



# Improving Information Exchange for Care Transitions

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Mark Belanger, MBA  
Lawrence Garber, MD  
Margaret McDonald, MSW

May 23, 2013  
2:00-3:30 PM EDT



# Agenda

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- Welcome
  - Nalini Ambrose, AHRQ NRC TA Team
- Speaker Presentations
  - Mark Belanger, Massachusetts eHealth Collaborative
  - Lawrence Garber, Reliant Medical Group
  - Margaret McDonald, Center for Home Care Policy & Research, Visiting Nurse Service of New York
- Questions & Discussion



# Technical Assistance Overview

- Goal: To support grantees in the meaningful progress and on-time completion of Health IT Portfolio-funded grant projects
- Technical Assistance (TA) is delivered in three ways:
  - One-on-one individual TA
  - Multi-grantee webinars
  - Multi-grantee peer-to-peer teleconferences
- Ongoing evaluation to improve TA offerings



# Key Resources

- AHRQ National Resource Center for Health IT
  - [www.healthit.ahrq.gov](http://www.healthit.ahrq.gov)
- AHRQ Points of Contact
  - Vera Rosenthal, [vera.rosenthal@ahrq.hhs.gov](mailto:vera.rosenthal@ahrq.hhs.gov)
- AHRQ NRC TA Team
  - Nalini Ambrose, Project Manager, Booz Allen Hamilton, [ambrose\\_nalini@bah.com](mailto:ambrose_nalini@bah.com)
  - Seamus McKinsey, Project Support, Booz Allen Hamilton, [mckinsey\\_seamus@bah.com](mailto:mckinsey_seamus@bah.com)
  - Mark Belanger, TA Lead, and Rachel Kell, TA Co-lead, Massachusetts eHealth Collaborative, [NRC-TechAssist@AHRQ.hhs.gov](mailto:NRC-TechAssist@AHRQ.hhs.gov)



# Housekeeping

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- All phone lines are UN-muted
- You may mute your own line at any time by pressing \*6 (or via your phone's mute button); press \* 7 to un-mute
- Questions may also be submitted at any time via 'Chat' feature on webinar console
- Discussion summary will be posted on the AHRQ TA website



# Today's Presentation

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## Improving Information Exchange for Care Transitions

Facilitator: Mark Belanger



# Today's Objectives

- Provide an overview of types of care transitions and how information exchange can be utilized (e.g. medication reconciliation, discharge summaries, aftercare instructions, etc.)
- Showcase examples of health IT that facilitate the transition from inpatient to home health care and long term care and demonstrate how data can be used
- Guide discussion among grantees concerning health IT and information exchange that impacts care transitions as well as the relevant research questions to be addressed



# Today's Presenters

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- **Mark Belanger, MBA**
  - Overview of Health IT and Care Transitions
- **Lawrence Garber, MD**
  - Connecting Long-Term and Post-Acute Care (LTPAC) Providers to the Healthcare System of the Future
- **Margaret McDonald, MSW**
  - Nurse Use of an Electronic Clinical Decision Support Tool to Improve Medication Management when Patients are Transitioning into Home Health Care



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# Overview of Health IT and Care Transitions

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Mark Belanger, MBA

Director of Advisory Services

ONC State HIE Program

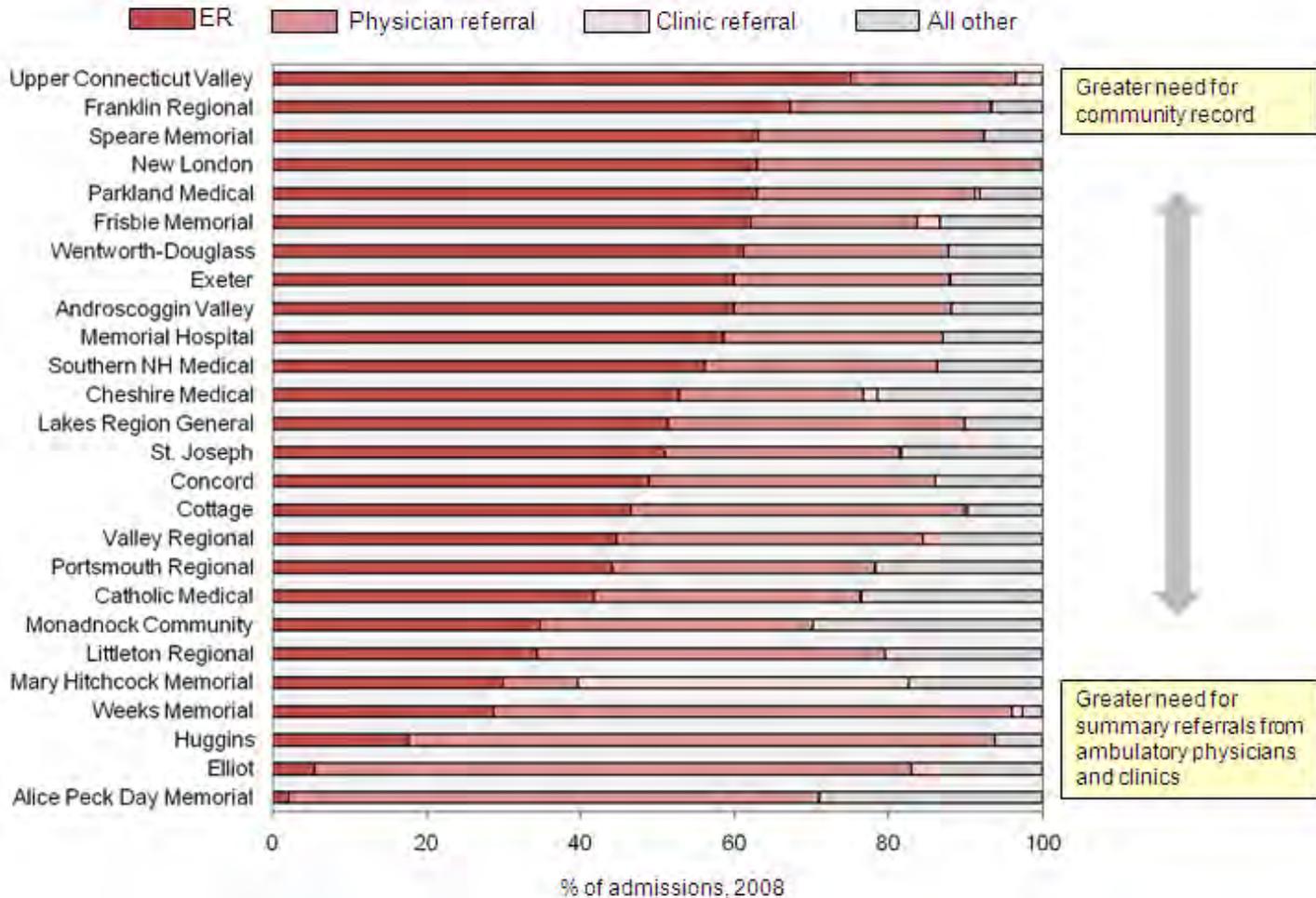


# Care Transitions – a National Target for Improving Healthcare

- Transitions of care have been identified as a high leverage point for improving patient care quality and cost
- There are many ‘carrots and sticks’ in the market attempting to encourage improvement of information flows to support transitions
  - Meaningful use incentives to hospitals and ambulatory providers
  - EHR certification
  - State laws (e.g., Massachusetts health reform law)
  - Shift in payment to shared savings models

# Where do they come from...

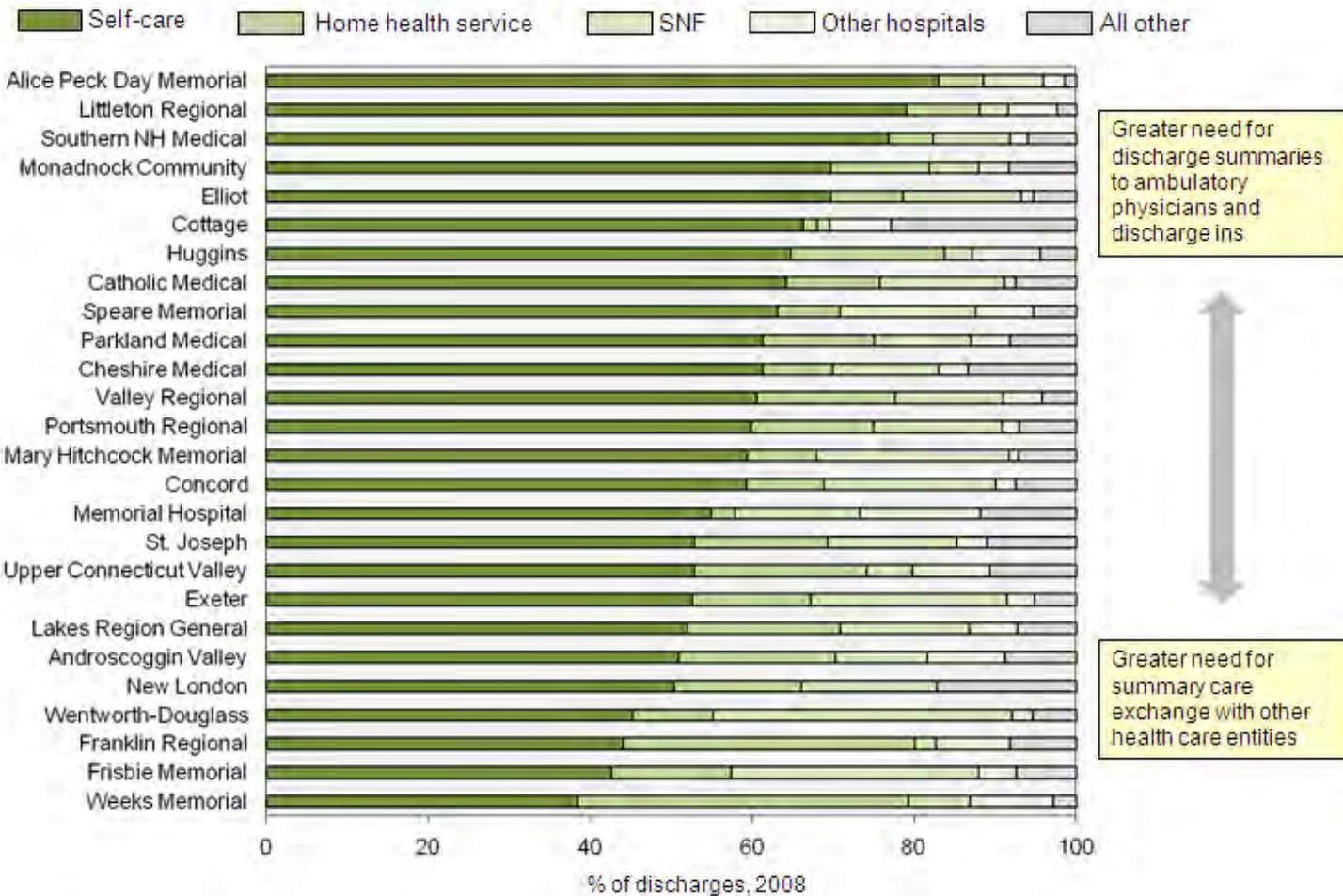
## Inpatient admissions by admission source – 26 NH hospitals



Source: Massachusetts eHealth Collaborative analysis; NH Hospital Association Inpatient Admission and Discharge data set (2008)

# ...where do they go?

## Inpatient discharges by patient destination – 26 NH hospitals



Source: Massachusetts eHealth Collaborative analysis; NH Hospital Association Inpatient Admission and Discharge data set (2008)



# Momentum is Building – Tough Issues Remain

## Areas of rapid progress

- EHR adoption
- Data transport standardization - DIRECT
- Data format standardization – Continuity of Care Document (CCD)
- Vocabulary standardization (and normalization)
- Payment alignment

## High friction areas

- Interfacing
- Sensitive information (HIV, genetic testing, substance abuse treatment)
- Proprietary EHR vendor strategies
- Cross entity trust
- HIE “public utility” sustainability post ARRA



# Connecting Long-Term and Post-Acute Care (LTPAC) Providers to the Healthcare System of the Future

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Larry Garber, MD

Medical Director for Informatics

Reliant Medical Group

# Agenda



- Problems with care coordination
- Promoting national standards for transitions of care and care plans
- LAND & SEE – Technology for connectivity

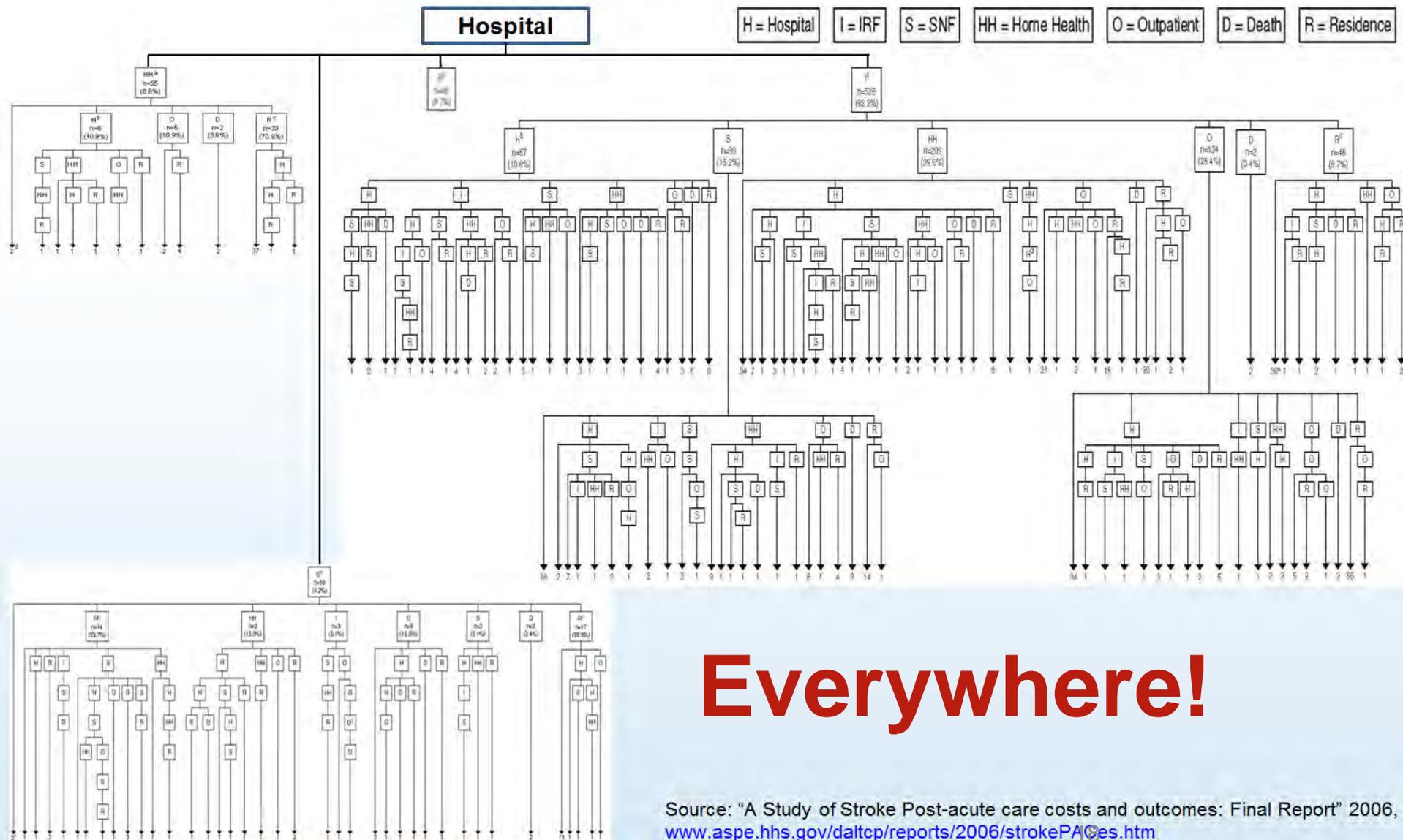


# Failures of Care Coordination

- 150,000 preventable adverse drug events (\$8 Billion wasted) nationwide each year occur at the time of hospital admission (Stiell, et al., 2003)
- 1.5 Million preventable adverse events annually nationwide following hospital discharge (Forster, et al., 2003)
- Preventable readmissions waste \$26B nationwide annually (McCarthy, et al., 2009)

National care transitions experts overwhelmingly identified “improving information flow and exchange” as the most important tool to improve care transitions  
(ONC, 2011)

# Where do patients go after a hospitalization?





# Meaningful Use's Impact on LTPAC

- Hospitalized patients are the sickest population and account for ~75% of Medicare costs
- ~40% of Medicare patients are discharged to traditional LTPAC settings (SNF, Home Health, Inpatient Rehab Facility, etc...)
- Hospitals must be responsible, and given the tools, to convey the information needed by the recipient of a patient during care transitions

Sources: <http://aspe.hhs.gov/health/reports/2011/pacexpanded/index.shtml#ch1>  
<http://www.medpac.gov/documents/Jun11DataBookEntireReport.pdf>



# Connecting LTPAC to the Rest of the Healthcare System

- What are the data elements needed for transitions across the continuum of care?
- What are the technologies needed to facilitate this connectivity?
- Does it truly make a difference to connect LTPAC's to an electronic Health Information Exchange (HIE) network?

# IMPACT Grant

February 2011 – HHS/ONC awarded \$1.7M HIE Challenge Grant to state of Massachusetts (MTC/MeHI):

Improving **M**assachusetts **P**ost-**A**cute **C**are  
**T**ransfers (**IMPACT**)



# Datasets for Care Transitions



- Traditionally – What the sender thinks is important to the receiver
- Future – Also take into account what the receiver says they need

# “Receiver” Data Needs Survey



- Largest survey of Receivers’ needs
- 46 Organizations completing evaluation
- 11 Types of healthcare organizations
- 12 Different types of user roles
- 1135 Transition surveys completed

		From Acute Care Hospital	From Emergency Department	From Skilled Nursing Facility
6				
72	Chief Complaint	Required	Required	Required
73	Reason Patient is being referred	Required	Required	Required
74	Reason for Transfer	Not needed/No	Not needed/No	Not needed/No
75	Sequence of events proceeding patient's disease/condition	Optional	Optional	Required
76	History of Present Illness	Required	Required	Required



# Additional Contributor Input



- State (Massachusetts)
  - MA Universal Transfer Form workgroup
  - Boston's Hebrew Senior Life eTransfer Form
  - IMPACT learning collaborative participants
  - MA Coalition for the Prevention of Medical Errors
  - MA Wound Care Committee
  - Home Care Alliance of MA (HCA)

# Additional Contributor Input



## ■ National

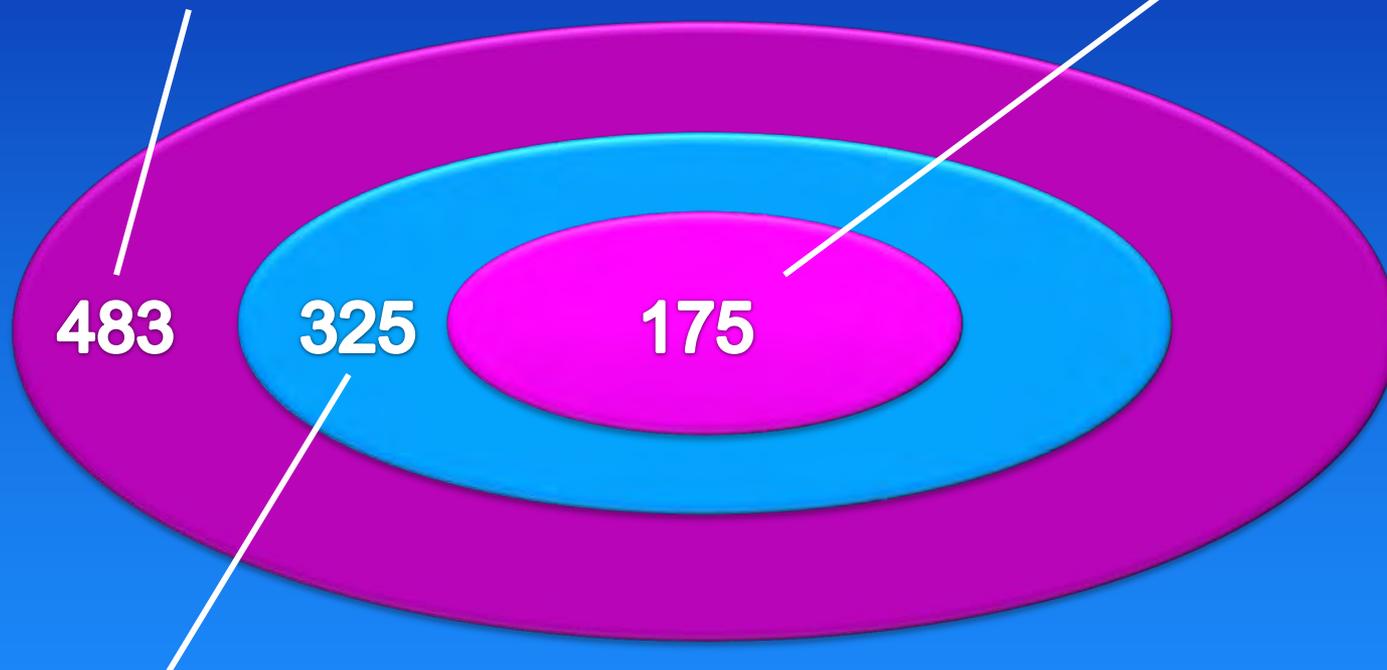
- NY's eMOLST
- Multi-State/Multi-Vendor EHR/HIE Interoperability Workgroup
- Substance Abuse, Mental Health Services Agency (SAMHSA)
- Administration for Community Living (ACL)
- Aging Disability Resource Centers (ADRC)
- National Council for Community Behavioral Healthcare
- National Association for Homecare and Hospice (NAHC)
- Transfer of Care & CCD/CDA Consolidation Initiatives (ONC's S&I Framework)
- Longitudinal Coordination of Care Work Group (ONC S&I Framework)
- ONC Beacon Communities and LTPAC Workgroups
- Assistant Secretary for Planning and Evaluation (ASPE): Standardizing MDS and OASIS
- ASPE/Geisinger/HL7 : LTPAC Summary Documents (using MDS and OASIS)
- Centers for Medicare & Medicaid Services (CMS)(MDS/OASIS/IRF-PAI/CARE)
- **INTERACT (Interventions to Reduce Acute Care Transfers)**
- Transfer Forms from Ohio, Rhode Island, New York, and New Jersey

# Comparison to CCD



Data Elements for Longitudinal  
Coordination of Care

CCD Data Elements



IMPACT Data Elements  
for basic Transition of  
Care needs

- Many “missing” data elements can be mapped to C-CDA templates with applied constraints
- **20% have no appropriate C-CDA templates**

# Five Transition Datasets



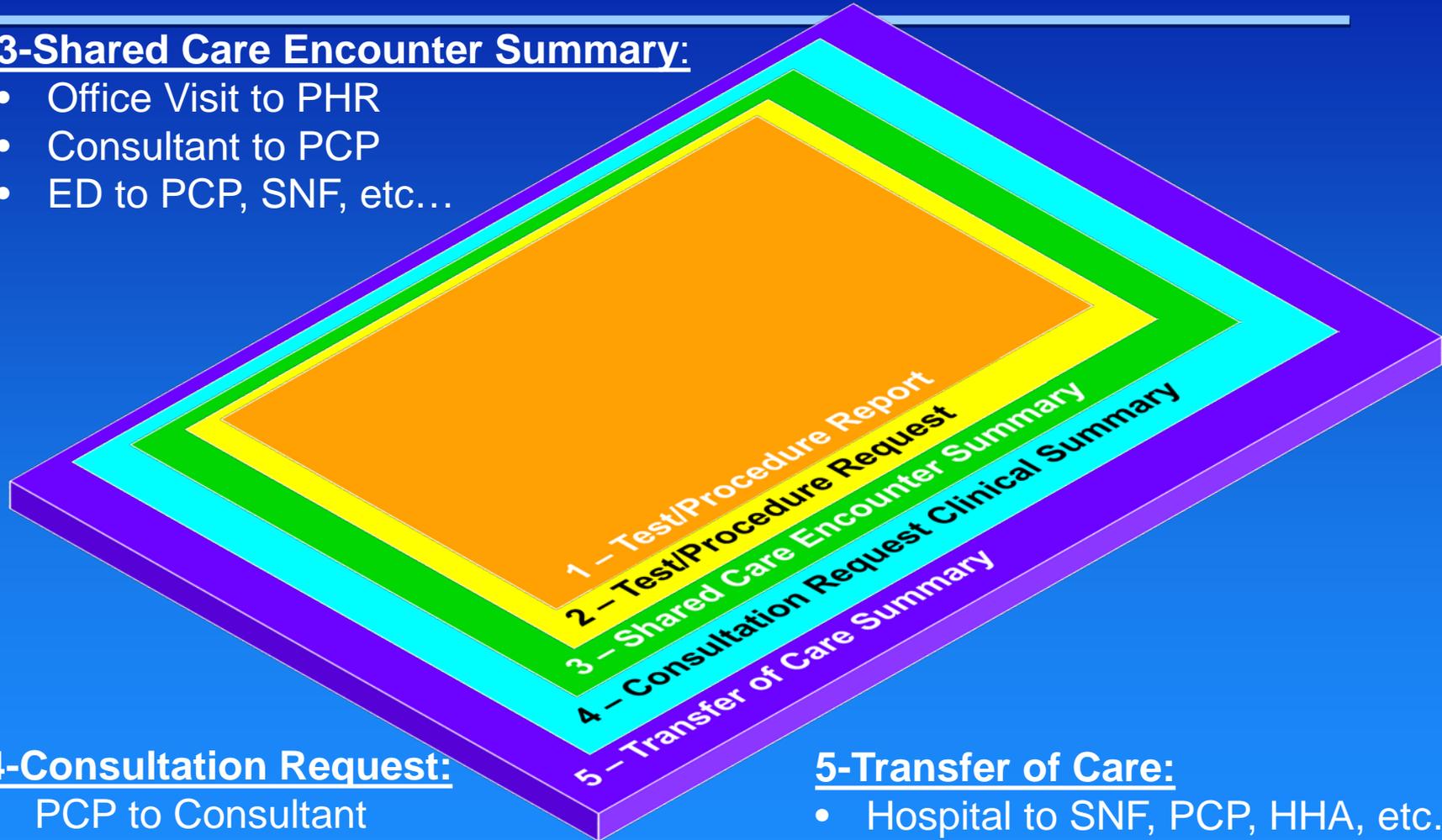
1. Report from Outpatient testing, treatment, or procedure
2. Referral to Outpatient testing, treatment, or procedure (including for transport)
3. Shared Care Encounter Summary (Office Visit, Consultation Summary, Return from the ED to the referring facility)
4. Consultation Request Clinical Summary (Referral to a consultant or the ED)
5. Permanent or long-term Transfer of Care to a different facility or care team or Home Health Agency

# Five Transition Datasets



## 3-Shared Care Encounter Summary:

- Office Visit to PHR
- Consultant to PCP
- ED to PCP, SNF, etc...



## 4-Consultation Request:

- PCP to Consultant
- PCP, SNF, etc... to ED

## 5-Transfer of Care:

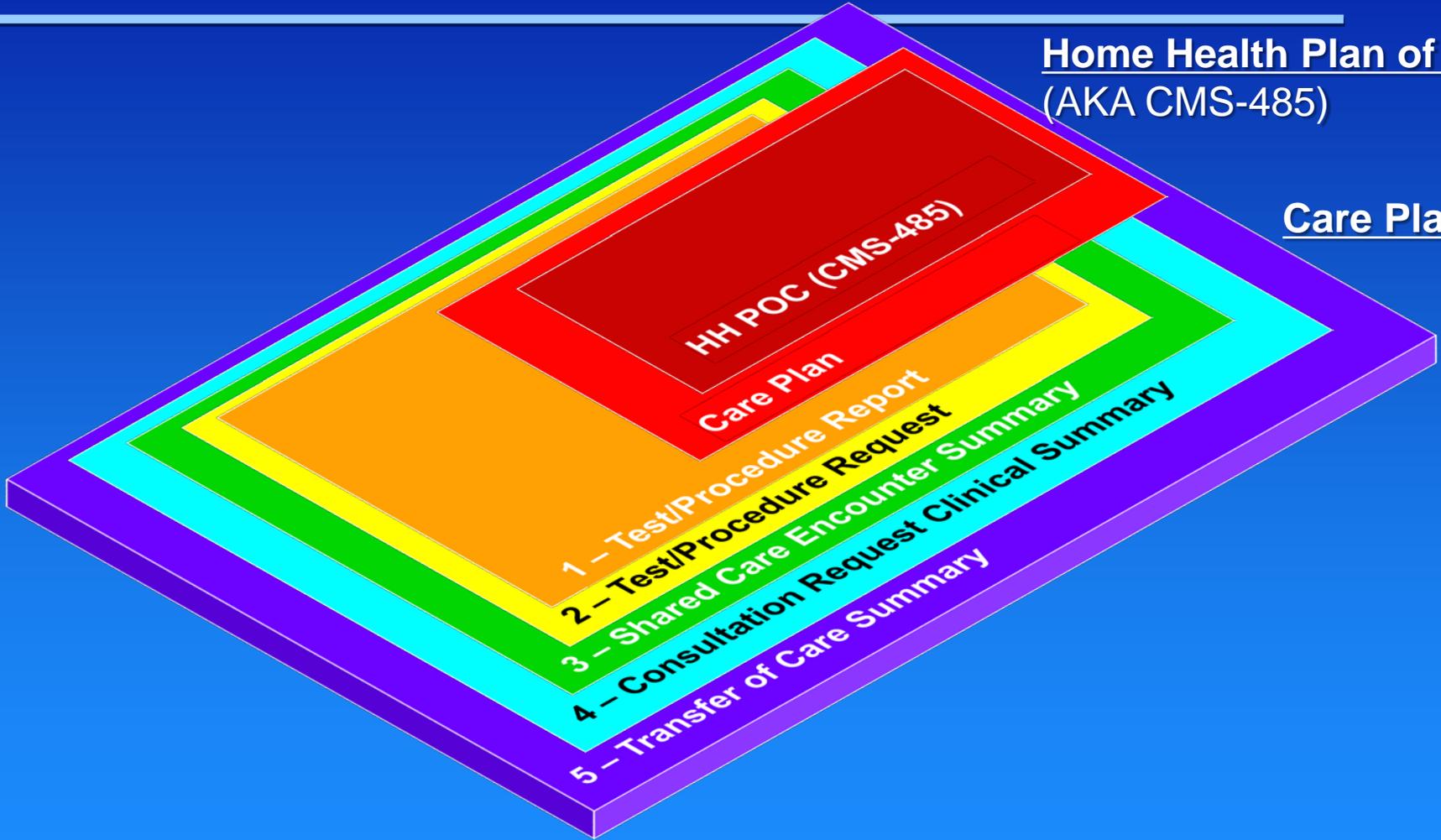
- Hospital to SNF, PCP, HHA, etc...
- SNF, PCP, etc... to HHA
- PCP to new PCP

# Care Plan & Plan of Care



Home Health Plan of Care  
(AKA CMS-485)

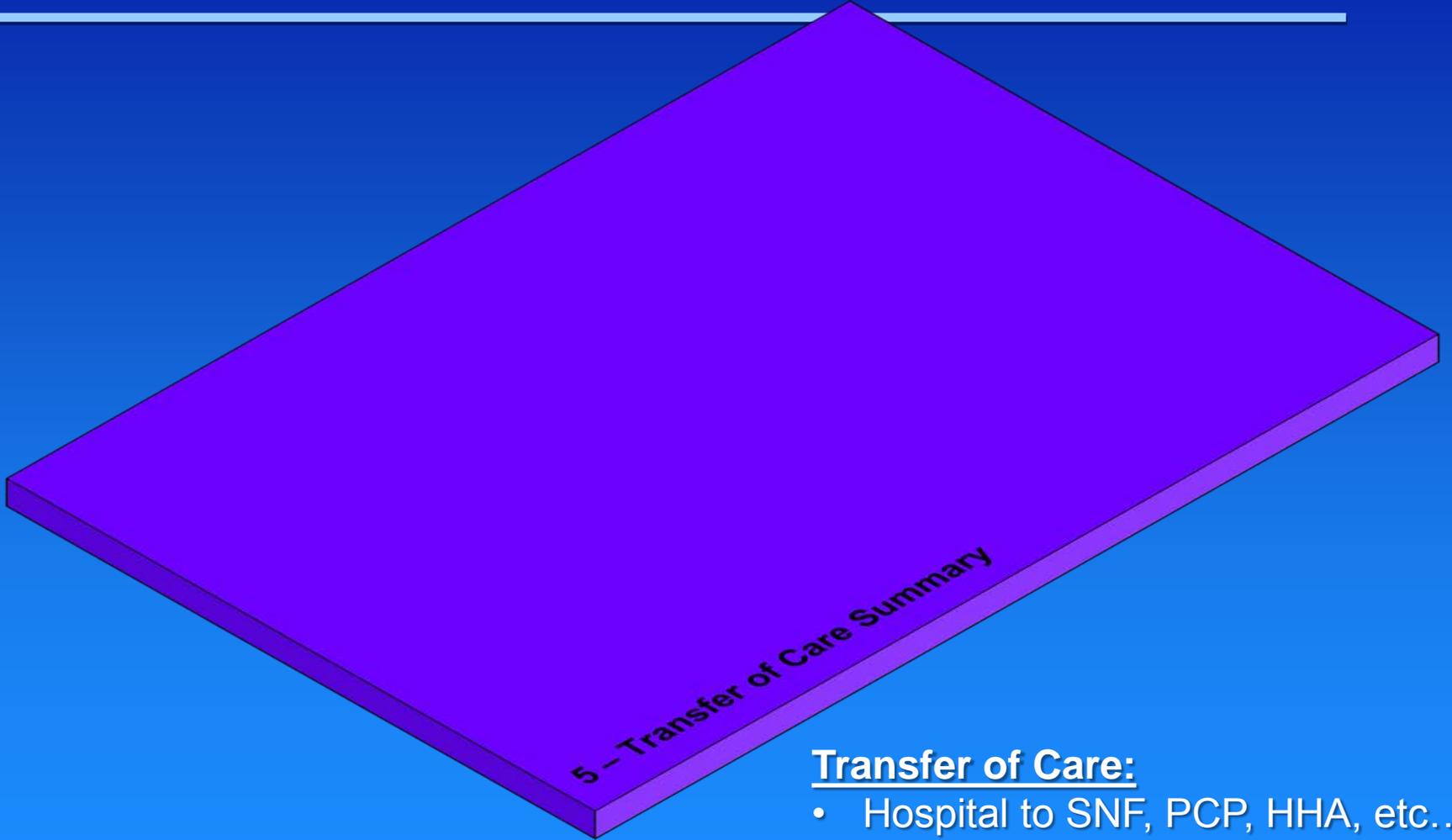
Care Plan



# Testing the IMPACT Transfer of Care Dataset



# IMPACT Dataset for Testing



## Transfer of Care:

- Hospital to SNF, PCP, HHA, etc...
- SNF, PCP, etc... to HHA
- PCP to new PCP

# Testing the Dataset



**Spring 2012, on paper:**

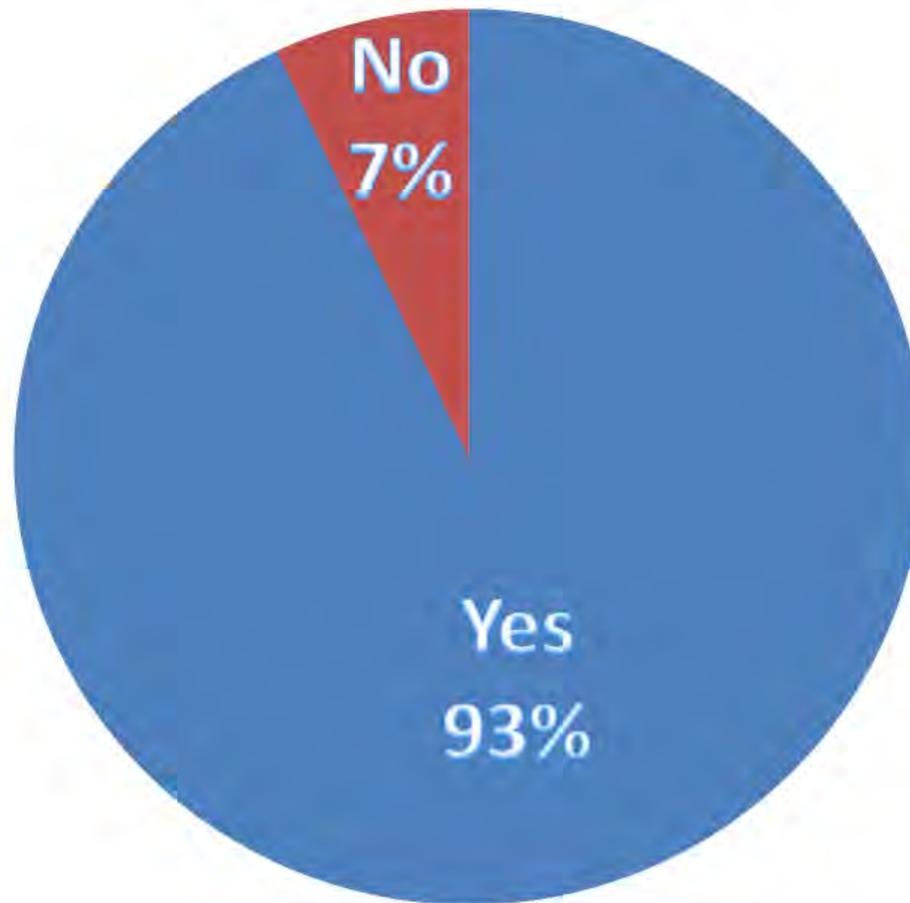
2 hospitals, 2 large group practices, 2 home health agencies, 8 SNFs, 1 IRF, 1 LTACH, and **several hundred patient transfers...**



# Senders Found the Data



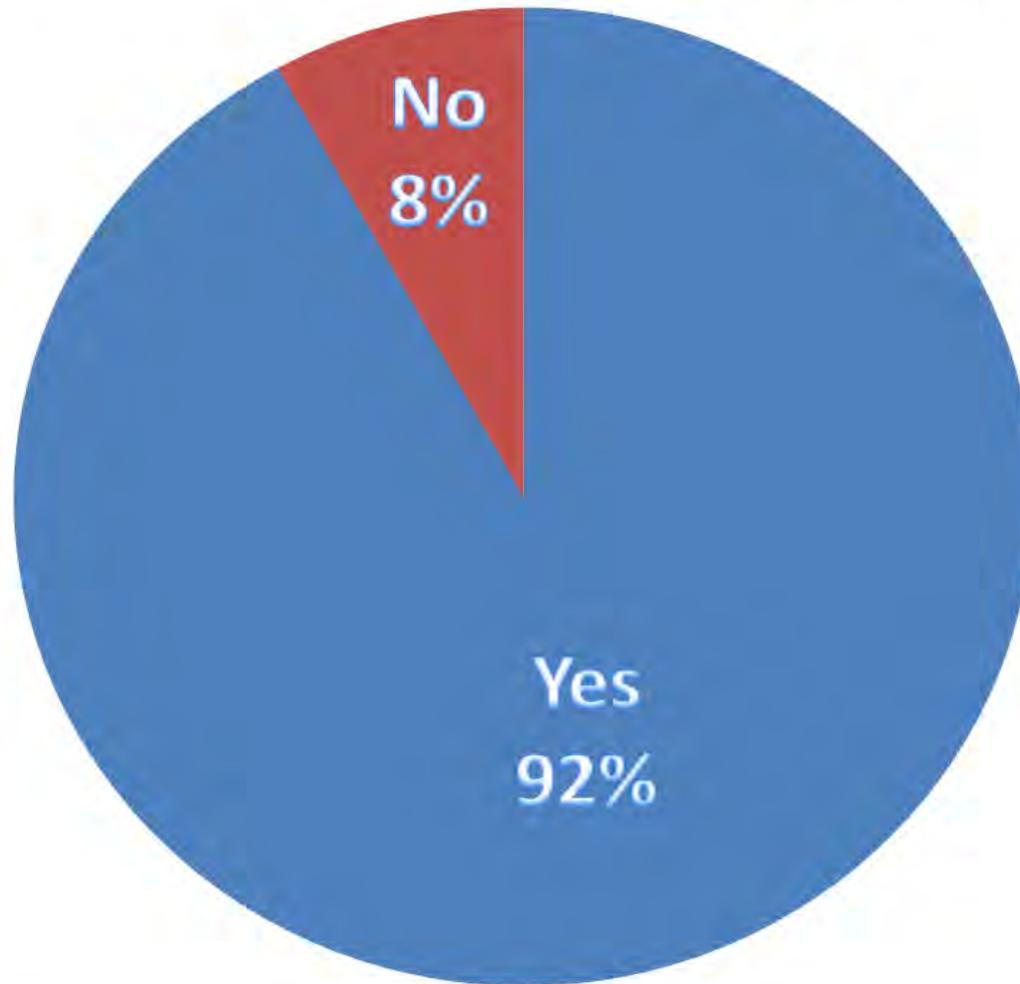
I was able to send all of the requested  
IMPACT data elements



# Receivers Got Most of Their Needs



Fewer than 5 data elements were missing



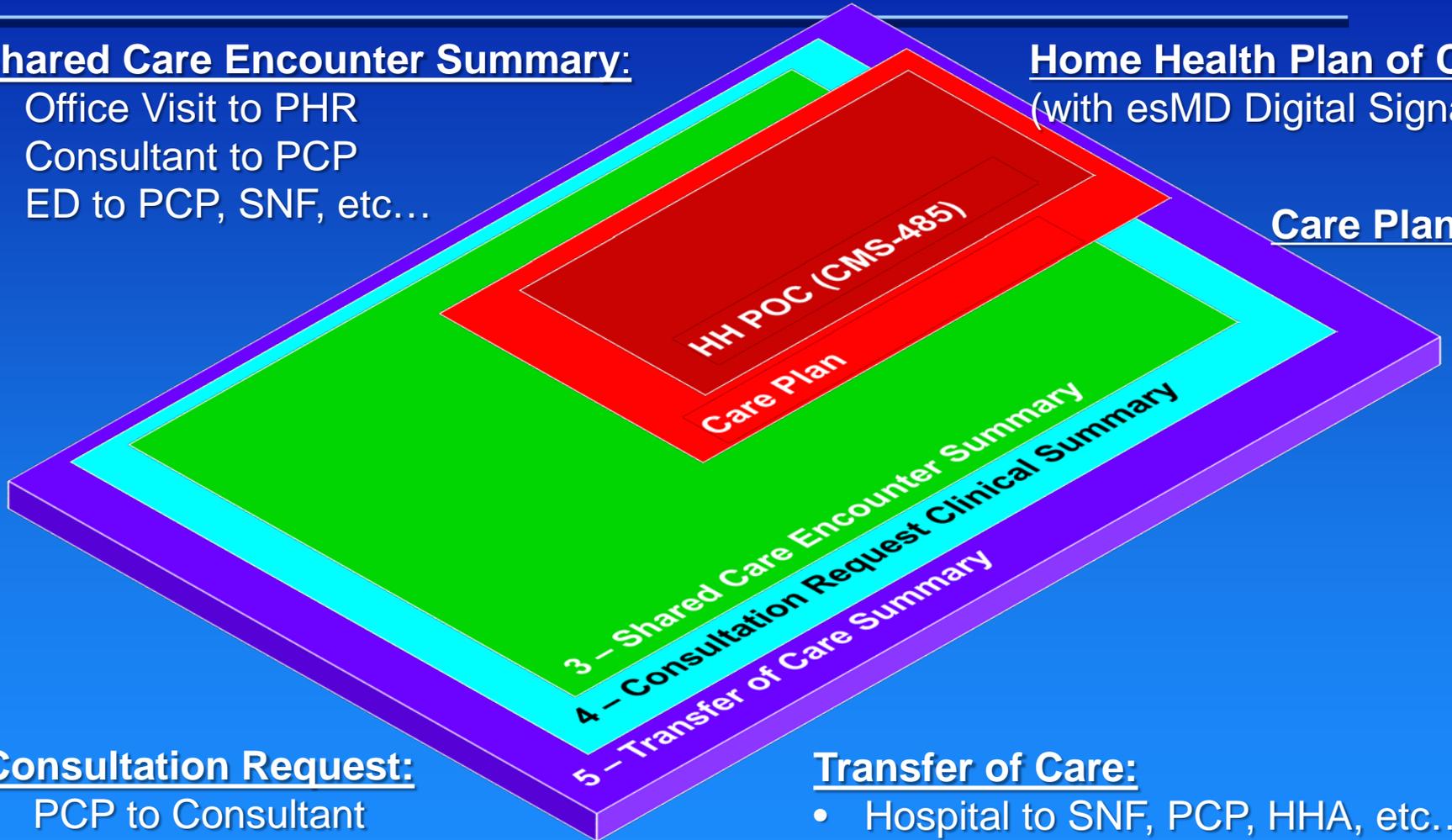
# Lantana Contract with LCC to Make and Ballot HL7 CDA IGs

## Shared Care Encounter Summary:

- Office Visit to PHR
- Consultant to PCP
- ED to PCP, SNF, etc...

## Home Health Plan of Care (with esMD Digital Signature)

## Care Plan



## Consultation Request:

- PCP to Consultant
- PCP, SNF, etc... to ED

## Transfer of Care:

- Hospital to SNF, PCP, HHA, etc...
- SNF, PCP, etc... to HHA
- PCP to new PCP

# Getting Connected: LAND & SEE



# LAND & SEE

- Sites with EHR or electronic assessment tool use these applications to enter data elements
  - **LAND** (“**L**ocal” **A**daptor for **N**etwork **D**istribution) acts as a data courier to gather, transform, and securely transfer data if no support for Direct SMTP/SMIME or IHE XDR
- Non-EHR users complete all of the data fields and routing using a web browser to access their “**Surrogate EHR Environment**” (**SEE**)



# Surrogate EHR Environment (SEE)

- Acts as destination for routed CCD+ documents
- Software hosted by trusted authority, accessed via web browser
- SEE is accessed via the HIE's web mailbox
- Non-EHR users able to use SEE to view, edit, send CDA documents via HIE or Direct to next facility
- Can reconcile 2 documents to create a third
- Can use SEE for other workflows (e.g. completing INTERACT SBAR prior to sending patient to ER)
- SEE users can print copies of the document for family or ambulance transport



# IMPACT Evaluation Metrics

- 30 day hospital readmission rates
- ER visit rate
- Hospital admission rate from ER
- Total Resource Utilization



# Summary



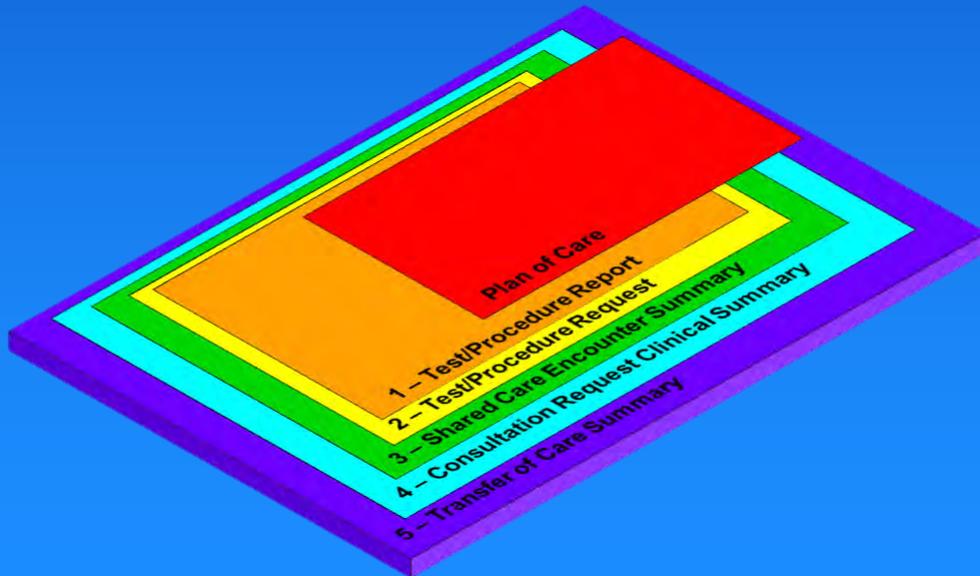
- Problems with care coordination result in preventable harm and expense
- New national standards for transitions of care and care plans will be available this fall
- LAND & SEE are inexpensive tools to facilitate connectivity to Health Information Exchanges, matching each organization's level of technology



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# Questions?





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## **Nurse Use of an Electronic Clinical Decision Support Tool to Improve Medication Management when Patients are Transitioning into Home Health Care**

Margaret V. McDonald, MSW

Associate Director of Research Studies

Center for Home Care Policy & Research

Visiting Nurse Service of New York



# Background

- Managing medications during the transition to home health care is challenging and resource intensive
- Patients have:
  - Multiple comorbid conditions
  - High number of medications, prescribed by multiple MDs
  - Complex medication regimens
  - Medication adherence issues
  - Medication side effects
- Medication complexity has been identified as an independent contributor to unplanned hospitalizations and ED visits



# The IMPACT Study

- Cluster randomized study to examine the relative effectiveness of a clinical decision support (CDS) intervention to improve the management and outcomes of patients with complex medication regimens who were just admitted to home health care
- Aims – to assess:
  1. Nurses' use of the CDS
  2. Patient outcomes

# Study Design

## Nurse-level randomization

- Control group: usual home care
  - No contact by study group
- Intervention group
  - Nurses received the following for all patients who had high medication complexity:
    - Clinical alert
    - Access to an electronic decision support tool that was integrated into the electronic health record
    - Patient educational material
- Nurses kept their randomized assignment throughout
- Patient group assignment was based on the nurse who was designated as their coordinator of care



# Clinical Email Alert

**Subject line:** New Complex Medication Management Problem

**From:** Medication Management Improvement Group

This email is part of a VNSNY initiative to provide you and your patient with additional support for complex care management.

Your patient, **Jane Doe (case #: xxxxxx)**, has a **complex medication regimen**. In addition to many medications, complexity may come from:

- High number of doses per day
  - High number of routes for medication administration
- AND/OR
- Special instructions the patient needs to remember (e.g., take with meals, cut in half, take every other day)

**A new Complex Medication Management Problem module is now available on your tablet to help guide assessment and interventions in this area.** Please review this module for support on strategies to improve your patient's adherence and self-management practices, while potentially lowering their risk for adverse events. Educational material to share with your patient is also being sent to you via interoffice mail. Thank you for your participation in this important initiative.



# New Complex Medication Management Care Problem (CDS Tool)

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- Only triggered if patient on caseload has high medication complexity
- Was accessible between the 2<sup>nd</sup> and 3<sup>rd</sup> visits
- Structured like all other care management problems already existing in the EHR

# Methods

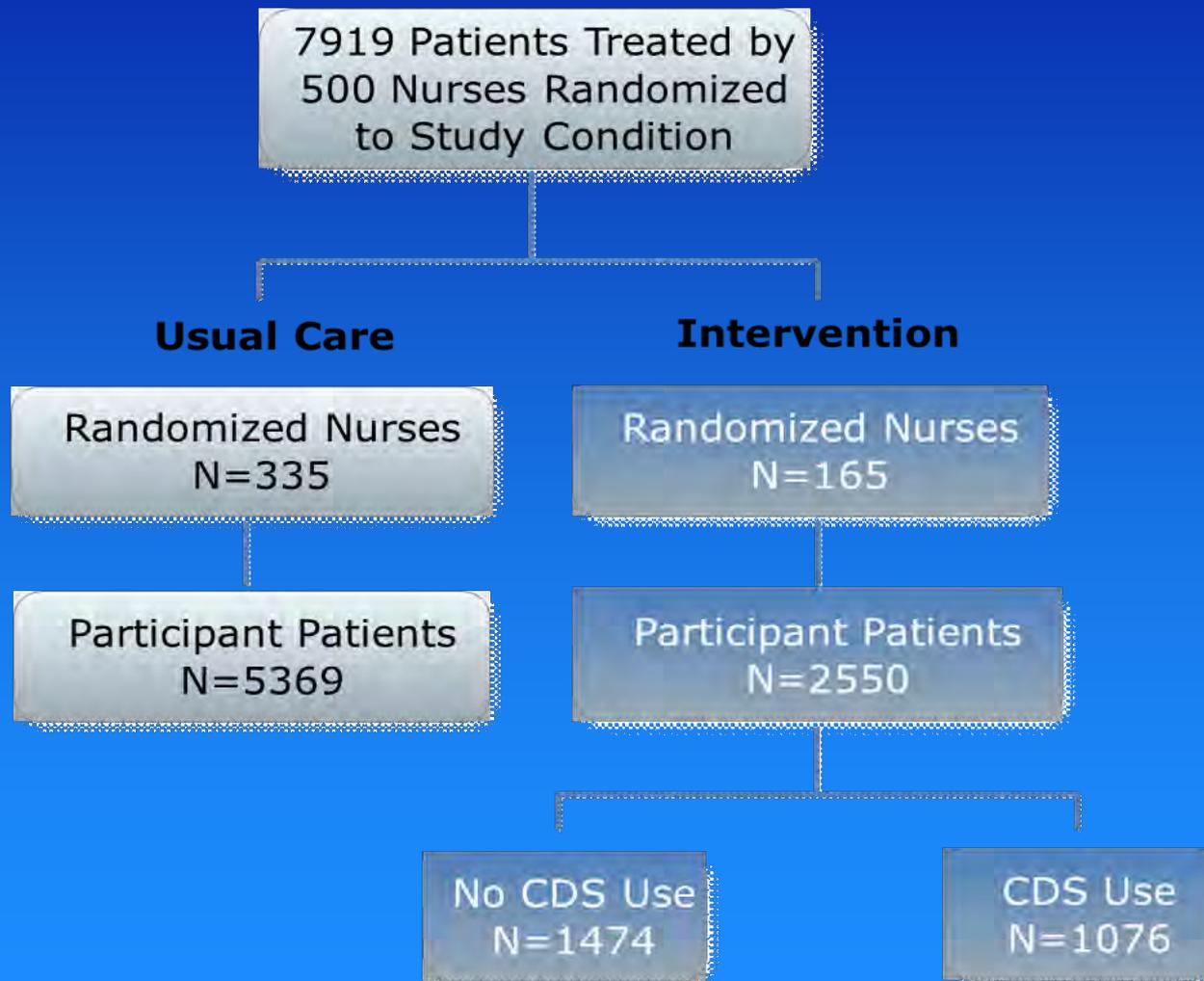
- Patient eligibility: newly entered home care with a Medication Regimen Complexity Index (“MRCI”\*) score that was considered high risk ( $\geq 24.5$ ) based on:
  - Dosing Frequency
  - Routes of Administration
  - Special Instructions
- Data sources:
  - Medication and assessment data collected as part of usual care
  - Documentation in the electronic health record

\*George et al., *Ann Pharmacother* 2004; 38:1369-76 and McDonald et al., *JAMIA* 2013; 20:499-505

# Analysis

1. Intent to treat analysis from cluster randomized trial
  - Comparison of patient outcomes between usual care and intervention groups
2. Intervention group sub-analysis
  - Nurse and patient characteristics associated with Clinical Decision Support (CDS) use
  - Association between CDS use and patient outcomes

# IMPACT Study: Nurse/Patient Flow





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# Intent to Treat Analysis

# Intent to Treat Analysis

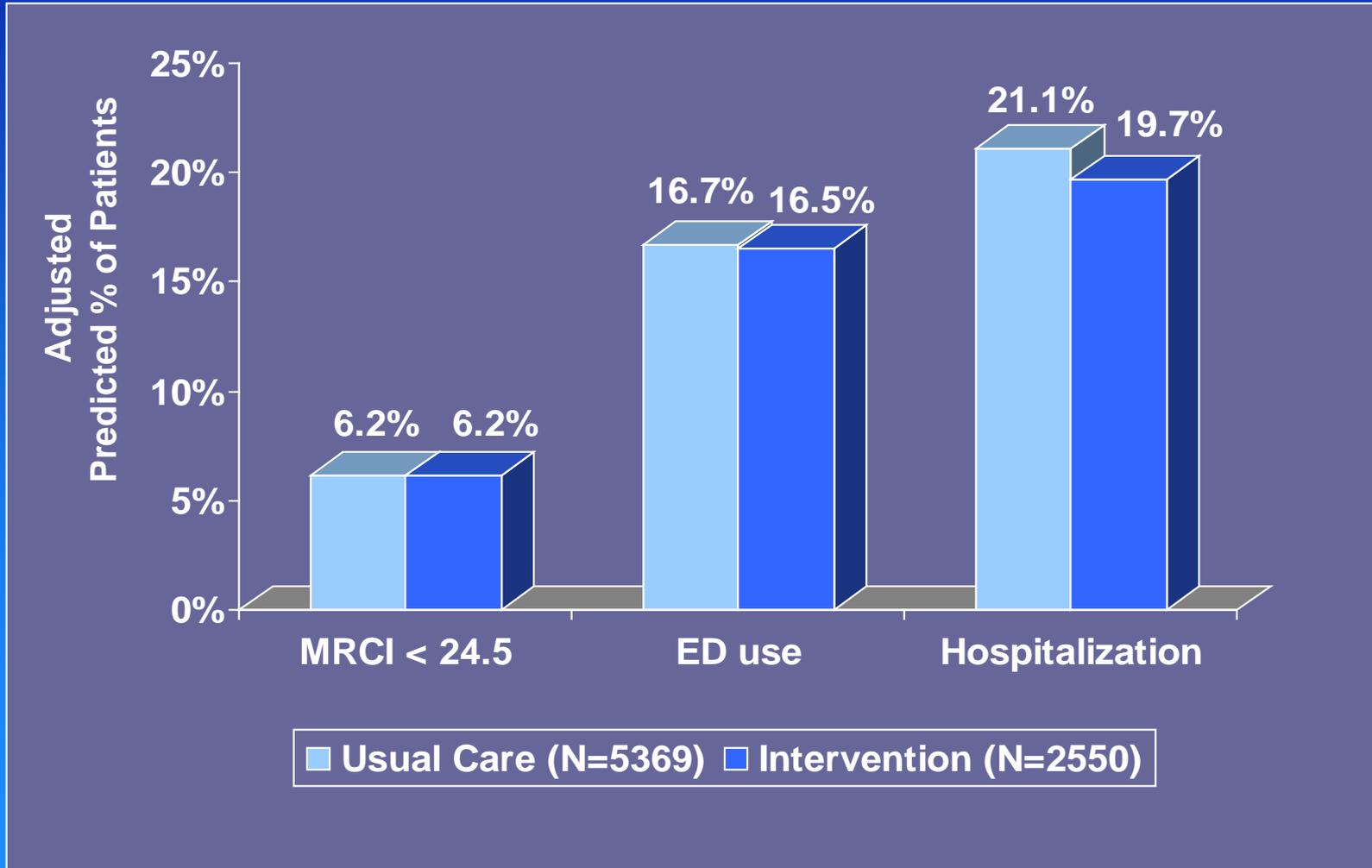
## Outcome Measures

1. Reduction in Medication Complexity (MRCI < 24.5)
2. ED use
3. Hospitalization

## Models

- Logistic regression models predicting the 3 patient outcomes, adjusted by patient and nurse characteristics
  - Generalized Estimating Equations (GEE) to adjust for clustering at the nurse level
  - Adjustment for patient characteristics that differed significantly across study groups

# Patient Outcomes by Study Group: Intent to Treat Analysis





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# CDS Use Analysis



# CDS Use Analysis

- CDS use was not randomized
  - Certain nurses chose to use CDS while others did not
  - Nurses chose to use CDS with certain patients but not with others
- Propensity scores, defined as the conditional probability of CDS use given nurse and patient characteristics, were used to balance patient and nurse characteristics in the two groups and reduce potential bias through regression adjustment
- Propensity scores were used as covariates in logistic regression models when estimating the effect of CDS use on outcome measures



# CDS Use in Intervention Group

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- 82% of the 165 intervention nurses used CDS at least once
- Nurses used CDS with 42% of the 2550 patients in the intervention



# Nurse Characteristics and Likelihood of CDS Use

## More likely

- Older age
- Higher number of years of employment
- Higher number of patients in the study

## Less likely

- Working as a per diem nurse



# Patient Characteristics and Likelihood of Nurses' CDS use

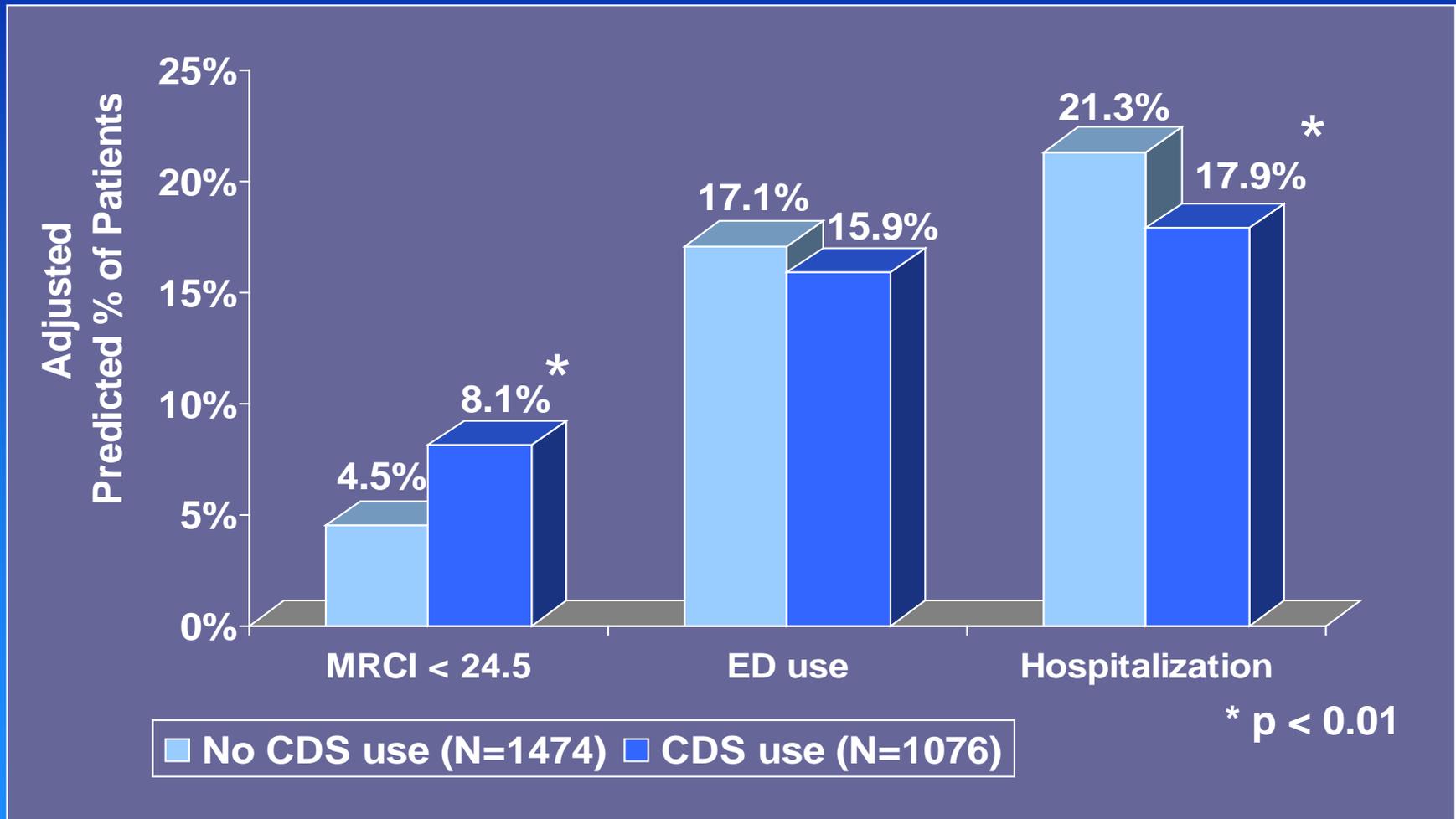
## More likely

- Higher number of medications
- Discharge from inpatient rehabilitation hospital within 14 days of home care admission
- Hypertension Dx
- Cardiac condition Dx
- Stroke Dx
- Shortness of breath
- Longer length of stay in home care
- Higher number of RN visits

## Less likely

- African-American race
- Medicaid beneficiary
- Private insurance
- Cancer Dx
- Higher number of chronic conditions
- Change in coordinator of care nurse

# Patient Outcomes by CDS use



# Conclusions

- Intent to treat analysis found no intervention effect.
- CDS use, adjusted for propensity scores, was associated with lower hospitalization rates.
- Use was limited
  - Affected by both nurse and patient characteristics – some remediable and some not
  - Potentially remediable:
    - Use of per diem versus staff nurses
    - Changes in nurse coordinator of care
    - Patient length of stay



# Implications for Policy, Delivery and Practice

- Limited empirical research is available to understand factors affecting:
  - Nurses' CDS use
  - Impact of CDS use on patient outcomes
  
- Our findings suggest that CDS use and patient outcomes when transitioning to home care could potentially be improved by:
  - Improving continuity of care
  - Avoiding very short lengths of stay
  - Increasing per diem nurses' knowledge, comfort and motivation to use IT



# Acknowledgments

## Research Team

- Penny H. Feldman, PhD
- Yolanda Barron, MS
- Timothy Peng, PhD
- Sridevi Sridharan, MS
- Melissa Trachtenberg, BS
- Liliana Pezzin, PhD JD

Center for Home Care Policy and Research,  
Visiting Nurse Service of New York



# Acknowledgments

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Agency for Healthcare Research and Quality, U.S.  
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*“Improving Medication Practices and Care Transitions  
Through Technology”*

P.H. Feldman, P.I.

**Questions?**



# Discussion

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- We welcome your comments and questions
- Reminder: press \*6 to mute; press \* 7 to unmute
- Questions may also be submitted via 'Chat' feature on webinar console at any time



# Final Comments

- Discussion Summary
  - Will be distributed to all Webinar participants and posted on the AHRQ TA website
- Evaluation Form
  - Attendees will receive a link to an online evaluation survey within 24 hours of the event; please take a few minutes to complete; we value your input and suggestions.
  - Thank you for joining us today!



# Panelist Bio

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## Mark Belanger, MBA

Mark Belanger leads MAeHC's statewide health information exchange projects for Massachusetts, New Hampshire, North Carolina, and Missouri. Mark has expertise in healthcare strategic planning and multi-stakeholder workgroup facilitation as well as deep experience in the healthcare information industry. Prior to joining MAeHC, Mark was a member of the Booz Allen Hamilton Healthcare and IT practice where he led large and complex multi-stakeholder healthcare information technology projects in the U.S. and Australia.

Mark holds a Masters in Business Administration from Babson College and a Bachelors in Music Education from the University of New Hampshire.

Contact email: [mbelanger@maehc.org](mailto:mbelanger@maehc.org)



# Panelist Bio

## Larry Garber, MD

Dr. Garber is a practicing Internist and the Medical Director for Informatics at Reliant Medical Group (formerly known as Fallon Clinic). He has had decades of experience and success in Medical Informatics.

Dr. Garber is Acting Chair of the Massachusetts eHealth Collaborative's Executive Committee, a member of the Massachusetts State Health Information Technology Council, and a member of ONC Policy Committee's Health Information Exchange Workgroup. He has been Principal Investigator on \$3.5 Million AHRQ and HHS/ONC grants to develop innovative Health Information Exchanges.

Dr. Garber is recipient of the 2010 eHealth Initiative eHealth Advocate Award, and the 2011 Health Data Management EHR Game Changer Award.

Contact email: [Lawrence.Garber@ReliantMedicalGroup.org](mailto:Lawrence.Garber@ReliantMedicalGroup.org)



# Panelist Bio

## Margaret McDonald, MSW

Ms. McDonald is Associate Director of Research Studies at the Center for Home Care Policy and Research, Visiting Nurse Service of New York. At the Center, she is responsible for developing, conducting, and disseminating results of research studies evaluating the quality, comparative effectiveness and outcomes of home health care interventions. Since joining the VNSNY Research Center in 1998, Ms. McDonald has been the Project Director on a number of large of large Agency for Healthcare Research and Quality (AHRQ), National Institutes of Health (NIH), and foundation sponsored projects. Prior to VNSNY, Ms. McDonald conducted research at Memorial Sloan Kettering Cancer Center's Psychiatry and Pain Service and the Oncology Symptom Control Research Group at Community Cancer Care of Indiana. Ms. McDonald is a graduate of New York University's Stern School of Business and received a Masters of Social Work degree with a concentration in research from Fordham University.

Contact email: [margaret.mcdonald@vnsny.org](mailto:margaret.mcdonald@vnsny.org)