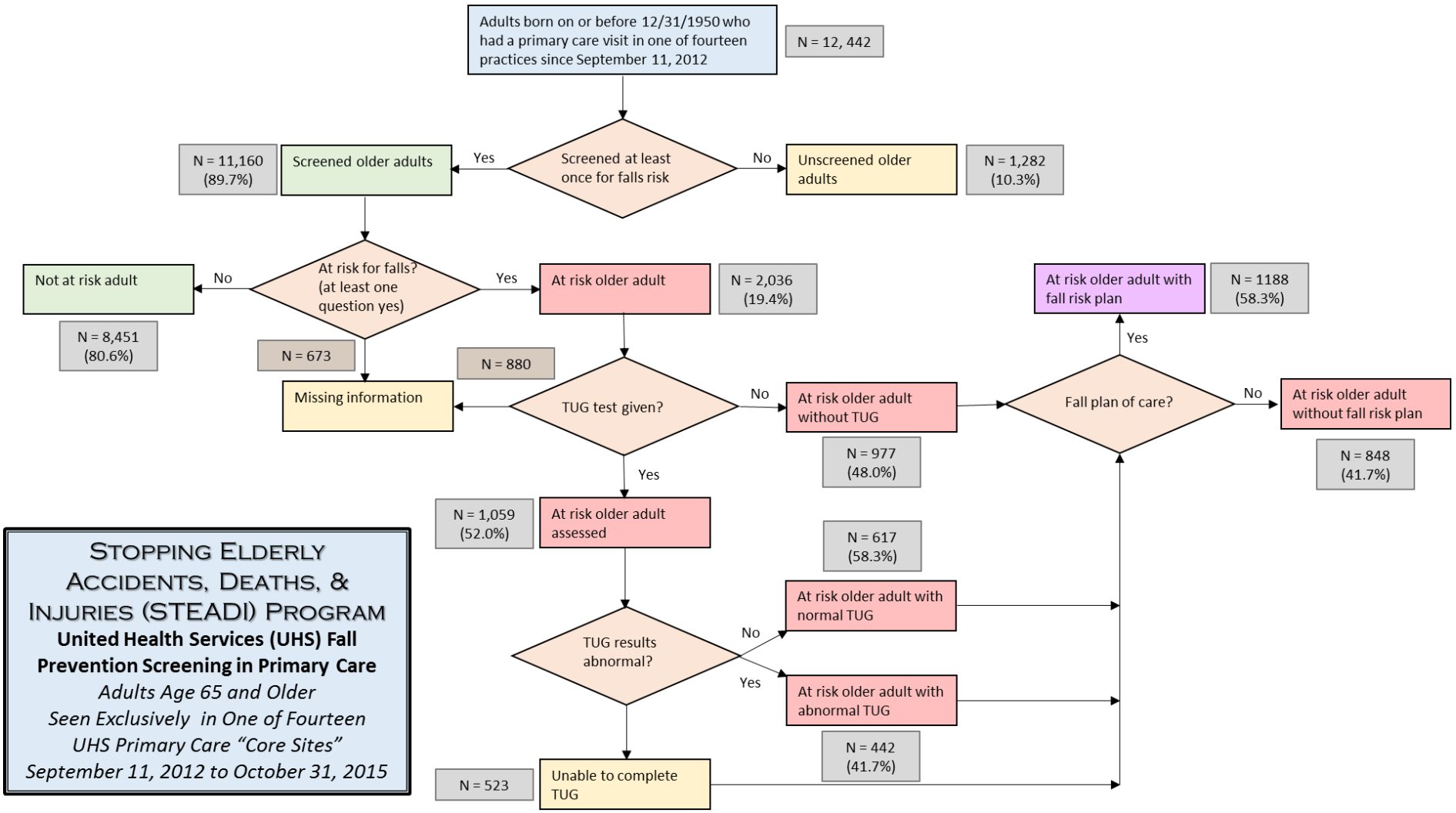


# Data Sources for Outcome Measures: Electronic Health Record

- Data extraction from three separate electronic health record systems for hospitalizations and emergency department visits
  - Archive (Jan 09 – Dec 12)
  - Invision (Dec 12 – Jun 14)
  - Soarian (Jun 14 – Oct 15)
- Separate electronic health record system for primary care data extraction
  - Next Gen with multiple updates (Sep 2012 – Oct 2015)



# Flow Diagram




**Stopping Elderly Accidents, Deaths, & Injuries (STEADI) Program**

**United Health Services (UHS) Fall Prevention Screening in Primary Care**

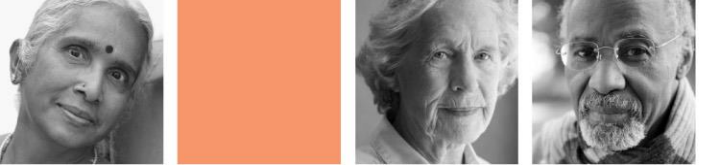
*Adults Age 65 and Older*

*Seen Exclusively in One of Fourteen UHS Primary Care "Core Sites"*

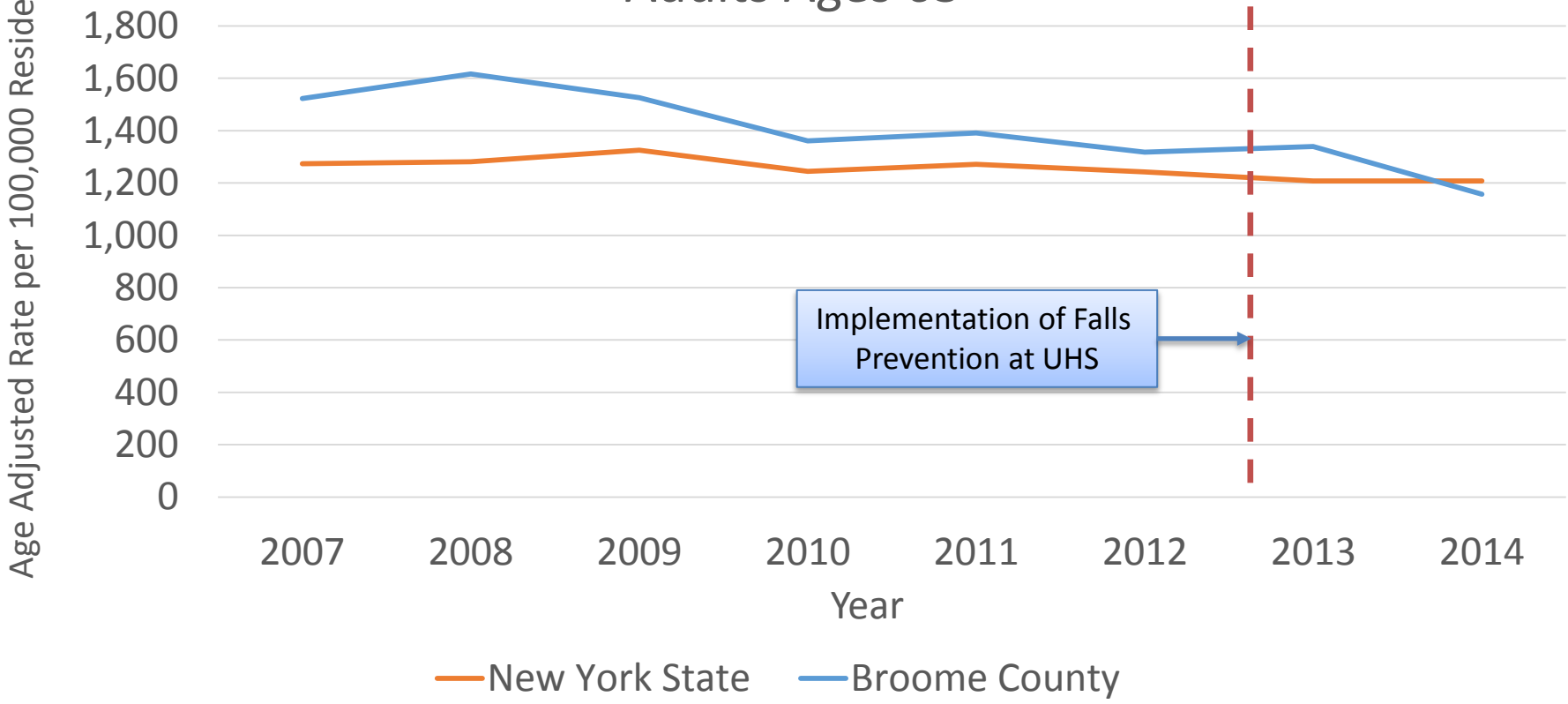
*September 11, 2012 to October 31, 2015*

# STEADI Flow Diagram

- Total number of older adults with primary care visit in Broome County: **12,442**
- Fall Risk Assessment screening rate for Broome County: **89.7%**
- Number of older adults screened who were identified as at risk for fall: **2,306**
- Proportion of older adults screened who were identified as at risk for fall: **19.4%**
- Proportion of older adults at risk for fall who had a TUG test: **52.0%**
- Proportion of older adults at risk for fall who had a Fall Plan of Care: **58.3%**

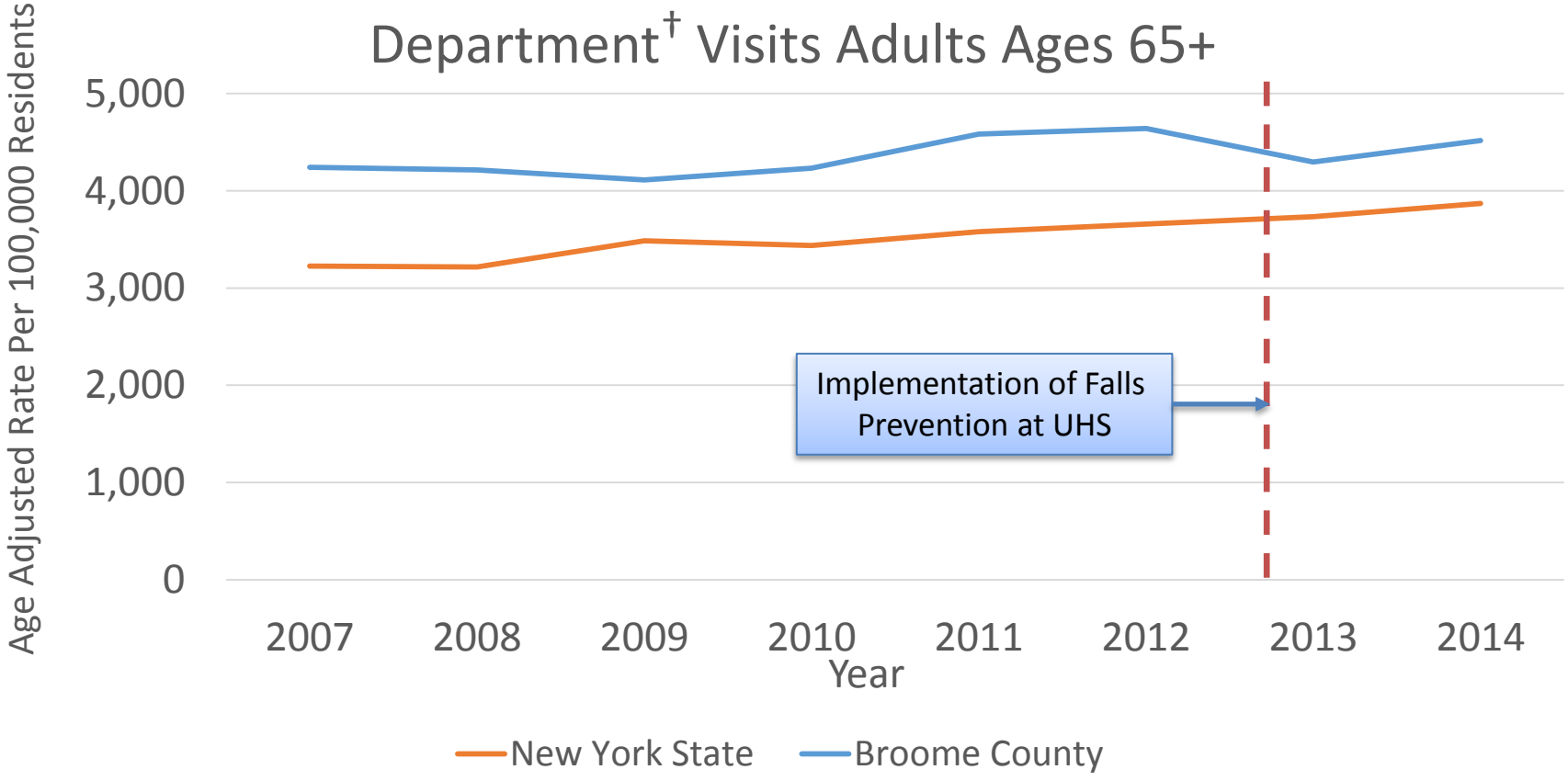


# Age Adjusted Rate of Fall-Related Hospitalizations
## Adults Ages 65+



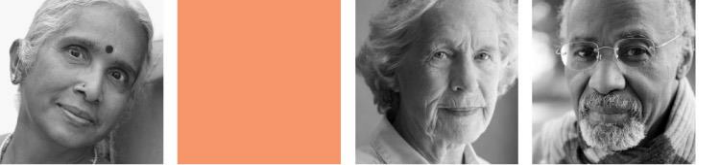

Source: New York State Department of Health
Bureau of Occupational Health and Injury Prevention

# Age Adjusted Rate of Fall-Related Emergency Department† Visits Adults Ages 65+

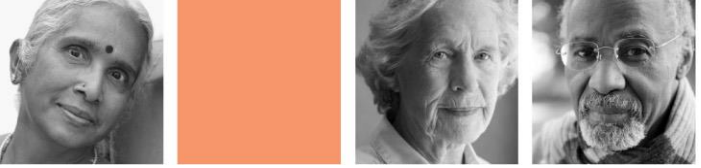



†The incidence of ED visits does not include patients who were subsequently admitted into the hospital

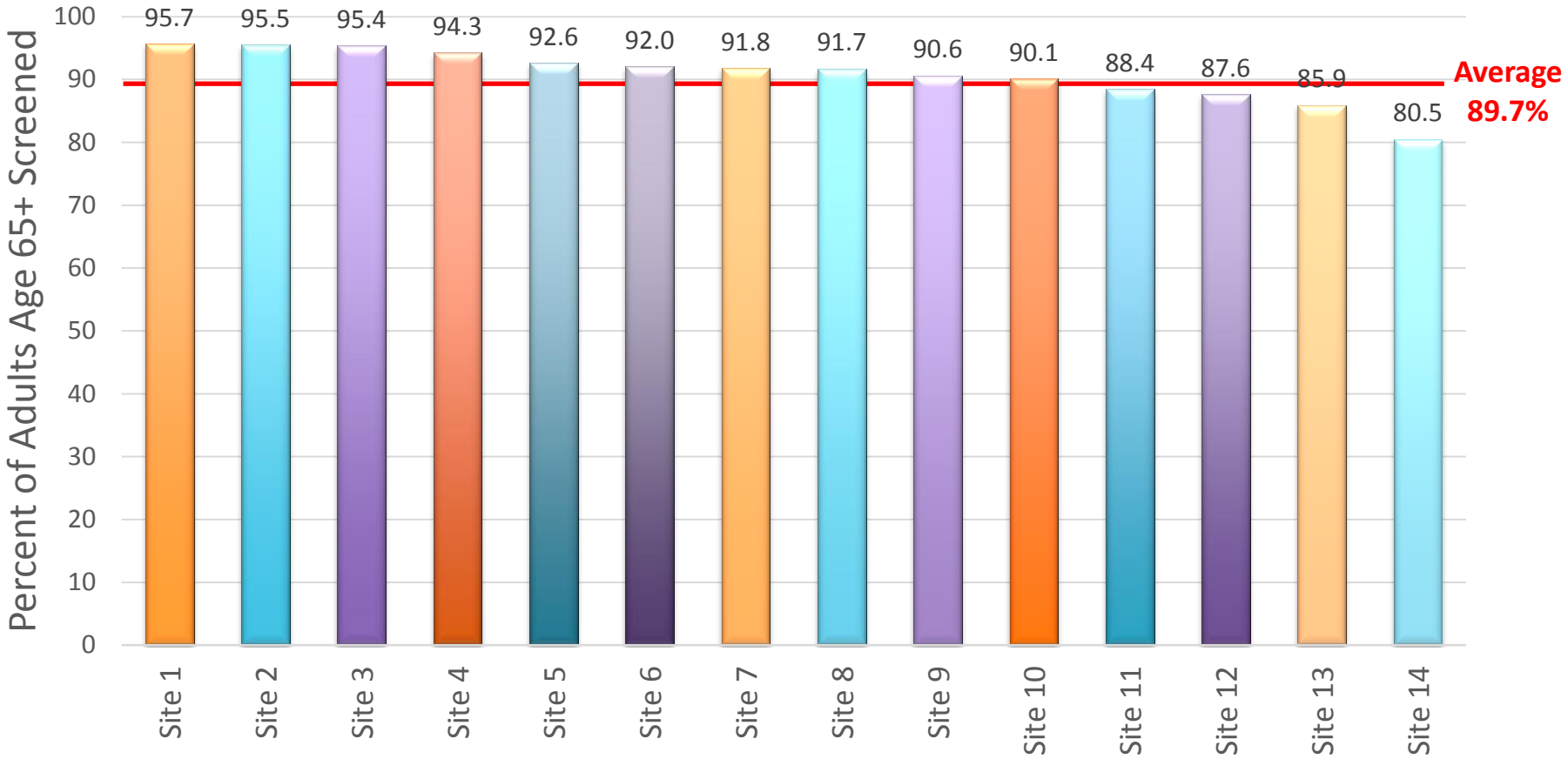
Source: New York State Department of Health
Bureau of Occupational Health and Injury Prevention



# SCREENING & DEMOGRAPHIC CHARACTERISTICS



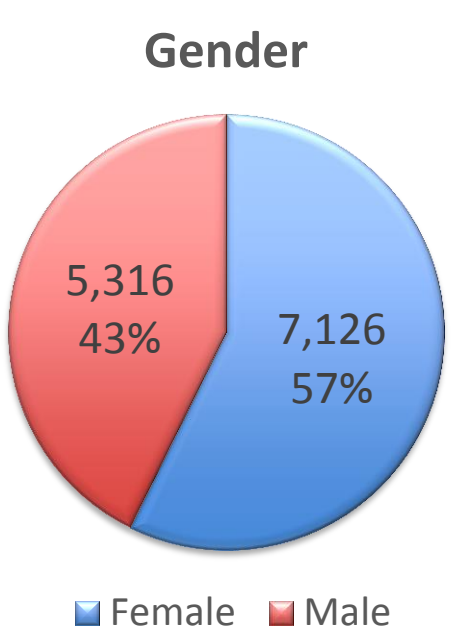
# Fall Risk Assessment Screening among Adults Age 65+ by UHS Primary Care Practice Location (core sites)

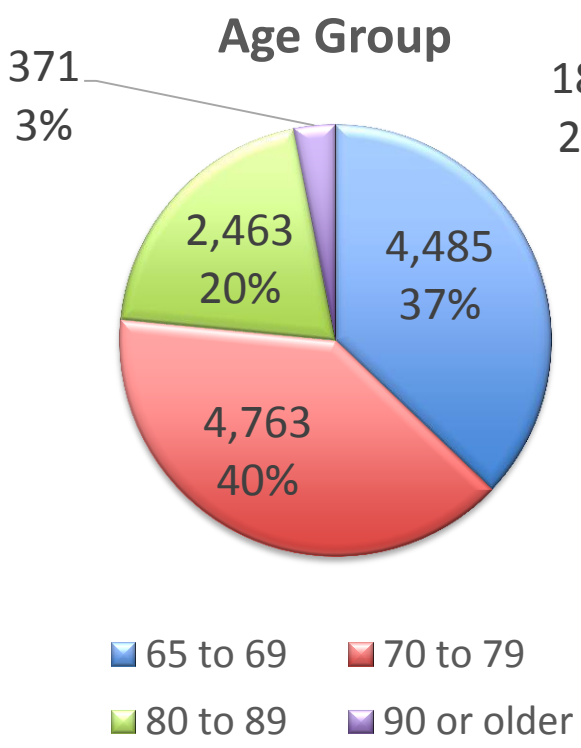


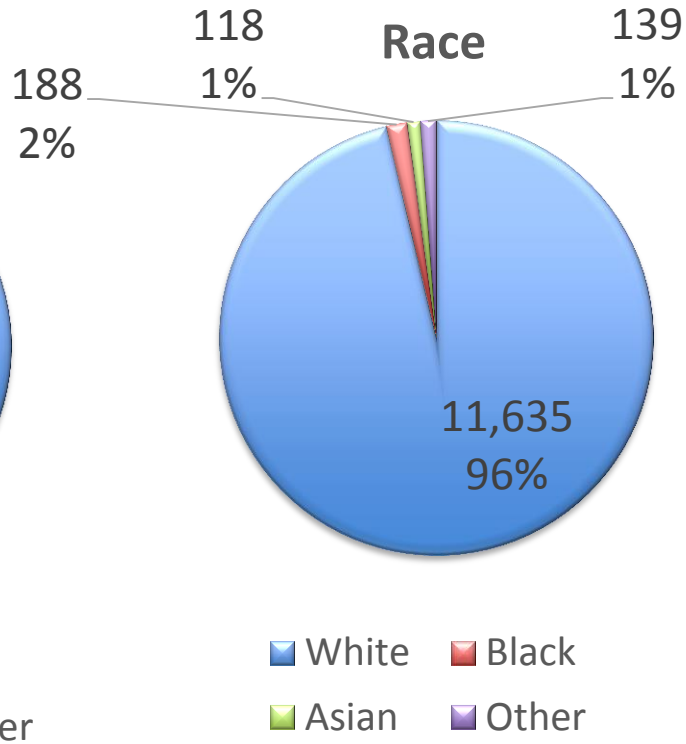

DATE RANGE: Includes All PCP Visits Between 9/4/2012 and 11/12/2015 inclusive

STEADI Stopping Elderly Accidents, Deaths & Injuries

# Demographic Characteristics of Adults Age 65+ with UHS Primary Care Visit (core sites)

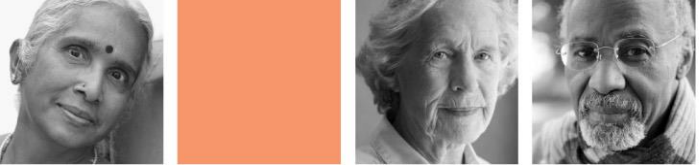


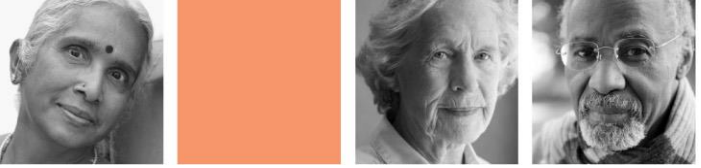




N=12,442

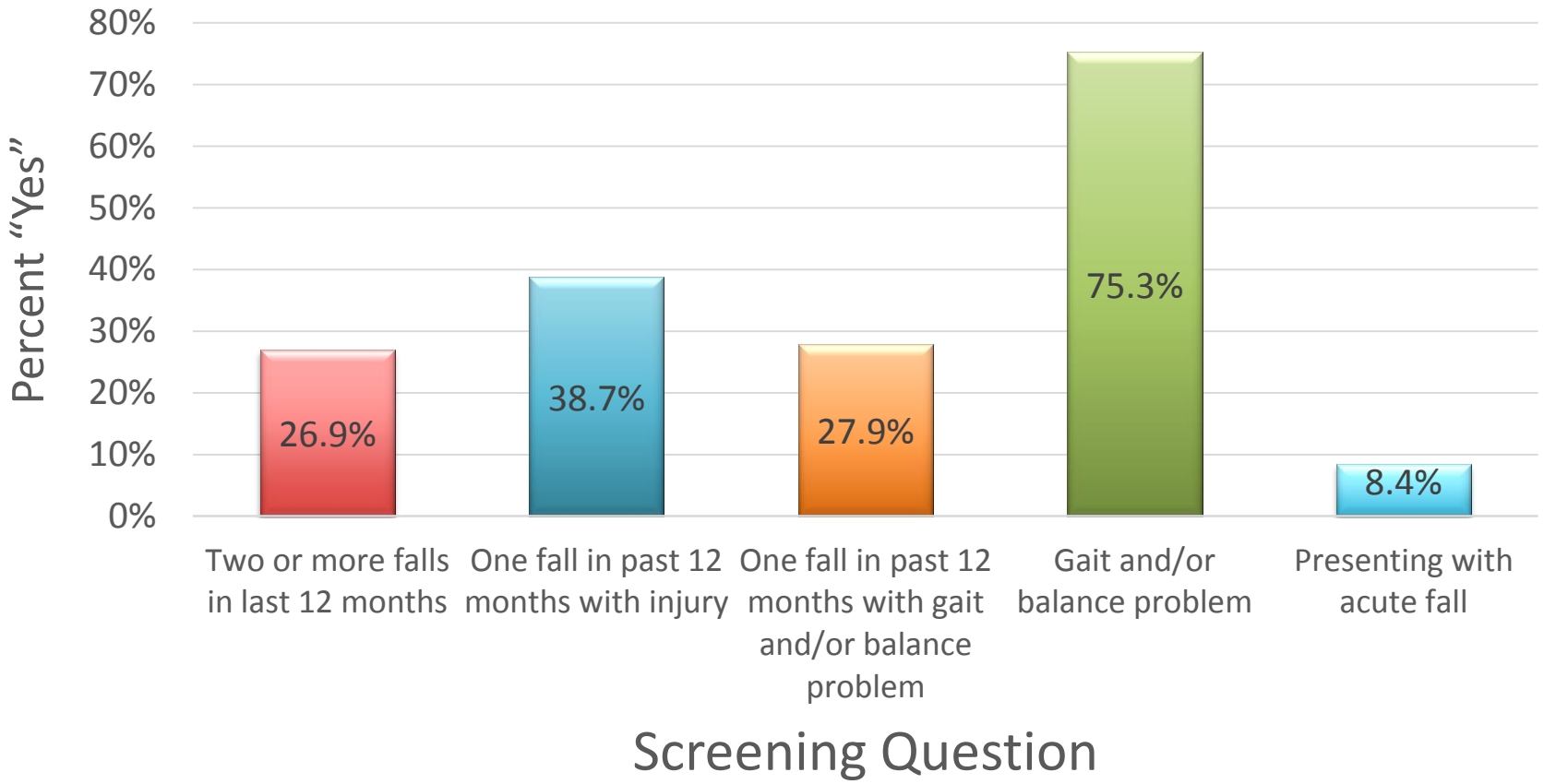
STEADI Stopping Elderly Accidents, Deaths & Injuries



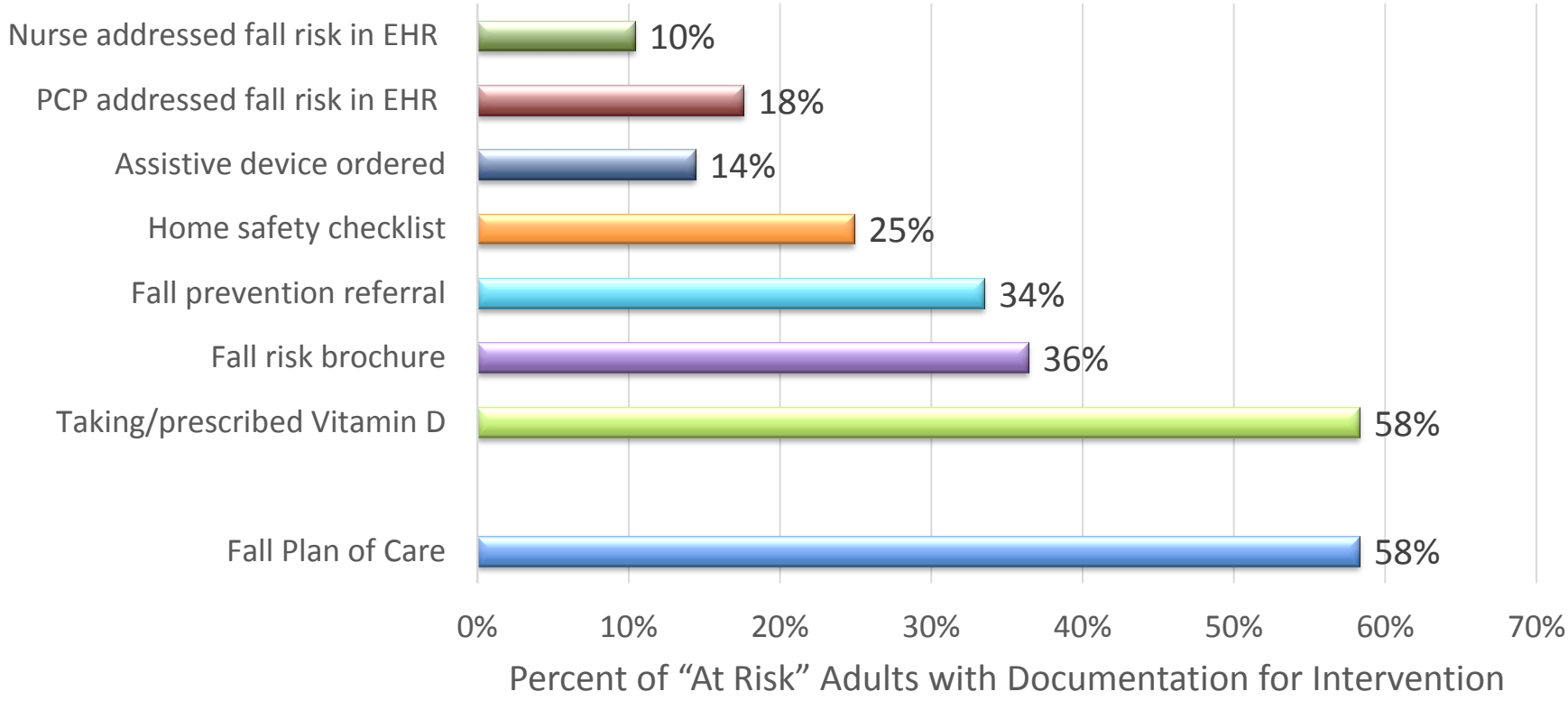
# RESULTS
# RISK ASSESSMENT AND REFERRAL



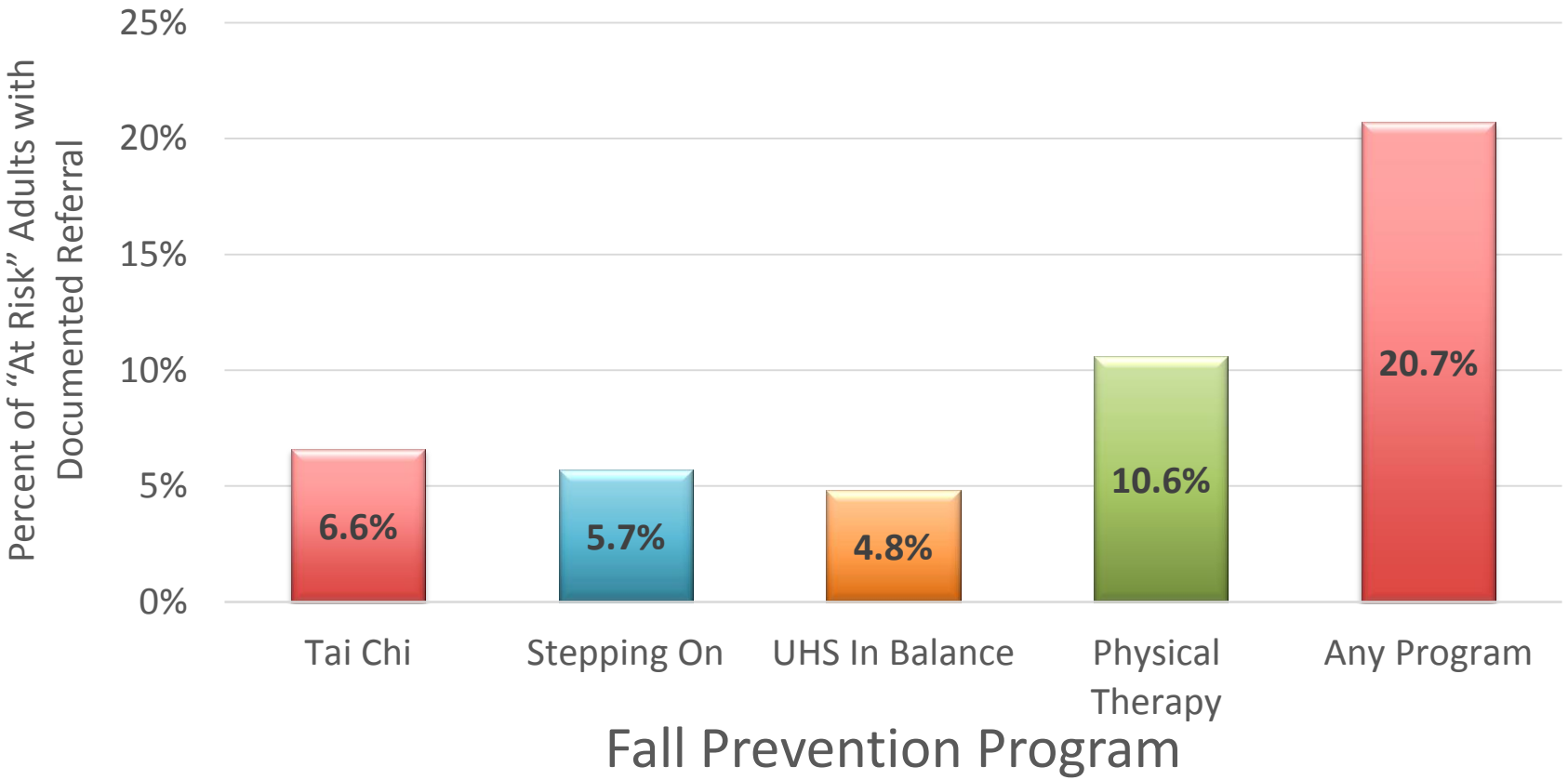
# Fall Risk Assessment Screening Questions, Adults Age 65+ Screened as At Risk for Fall, UHS Primary Care (core sites)

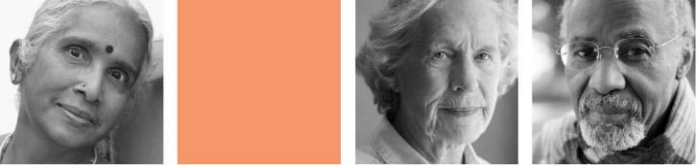


# Fall Prevention Interventions, Adults Age 65+ Screened as At Risk for Fall, UHS Primary Care (core sites)



# Fall Prevention Program Referrals, Adults Age 65+ Screened as At Risk for Fall, UHS Primary Care (core sites)

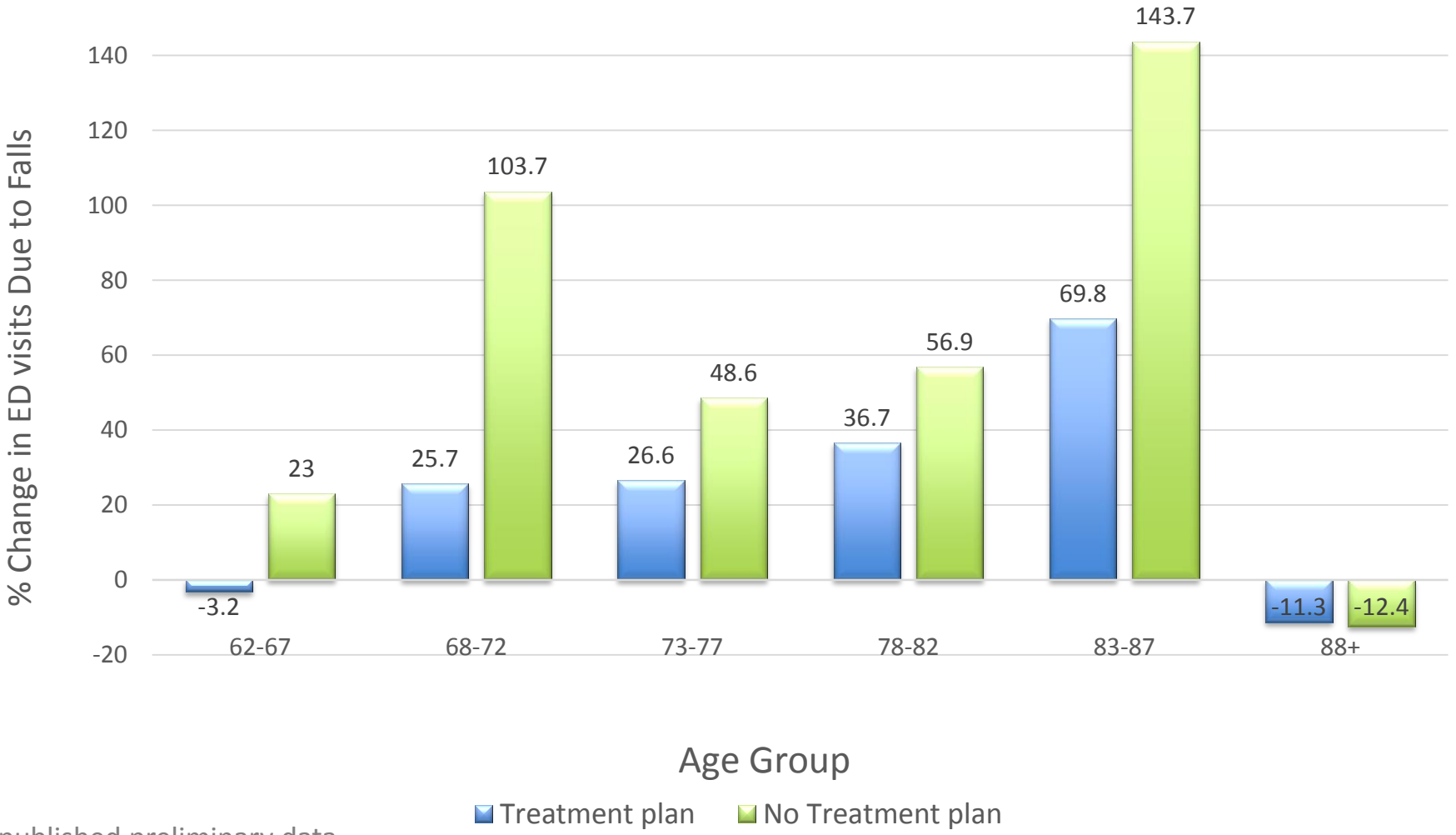




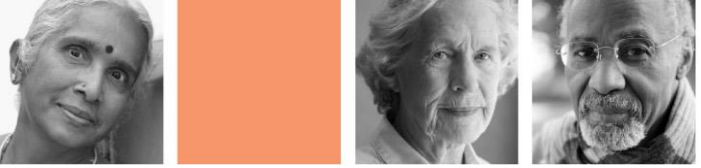
# RESULTS
# HEALTH OUTCOMES

UHS

**Preliminary results show that among most age groups, patients receiving a STEADI treatment plan had fewer fall-related emergency department (ED) visits compared to those who did not receive treatment.**




Unpublished preliminary data



# Fall Plan of Care (FPOC) as a Predictor of Emergency Department Visits

| Variable | N | β | Exp ( β ) | 95% CI | Sig |
|---|---|---|---|---|---|
| Gender | | | | | |
| Female | 6,077 | .355 | 1.426 | (1.182, 1.721) | .000 |
| Age (in 2012) | | .065 | 1.067 | (1.055, 1.080) | .000 |
| Person-Months | | .042 | 1.043 | (1.031, 1.055) | .000 |
| Fall Plan of Care | | | | | |
| No Fall Plan of Care | 1,188 | .678 | 1.970 | (1.579, 2.458) | .000 |
| Fall Plan of Care | 848 | .550 | 1.734 | (1.333, 2.254) | .000 |

Total N = 10,487
One or More ED visits N = 568

# Fall Plan of Care (FPOC) as a Predictor of Hospitalizations

| Variable | N | β | Exp ( β ) | 95% CI | Sig |
|---|---|---|---|---|---|
| Gender | | | | | |
| Female | 6,077 | .326 | 1.386 | (0.962, 1.995) | .079 |
| Age (in 2012) | | .088 | 1.092 | (1.069, 1.116) | .000 |
| Person-Months | | .049 | 1.050 | (1.026, 1.075) | .000 |
| Fall Plan of Care | | | | | |
| No Fall Plan of Care | 1,188 | .493 | 1.638 | (1.072, 2.500) | .022 |
| Fall Plan of Care | 848 | .437 | 1.548 | (0.950, 2.522) | .079 |

Total N = 10,487
One or More Hospitalizations N = 145

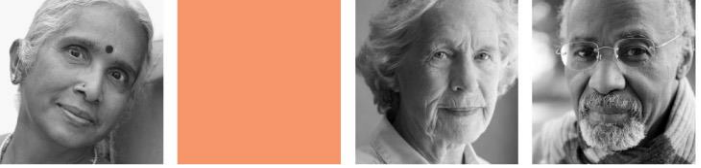
# LESSONS LEARNED & CONCLUSION

# Use of Electronic Health Record for Outcome Evaluation: Limitations

- Multiple software platforms over time requires extraction from several databases (overlap/duplication)
- Quality of storage/extraction for archived data
- Not inclusive of visits to other providers or hospital facilities
- Incomplete documentation
- How plan of care is documented - different providers/EHR location
- Specific plan of care elements not readily extractable from the medical record
- Information from scanned documents difficult to retrieve
- Time/effort conducting chart reviews

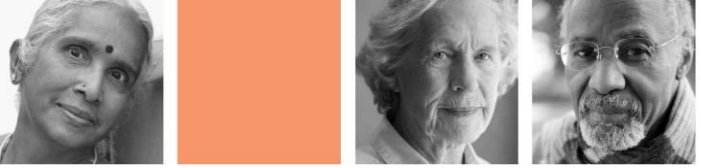
# Use of Electronic Health Record for Outcome Evaluation: Benefits

- Reliable data storage capacity
- Information retrievable for medically treated falls by diagnostic code
  - Hospitalizations, emergency department visits, & primary care visits
- Inclusive of all relevant records (census) for screened and unscreened
- Multiple fields readily extractable to relational database - access to medication and comorbidity data
  - Extraction to a flat file was too large
- No data collection burden for patients or providers
- Minimizes recall bias / improves accuracy
- Useful for program & performance monitoring



# Summary

- Approximately 90% of older adults were screened
  - *At risk for falls*: 1 in 6 older adults
  - *Gait/balance issues*: 3 of 4 older adults with fall risk
  - *Abnormal TUG*: 2 of 5 older adults with a TUG
- Half of older adults had their fall risk addressed
- A Fall Plan of Care may reduce the likelihood of a medically treated fall for at-risk older adults



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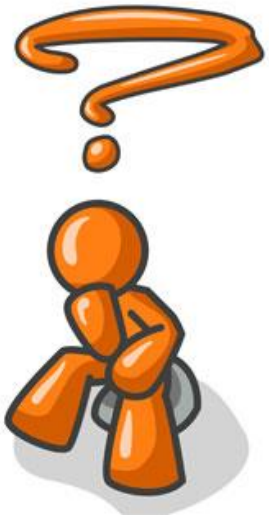

# Thank You

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.