

NIA IMPACT
COLLABORATORY
SCIENTIFIC CONFERENCE

2024 Scientific Conference, Day 2

Thursday, April 4, 2024 | 9:00 A.M. – 12:00 P.M. ET

Welcome to IMPACT's Annual Scientific Conference



NIA IMPACT
COLLABORATORY
SCIENTIFIC CONFERENCE

Vincent Mor, PhD – Brown University School of Public Health

Session 5:

Methods Using the Long-Term Care Data Cooperative for ePCTs in Dementia Care



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SCIENTIFIC CONFERENCE

Moderator: Vincent Mor, PhD – Brown University School of Public Health

Presenters:

Elizabeth White, APRN, PhD – Brown University School of Public Health

Susan Mitchell, MD, PhD – Hebrew SeniorLife's Marcus Institute for Aging Research, Harvard Medical School

Kevin McConeghy, PharmD, PhD – Brown University

Sarah Berry, MD, MPH – Hebrew SeniorLife's Marcus Institute for Aging Research, Harvard Medical School

Jinying Chen, PhD – Boston University

Lindsay White, PhD – University of Pennsylvania

Yongkang Zhang, PhD, MS, Weill Cornell Medical College

Panelists:

Partha Bhattacharyya, PhD – National Institute on Aging

David Dore, PharmD, PhD – Exponent, Inc.

Thomas Trivison, PhD – Hebrew SeniorLife's Marcus Institute for Aging Research, Harvard Medical School



Leveraging Nursing Home Electronic Health Records Data for Research

Elizabeth White, APRN, PhD – Brown University
IMPACT Collaboratory Annual Meeting 2024

Disclosures

- The Long-Term Care Data Cooperative is funded as a supplement to the IMPACT Collaboratory by the National Institute on Aging (U54AG063546-S6)
- Dr. White has no conflicts of interest to disclose

Website

www.ltcdatacooperative.org

Introduction to the LTC Data Cooperative

Mission: To improve the quality of care within skilled nursing facilities by compiling the most comprehensive data on nursing home residents nationwide – and to translate these data into accessible and actionable information designed to help clinicians, managers and policy makers improve care

Approved Data Uses

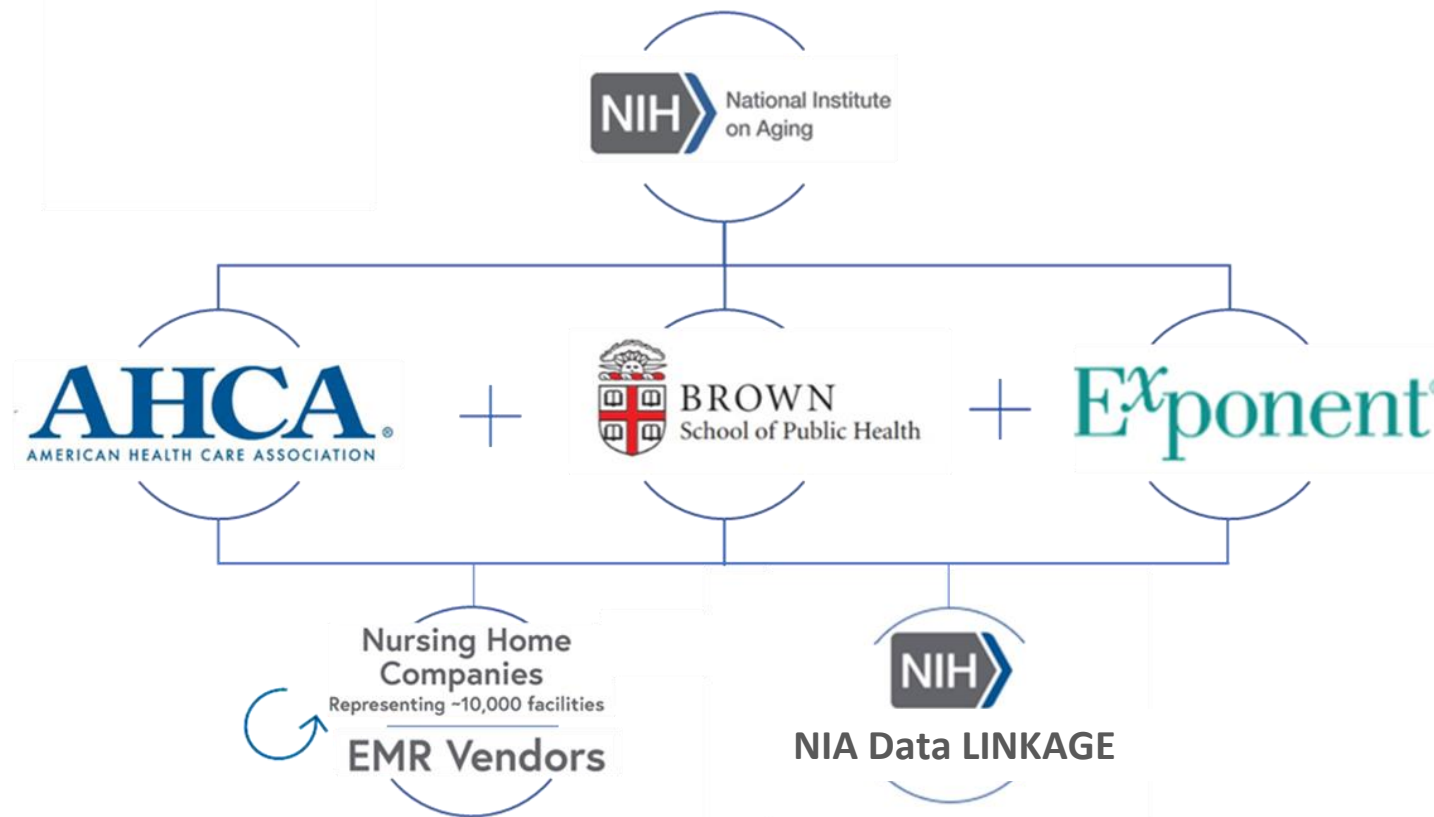
Population health analytics to support operations & care coordination for LTC providers

Public health surveillance

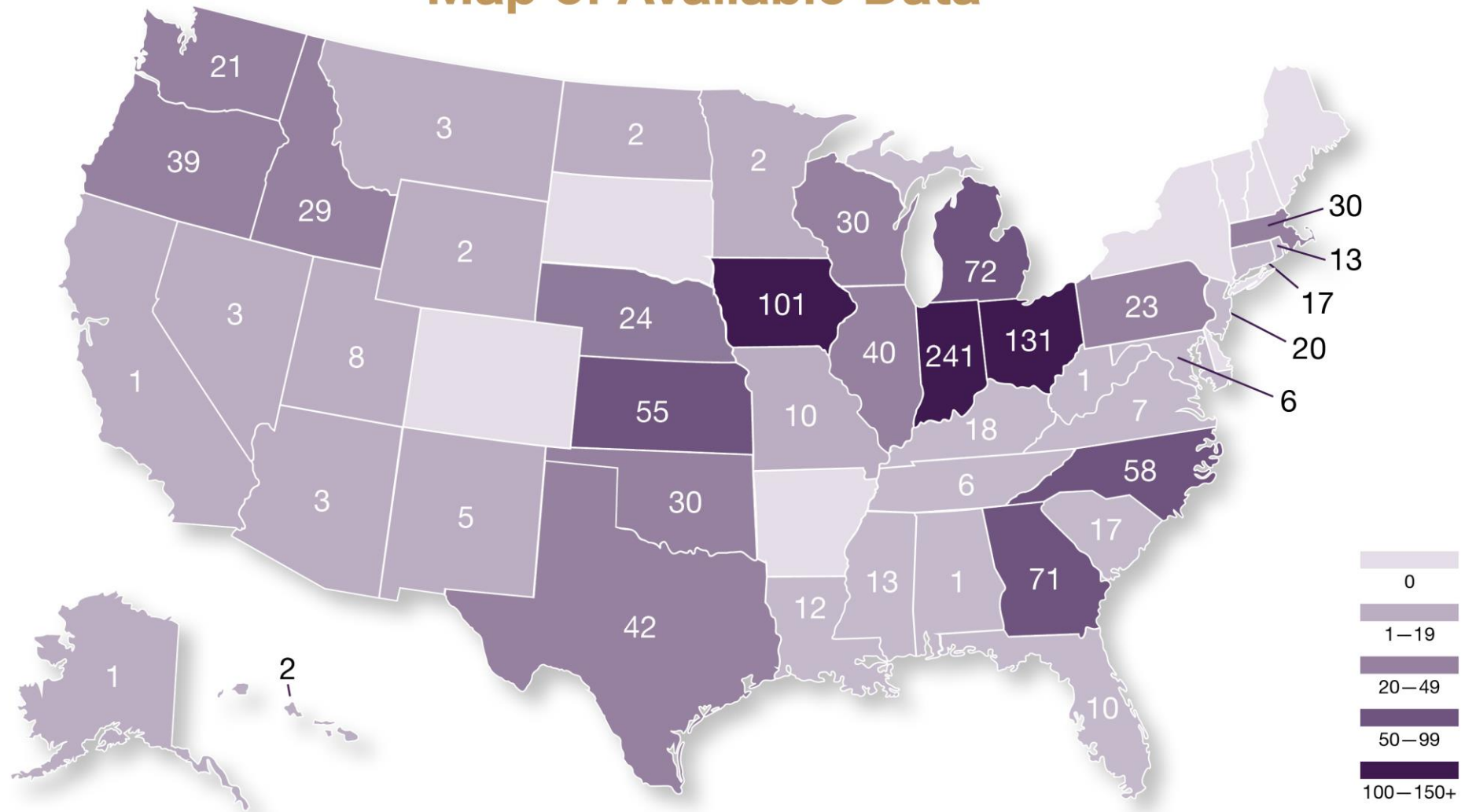
Observational comparative effectiveness research

Clinical research studies including randomized trials

LTC Data Cooperative Governance & Structure



Map of Available Data



Note: Skilled nursing facilities with data as of March 11, 2024.

This map represents the geographic distribution of the 1220 skilled nursing facilities with data ready for researcher use in the Long-Term Care Data Cooperative. As of March 11, 2024, there are an estimated total of 2986 skilled nursing facilities enrolled to participate in the LTC Data Cooperative that will eventually have data ready for researcher use.

The Value of EHR Data (vs. Claims or MDS Only)

- **Daily resident census information** - i.e. location on a given day
 - Improved over 'guesstimating' when person is in house from MDS alone
- **Vitals**
 - Vital signs (BP, HR, RR, SpO2, temperature, pain)
 - Blood glucose
 - Height & weight
- **Immunization records**
 - vs. MDS which only has basic influenza & 'pneumococcal' vaccination info
 - Vaccine dates, type (eg. PCV15, PPSV23, PCV20)

The Value of EHR Data (vs. Claims or MDS Only)

- **Lab data**

- Point-of-care testing (e.g. blood glucose monitoring, COVID & flu rapid antigen tests)
- Results from external contracted labs (e.g. CBC, BMP, UA, PT/INR)

- **Medication**

- Orders: prescriptions as ordered by MD/NP/PA
- Medication Administration Record (MAR): record of administration by RN/LPN/med tech

Medication Orders

NAME **STRENGTH** **FORM**
Acetaminophen 325mg tablet

Give 2 tablets (650mg) by mouth every 8 hours as needed for pain for 30 days

DOSE **ROUTE** **FREQUENCY** **DURATION**

INDICATION: Osteoarthritis

START DATE: 10/1/2023

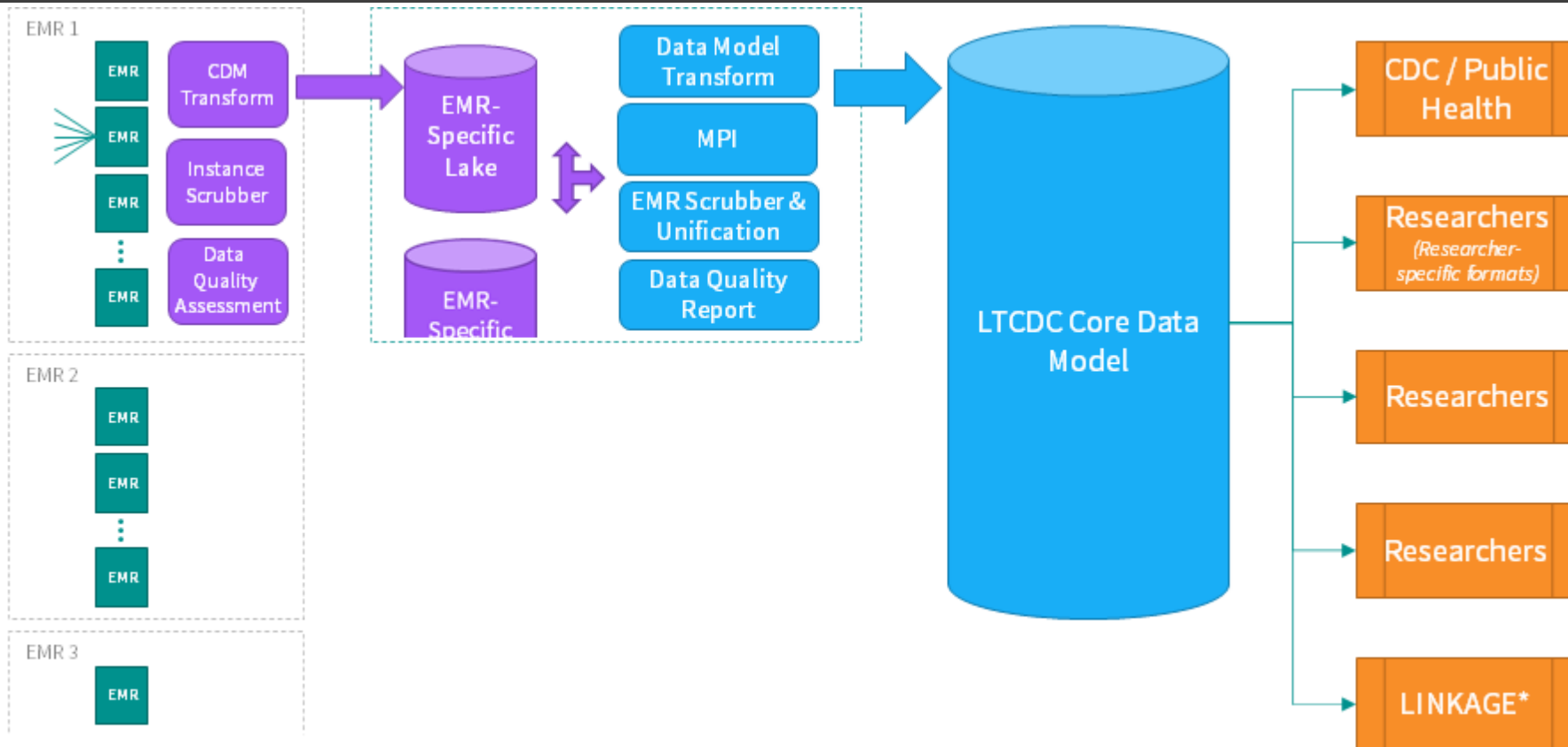
END DATE: 10/31/2023

Medication Administration Record (MAR)

- All nursing home residents have a **medication administration record (MAR)** in which nurses and/or med techs document all scheduled and as-needed (PRN) medications
- Documents whether a medication was administered, held, or discontinued at a given time
- Data are administration-level

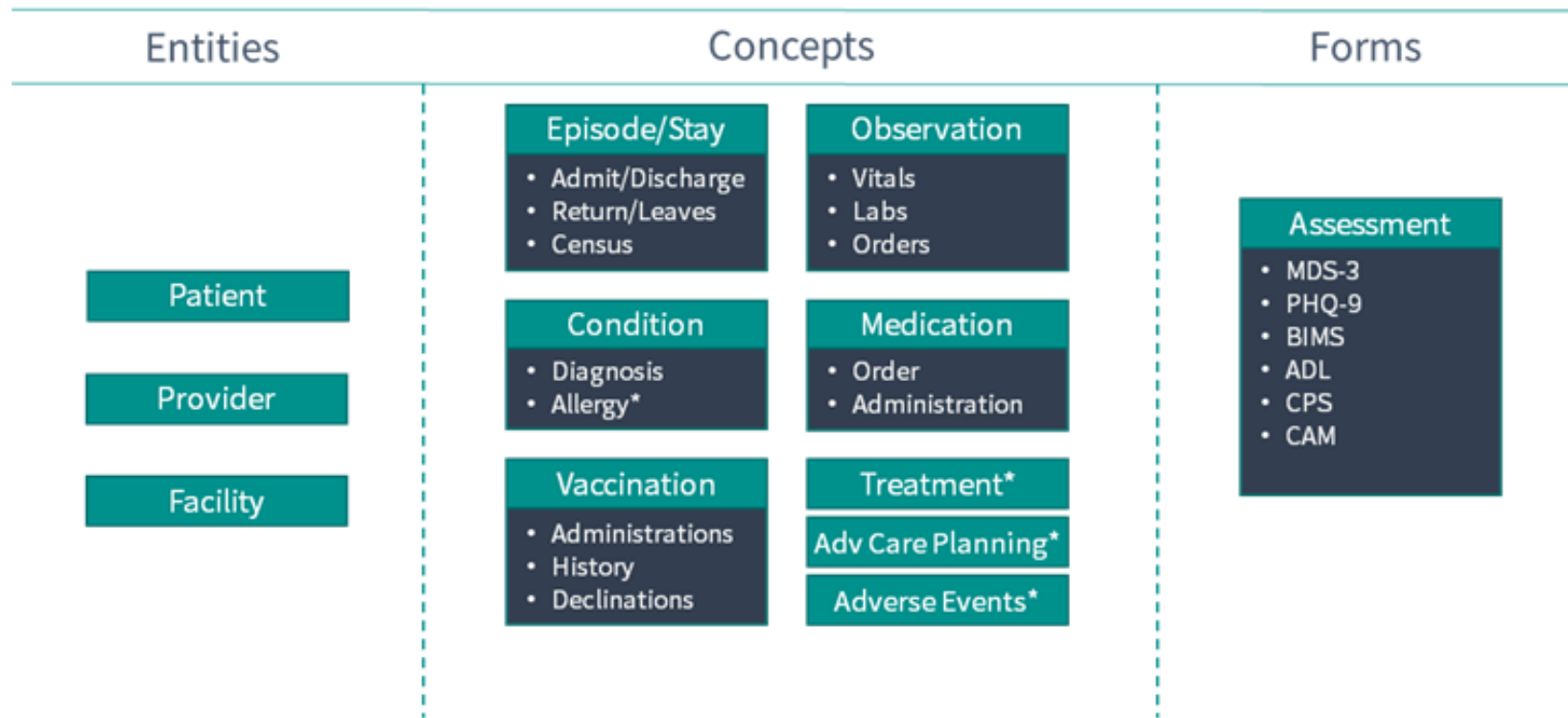


Core Data Model



Data Integration and Standard Data Domains

Data supplied by EHR vendors have been harmonized and organized into clinical concepts.



* Concepts scheduled for integration in early 2024.

Clinical Events and Measurements

Labs



Lab Result Records
>67 million



Examples of Labs

Blood Glucose
CBC
TB Tests
PT/INR
COVID-19 Tests
CMP
HbA1c

Vitals



Vitals Observations
>544 million



Types of Vitals

Temperature
Pulse rate
Respiration rate
Blood pressure
Oxygen saturation
Pain scale
Blood sugar

Medications



Prescriptions, Including
Schedule and Details
>30 million



Administrations,
Including Time of Day
>486 million

Medications Include

Prescriptions
Over-the-counter
PRNs (as needed)

As of October 2023



Technical User Guide

HOME

FOR PROVIDERS

FOR RESEARCHERS

DATA

Data

The Long-Term Care Data Cooperative consists of 796,133 residents in 908 nursing homes comprising 39 nursing home companies. Data are current as of December 15, 2023. Additional details on available data are shown below. Due to conflicting reports from different patient records, some residents may be double-counted.

Counts of Nursing Homes and Residents	>
Demographic Characteristics: Age Groups by Sex	>
Demographic Characteristics: Race	>
Demographic Characteristics: Ethnicity	>
Resident Characteristics: Admissions, Stays, and Hospital Transfers	>
Counts of Patients with Clinical Events, Relevant Records and Measurements	>
Resident Characteristics: Select Diagnoses and Treatments	>
Counts of Facilities and Staff	>

DOWNLOADS & MATERIALS

- [Technical User Guide](#)
- [LTC Data Cooperative "by the numbers" Infographic](#)
- [Data Configuration Form](#)



Data on Data

HOME

FOR PROVIDERS

FOR RESEARCHERS

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Approved Data Uses

Population health analytics to support operations & care coordination for LTC providers

Public health surveillance

Observational comparative effectiveness research

Clinical research studies including randomized trials

Approved Data Uses for Research

Population health analytics to support operations & care coordination for LTC providers

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Approved Data Uses for Research

Observational Comparative Effectiveness Research

Generally, these are cross-sectional or longitudinal analyses comparing patients who:

- Were vs. were not exposed to a particular treatment (e.g. drug, test, care regimen)
or
- Were exposed to different treatments intended to address the same clinical condition

Clinical Research Studies

Studies that test and evaluate interventions in nursing homes, including pragmatic trials

Research Examples

Approved

Incident hypoglycemia in residents with vs. without sliding scale insulin

Effectiveness of a staff dementia education intervention on agitated behaviors & ADL decline in residents with dementia

Adverse events following Paxlovid treatment in nursing home residents with COVID-19

Not approved

Adherence to diabetic clinical practice guidelines in nursing homes

Trends in antipsychotic prescribing in for profit vs. non-profit nursing homes

Facility-level factors associated with COVID-19 testing frequency

Application Process

Upload Specific Aims

Researcher submits specific aims document; LTC Data Cooperative conducts a preliminary review

2 weeks

Submit Application

Disposition sent to researchers in ~2 weeks of specific aims submission; those approved will be invited to submit a full application

Pre-funding

Initial Review

The LTC Data Cooperative reviews the application for content and provides, if needed, a letter of support and/or cost estimate

2-3 weeks

Full Application Review

Review Committee convenes following comment period for providers

6-8 weeks

Post-funding

Research Review Committee

Committee

- 3 members of the LTC Data Cooperative leadership – 1 representative each from Brown, AHCA, & Exponent
- 1 LTC Data Cooperative Advisory Board member (provider representative)
- 6 LTC Data Cooperative participants (providers)

*** All LTC Data Cooperative participants have an opportunity to review proposals during the open comment period & provide feedback to the Research Review Committee*

Evaluation Criteria

- Alignment with mission
- Meets the requirements of allowed data use & IRB/privacy board approvals
- Merits scientific priority
- Uses data elements that are sufficient to accomplish study objectives
- Proposal includes sufficient detail
- Investigators qualified to execute the study
- Does not place unusually heavy burden on data-processing staff

Plain Language Abstract

- Researchers are asked to draft a [plain-language](#) abstract which is made available to LTC Data Cooperative provider participants during the open comment period
- This is an audience with expertise in the long-term care environment, not in research methods
- Avoid ‘academic language’, but also do not be overly simplistic
- Structured abstract requiring the following elements:
 - Objectives and importance; Study design; Study population; Intervention, if applicable; Key measures and outcomes; Data requested and justification; Provider engagement and implications for providers

Costs

- There is **no cost** for standard access to the EMR data or EMR data linked with claims (via NIA LINKAGE) for observational studies
- Standard access includes:
 - Secure cloud computing environment
 - Access to existing data elements, as outlined in the Technical User Guide
 - Open-source database & analytic software (DBeaver, R, & Python)***
 - Access for up to 5 concurrent users
 - Tech support up to 8 hours over the study period
- All interventional studies, and observational studies with data needs that exceed standard access criteria will incur costs that vary based on study complexity
- More detail here: www.ltcdatacooperative.org > 'For Researchers'

***Stata may be available within the next year

Real World Data Scholars



Jinying Chen, PhD

Boston University Chobanian &
Avedisian School of Medicine

Validating Free-text Medication
Orders by Leveraging Natural
Language Processing



Kenneth Lam, MD, MAS

University of Colorado School of
Medicine

Validation of Functional
Measures in LTC EHR Data



Lindsay White, PhD

University of Pennsylvania
Perelman School of Medicine

Determination of Cognitive
Status in NH Residents: The
Utility of EHR Data



Yongkang Zhang, PhD,
MS

Weill Cornell Medical College

Evaluating LTC Data Cooperative
EHRs to Study T2D among
Nursing Home Residents

Thank You!

Website:

www.ltcdatacooperative.org

General Questions?

LTCDDataCooperative@AHCA.org

Data/Cost Questions?

ltcdc@exponent.com





Training to **R**educe **A**ntimicrobial use **I**n **N**ursing home residents
with **A**lzheimer's disease and other **D**ementias

Susan Mitchell, MD, MPH – Hebrew SeniorLife
Kevin McConeghy Pharm D, PhD – Brown University School of Public Health



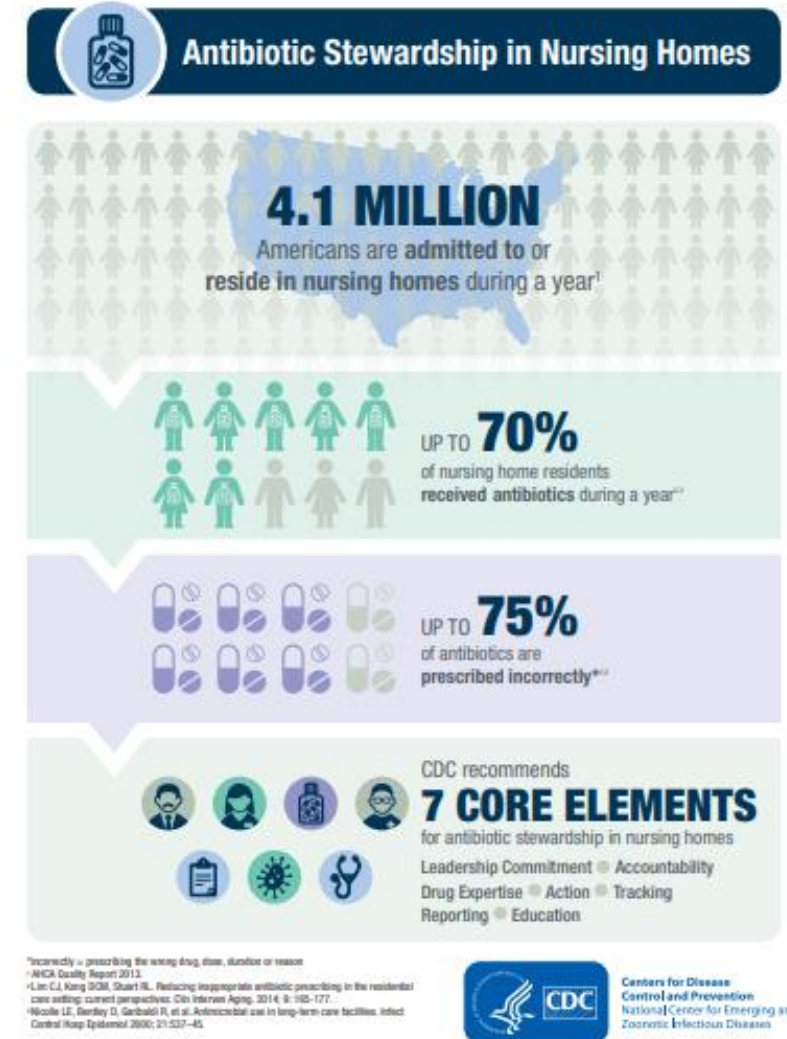
Background

- Ne·bu·la
- *“Thick cloud of gas and dust particles comprising hydrogen and helium”*
- Typically referred to as the *“birthplace of new stars”*



Background

- Infections expected in late-stage dementia
- Signal the end-of-life may be near
- Extensive antibiotic misuse
- Burdensome for patient
- Increases antimicrobial resistance
- Costly
- High quality infection management
 - Aligns with goals of care
 - Follows minimal criteria for antibiotic initiation
- Aligns with CDC program



Intervention

- Training Seminar



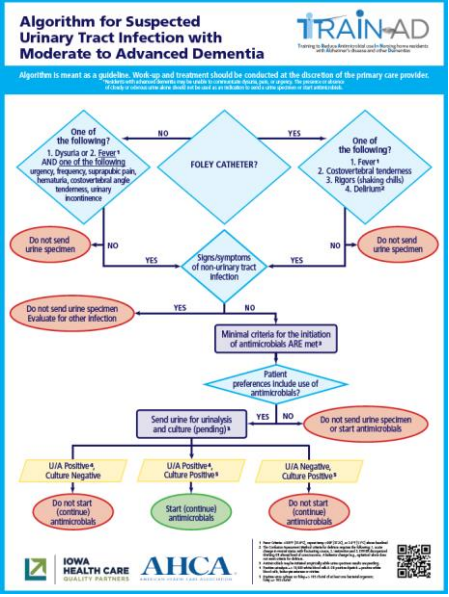
- On-line course

Case 1 - Mr. Smith
Ninety-eight-year-old man with advanced dementia, aspiration, and fever

Learning Objectives

- Differentiate between aspiration and lower respiratory tract infection (LRTI) in advanced dementia.
- Identify the minimum criteria required to initiate antimicrobials for a suspected OR in a nursing home resident with advanced dementia.
- Describe how to integrate patient preferences in the decision to treat LRTI in advanced dementia.

- Algorithms



- Family Booklet

Infections in Moderate to Advanced Dementia:

WHAT THE FAMILY SHOULD KNOW ABOUT TREATMENT DECISIONS

Susan L. Mitchell, MD, MPH • Erika M. D'Agata, MD, MPH

Background

JAMA Internal Medicine | Original Investigation




The Trial to Reduce Antimicrobial Use in Nursing Home Residents With Alzheimer Disease and Other Dementias (TRAIN-AD)

A Cluster Randomized Clinical Trial

- Stage III efficacy cluster randomized clinical trial
- 28 NHs; Advanced Dementia Residents, 209 intervention, 229 control
- Antimicrobials for UTIs and LRIs
 - 33% reduction in antimicrobial use
 - Courses resident/person-year: 0.74 vs. 1.23
 - % residents getting ≥ 1 course: 54% vs. 77%
- Underestimate ICC

Background



- TRAIN AD 2.0: Stage IV pragmatic cluster randomized clinical trial
- Partner:  |  | 
- Setting: 50 Iowa NHs (25/arm) “Tier 2” = member LTCDC, committed to QI Point Click Care EHR Platform
- Population: 750 (375/arm) residents = i) LOS > 90 days; ii) Dx of dementia; iii) Cognitive Functional Scale (CFS) = 2, 3, or 4
- 12-month outcomes:
 - 1^0 = # antimicrobial courses among moderate-severe dementia /person-year
 - 2^0 = # antimicrobial courses among all dementia person-year
burdensome interventions* /person-year in both cohorts

**Burdensome interventions= hospital transfers, radiography, blood cultures, or urine tests*

Background



	TRAIN AD 1.0 (Stage 3 Efficacy)	TRAIN 2.0 (Stage 4 Effectiveness ePCT)
Setting	Ad hoc NHs in Boston Actively recruited	Part of Iowa Network No active recruitment
Cohort	Severe dementia Identified and characterized using primary data collected by research team Waiver of consent	Moderate to severe dementia Identified and characterized using Electronic health record (EHR) Waiver of consent
Implementation	Facility providers with high touch of research team (e.g., research team gave webinar & tracked course participation with incentives)	Facility Providers under supervised by Iowa Network Research team invisible
Outcome ascertainment	Primary data collection by research team Antibiotics only for urine/respiratory tract infections	All antimicrobial use: EHR Hospital Transfers, Death: EHR & Medicare Xrays, urine tests, blood culture: EHR

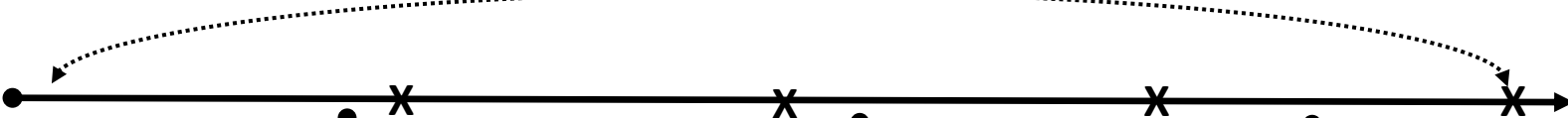
Analysis Overview

Facilities recruited,
assessed for eligibility,
Facility start



Eligible residents at
facility start
("prevalent cohort")

Antimicrobial use, other outcomes



Quarterly assessment of newly eligible
("incident cohort")
Quarterly assessment deaths/dropouts

Each subject
followed for up to
12-months

Analysis Organization

Long-Term Care
DATA COOPERATIVE



EHR data



50+ nursing homes



IOWA HEALTH CARE
QUALITY PARTNERS

AHCA
AMERICAN HEALTH CARE ASSOCIATION

Exponent®



Marcus Institute
for Aging Research
Hebrew SeniorLife

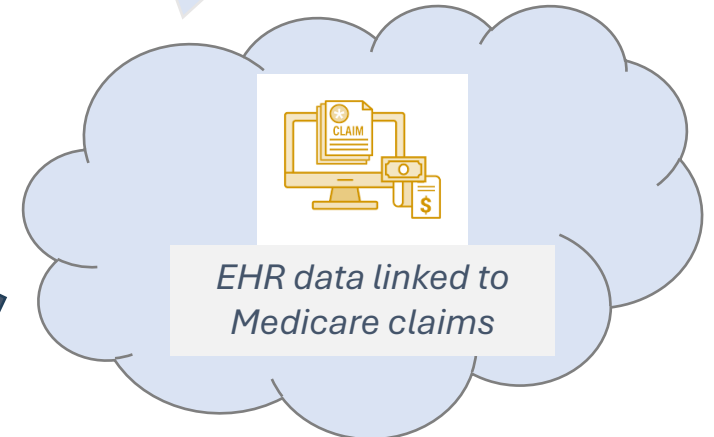


School of
Public Health
BROWN UNIVERSITY



Researchers

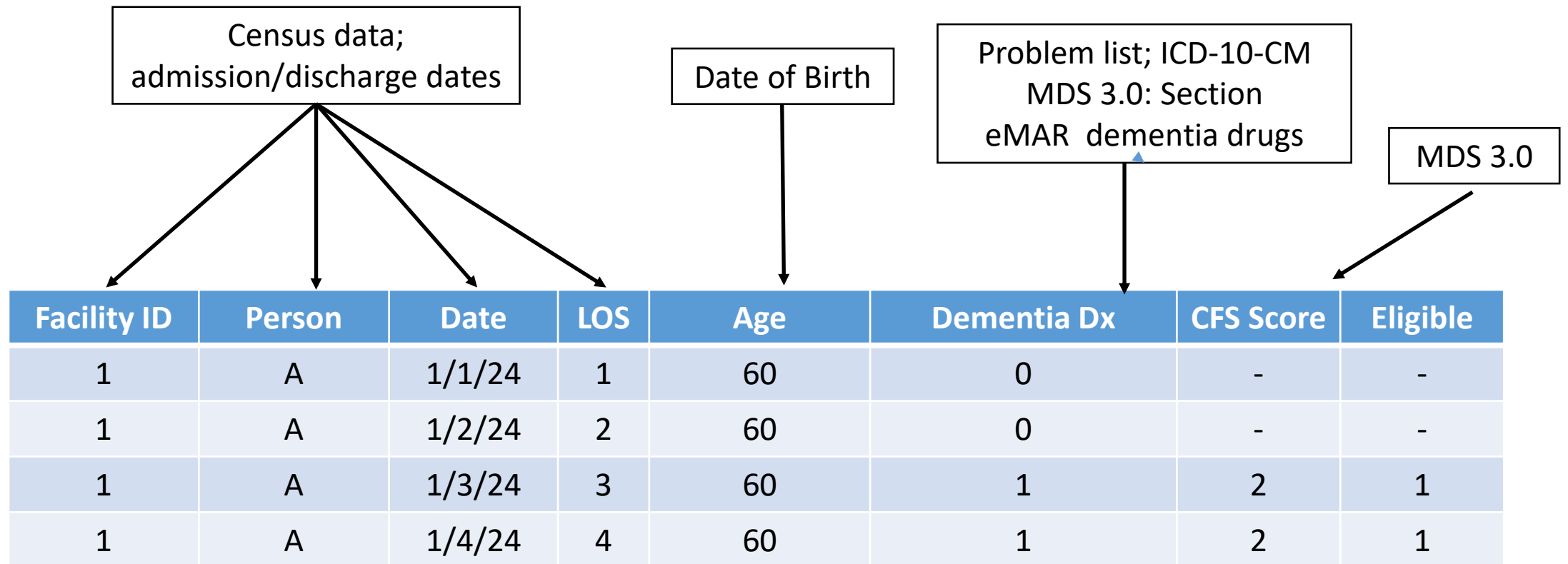
NIA Data LINKAGE Program
NIH National Institute on Aging



EHR data linked to
Medicare claims

Cohort Identification

Assessment of resident eligibility with “daily” residential history file



Cohort Identification

This basically works!

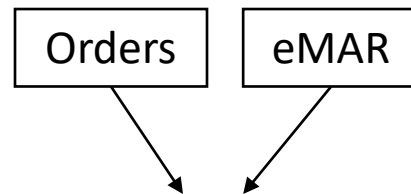
We can identify eligible residents at time of facility start for the 8 facilities in first randomization wave

No facility with <10 eligible residents...

Characteristic	N = 168
Age, y	85 (9)
Length of stay, days	610 (285-1,270)
Female	126 (75%)
White	164 (98%)
Source of dementia diagnosis (earliest date)	
MDS I Section (Alz Dis or other)	18 (11%)
ICD-10-CM codes for dementia	135 (80%)
Dementia medication	15 (8.9%)

Primary Outcome

Antibiotic courses among CFS 3 or 4/ person-days up to 12-months



Facility	Person	Date	Abx	Course
1	A	1/1/2024	1	1
1	A	1/2/2024	0	0
1	A	1/3/2024	0	0
1	A	1/4/2024	1	2
1	A	1/5/2024	1	0

- From two sources in EHR
- Common antibiotics for UTI/Respiratory tract
 - But...cannot determine exact indication
- Course definitions
 - New course = 3-day antibiotic-free period
 - Multiple antibiotics/day = 1 course
- Sum total courses per person divided by total follow-up time

Primary Outcome

- Antibiotics identified via matching names with a standard list
 - Attempts to link via RxNorm or other ontology are ongoing...
- We can identify 83 unique antibiotics in medication data
 - Most common is cephalexin, 2nd is Bactrim DS
 - On average, 2.6 (facilities average min-max of 0.7-4.4) antimicrobial courses per 1000 patient days, comparable to prior trial

Secondary Outcomes etc.

- Burdensome interventions
- Death
- Combination of EHR and claims
- LTCDC-Medicare linkage just finalized
- Sample-~60% FFS and 40% managed care
 - EHR: has everyone
 - Claims: Part B for FFS, Part C for MA
- Data Availability
 - NHs orders/results not consistently available for radiography, laboratory testing in PCC (did survey)
- Time
 - Claims more delayed then EHR data

Secondary Outcome	Electronic Health Record	Claims
Hospital Transfers (Admission, ED, Observation)	Reason for transfer out of NH	All types Parts A & C Delayed
Chest X-ray	NA	Part B & C
Urine specimen	NA	Part B & C
Feeding tube	Yes (MDS)	Part B & C
Death	Yes* (reason for discharge)	Denominator Delayed

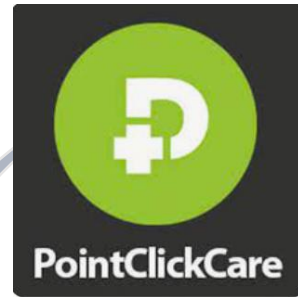
Where Do Problems Arise?

Long-Term Care
DATA COOPERATIVE



PCC extracts; e.g...

- may not share consistent data month->month



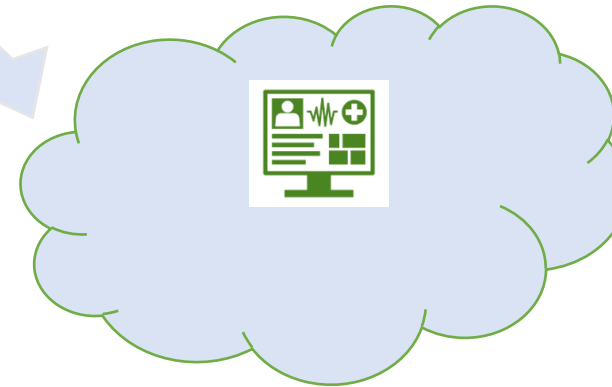
EHR data; e.g...

- Zeros instead of missing values on MDS
- Companies fill out MDS differently



50+ nursing homes

Exponent®



Exponent data; e.g...

- analytical files construction



Researchers

Problems with researcher; e.g...

- data programming
- coding errors etc.

Summary for “Nebula”



Gone Well

- Overall, “working” *but a bumpy start*
- Research application to LTCDC went smoothly
- Exponent data liaison attends weekly meeting, helps problem-solve
- Access to Exponent cloud
- Cohort identified
- Antibiotic courses ascertained

Challenges

- Delays in data availability
 - NH -> PCC -> Exponent -> researcher
- Data integrity/version control issues
 - Duplicated data, unlinked data, omitted data items, inconsistencies with comparable data
- Data Transparency
 - “Small” decisions by PCC/Exponent can make big differences
 - Complex data stream make problem-solving difficult
- AWS / Firewalled Server
 - Cannot easily upload or export data to/from server
- Medicare linkage TBD

THANK YOU!

Models of Post-Acute Care in Complex Older Adults with Fracture (PCORI)

Sarah D. Berry, MD MPH
Associate Professor in Medicine
Hebrew SeniorLife



Disclosures

- Funding from PCORI
- Royalties from Wolters-Klewer (chapter on falls in Up-to-Date)

Post-acute care following a fracture

- 40-50% of older adults hospitalized with fracture have ADRD or cognitive impairment
- Persons with ADRD are more likely to receive post-acute care in SNF
- 1 out of 7 patients who are hospitalized with a fracture will experience another injurious fall within the year



Why focus on medications after a fracture?

Some medications may do more harm than good.

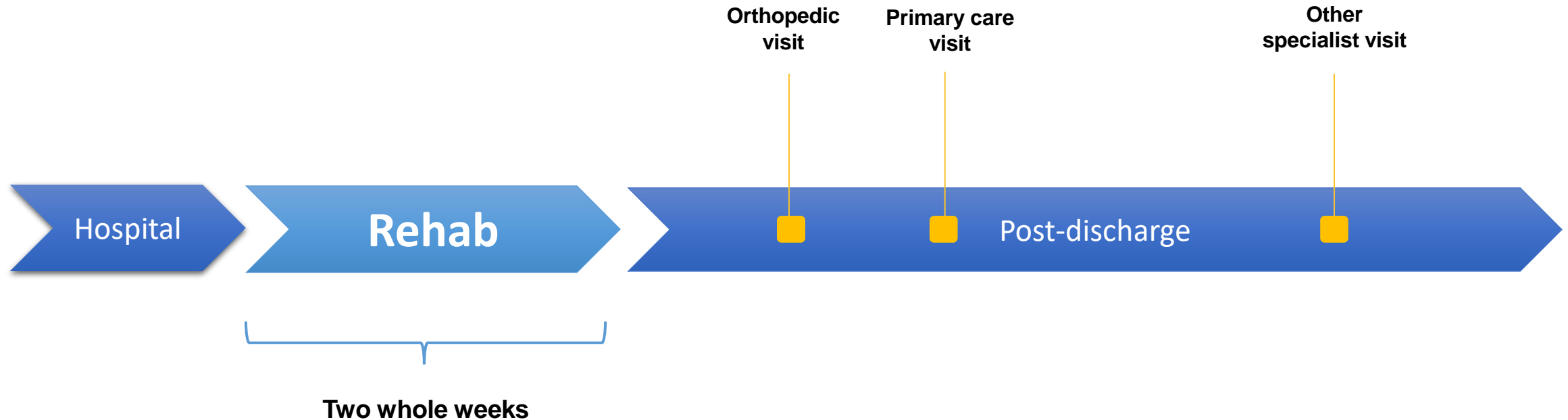
- Interfere with recovery
- Increase risk for another fall



Some medicines may help but are rarely prescribed:

- Bone strengthening medicines prevent fractures and death
- Fewer than 20% of patients receive these medicines after a fracture

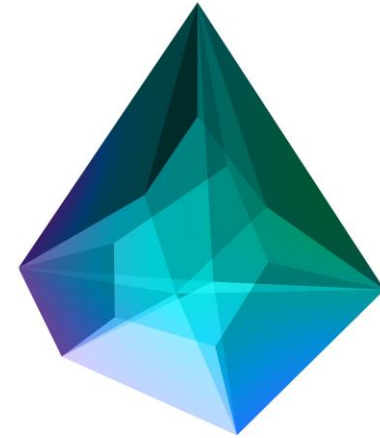
Post-fracture Timeline



Premise: leverage time in rehab, add additional resources to optimize medications and improve outcomes for patients with recent fracture

Objective

Conduct a **randomized cluster crossover trial** in fracture patients receiving **post-acute care** to **compare the effectiveness of three care models** (i.e., Deprescribing Care Model, a Bone Health Model, and a combined Injury Prevention Model) on rates of **injurious falls** and other patient-centered outcomes.



PRISM

Prevention of Injury in
Skilled Nursing Facilities
Through Optimizing Medications

Study Population and Recruitment



Skilled Nursing Facilities (target n=42)

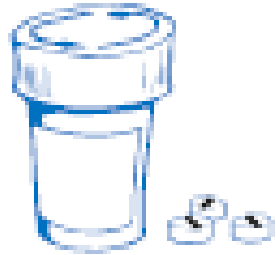
- Exclude
 - Non-participation in the Long Term Care Data Cooperative (LTCDC)
 - < 400 admissions annually



Patients receiving post-acute care with fracture (target n=3,780)

- Exclude
 - Non-osteoporotic fractures (trauma, cancer, fingers/toes)
 - Receiving hospice

WHAT CARE MODELS ARE USED?



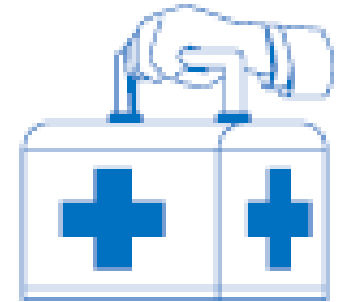
Deprescribing Care Model

- Make patient specific recommendations to reduce polypharmacy
- Facilitate shared decision making with patients/families before recommending changes



Bone Health Service Model

- Make patient specific recommendations regarding osteoporosis treatment
- Facilitate shared decision making with patients/ families before recommending changes



Injury Prevention Care Model

- Combines the deprescribing and osteoporosis care models

How will it work?

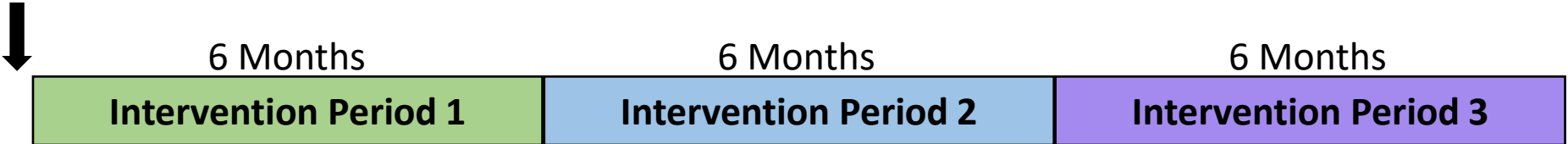
Consultation by the Post-fracture Nurse Consultant



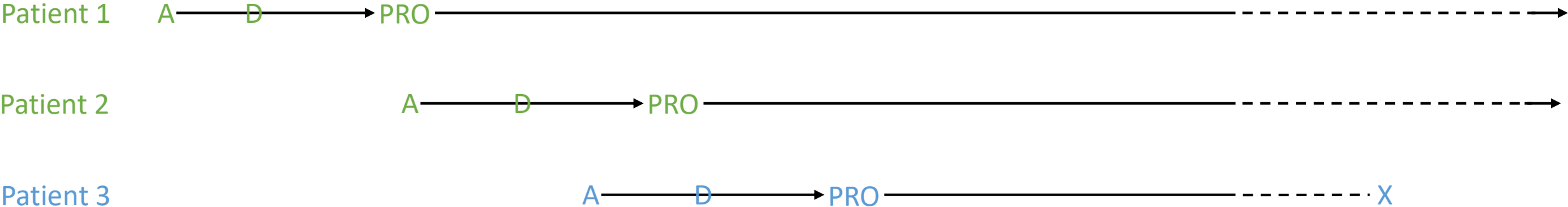
1. Review of electronic health record (EHR) including medications and provider notes
2. Draft preliminary plan of med changes
3. Contact patient/proxy by phone. Shared decision making with patients/proxy regarding med changes
4. Review with PRISM interdisciplinary team
5. Send personalized recommendations to MD/NP and discuss with frontline staff
6. Communicate plan with primary care provider
7. Follow patient after discharge

PRISM Study Design

SNF Randomization



Mean follow-up: 2 years after admission (range 1 - 3)



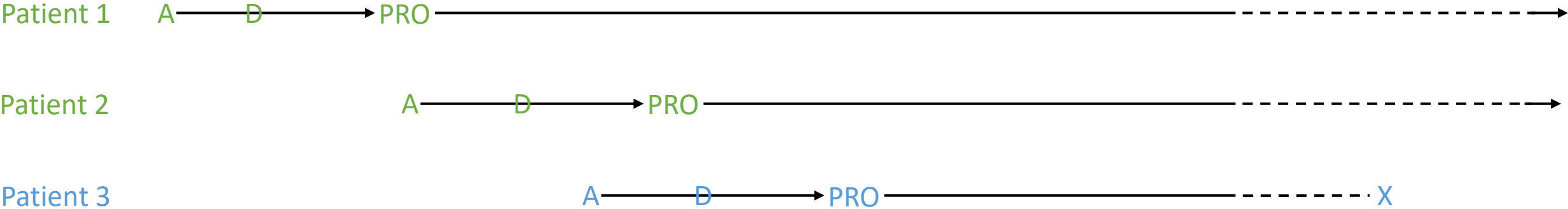
A = Admit Date
D = Discharge Date
PRO = Patient Reported Outcomes; measured 3 months after Admission
X = Censored at Death
*Patients analyzed by the period in which they were admitted

PRISM Study Design

SNF Randomization



Mean follow-up: 2 years after admission (range 1 - 3)



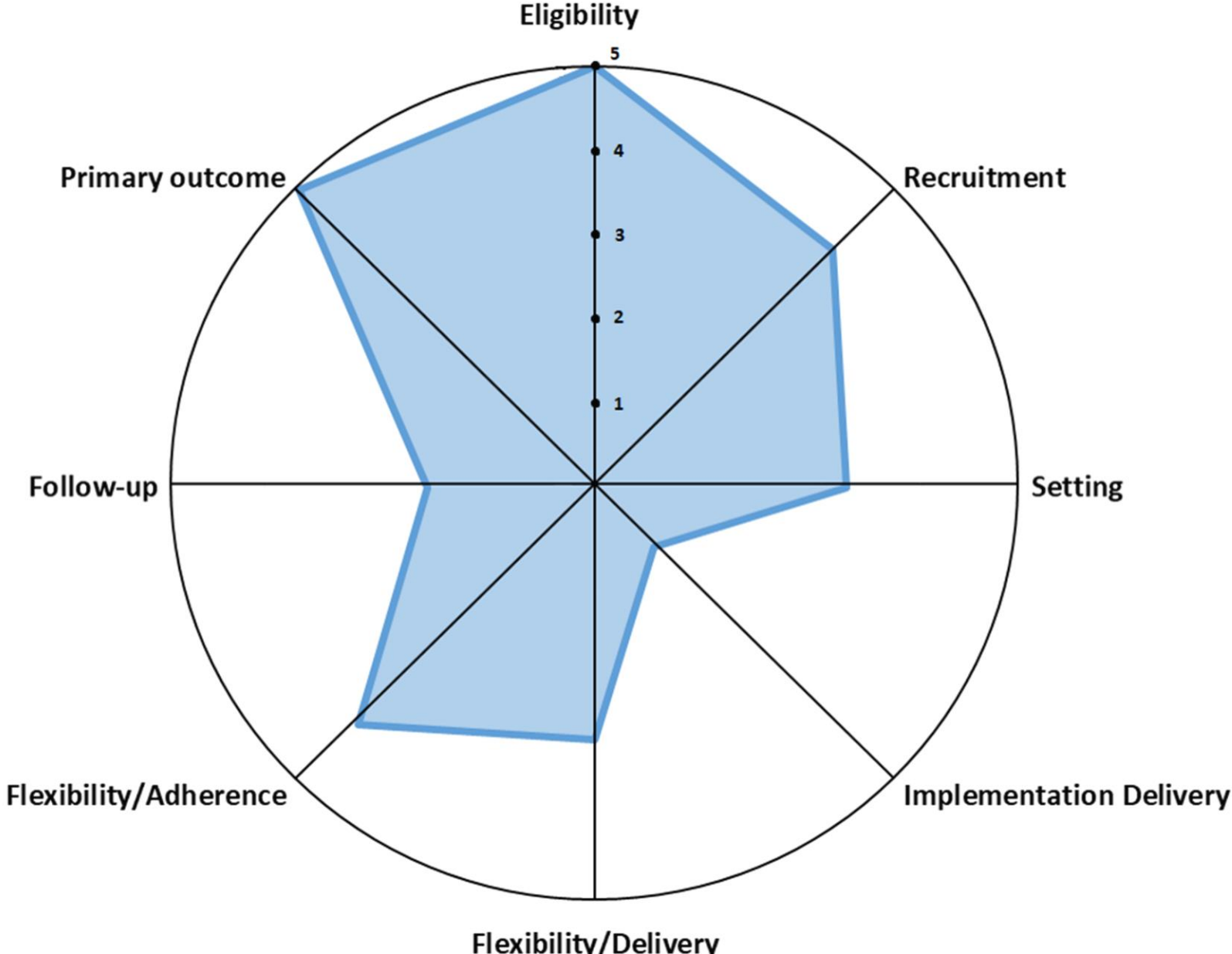
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SNF randomization
Bone Health->Deprescribing->Combined
Deprescribing->Bone Health->Combined

Outcomes. *Indicates measure derived from electronic health record or administrative data

Type	Name of Outcome	Specific measure(s) to be used (Source)	Timepoints	Minimal Important Difference
Primary	Injurious fall and fracture*	Unique claims for ED, urgent care, or hospital visit for injurious fall or any fracture (CMS ICD 10 codes) and self report	Mean 2 yr. follow-up	10% difference
Secondary	Osteoporosis treatment, adherence	*Initiated treatment Y/N, Medication Possession Ratio (LTDC and Medicare D)	1 year	Treatment 10%, 0.2 MPR
Secondary	Fall Risk Increasing Drug use	*Deprescribing ordered Y/N; Modified Drug Burden Index (LTCDC and Medicare D)	90 days	0.1 decrease
Secondary	Medication side effect burden	Living with Medications Questionnaire 3 (LMQ3)	90 days	0.5 SD change
Secondary	Fear of falling	Falls Management Scale (survey)	90 days	0.5 decrease
Safety	Pain, depression, anxiety, agitation, sleep scales	PROMIS pain interference scale, PHQ 8, anxiety short form, sleep disturbance short form (surveys)	90 days	5 points PHQ9; 3 points PROMIS measures

PRECIS-2 Diagram of PRISM



Challenges and Solutions

- Lag in Medicare Advantage data (~2 yrs)
- Added 1 mo, 6 mo, and 18 mo telephone calls

Challenges and Solutions

- Lag in Medicare Advantage data (~2 yrs)
- Need to assign 1 nurse per facility
- Added 1 mo, 6 mo, and 18 mo telephone calls
- Changed randomization plan, built in checks for nurse consultant, and will measure any contamination

Challenges and Solutions

- Lag in Medicare Advantage data (~2 yrs)
- Need to assign 1 nurse per facility
- Need to engage medical providers
- Added 1 mo, 6 mo, and 18 mo telephone calls
- Changed randomization plan, built in checks for nurse consultant, and will measure any contamination
- ??

Summary

- **PRISM** will compare three care models (Deprescribing, Bone Health, Combined Model) on the rates of injurious falls and other outcomes in patients receiving care in a nursing home after a hospitalization.
- Intervention relies on a **remote post-fracture nurse consultant** to review medications, engage in shared decision making and communicate changes with frontline staff and the primary care provider.
- Outcomes largely through LTCDC linkage but will include outcomes ascertained via self report and surveys (telephone)

Safety

- Adverse drug event (ADE)
 - an unplanned medical visit (i.e., acute care, emergency department, hospitalization, unscheduled medical visit in SNF) for symptoms potentially related to medication changes suggested by the study team as part of the injury prevention plan
 - Includes drug events and withdrawals
- Ascertained via claims data
- Staff and patient may report during encounters

Fidelity

- Quality of motivational interviewing
 - Motivational Interviewing fidelity assessment (adapted MITI-4.2)
 - Frequency: during training and every 6 months during study
- Shared decision making fidelity
 - Research staff will listen to calls and complete OPTION-MCC
 - Frequency: during training and every 6 months during study
- Other



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Validating Medication Names in Long-Term Care Data Cooperative Dataset by Leveraging Natural Language Processing

Presenter: Jinying Chen

Department of Medicine/Section of Preventive Medicine and Epidemiology

Data Science Core

Boston University Chobanian & Avedisian School of Medicine



Chobanian & Avedisian
School of Medicine



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Project Summary

Objective: Using natural language processing methods to validate and correct errors in data fields for medication names

Data: The Long-Term Care Data Cooperative (LTCDC) dataset

Methods: natural language processing, statistics, and machine learning

Significance: new approach to support validation of data fields in large databases that support healthcare and public health research

Impact: Generalizable approach that can support validation of clinical text data in other data resources

The LTCDC dataset (as of December 2023)

- Contains 796,133 residents in 908 nursing homes comprising 39 nursing home companies
- Links information from EHRs with Medicare claims
- Contains **37,849,774** medication prescription records and **903,903,109** medication administration records
- The data fields for medication names (medication_name and medication_generic_name) have not been validated yet

Objectives of the LTCDC NLP Study

Aim 1: Validate data fields for medication names

- completeness
- accuracy

Aim 2: Assess prescription patterns of anti-virus medications among NH residents with COVID-19 diagnosis

- over time
- stratified by facilities and resident's characteristics

Potential errors in a medication name

- Typos
 - cefriaxone vs. ceftriaxone
 - Exetimibe vs. Ezetimibe
- Extra information such as dose, strength
 - Juven ,1 packet by mouth BID
 - bupropion HCl 150mg
- Non-medication related information
 - daily
 - topical

Study plan

- Aim 1: detect and correct errors in medication names
 - Frequency distribution, regular expressions
 - Knowledge-based NLP system leveraging RxNorm
 - Transformer-based deep learning model

Study plan (cont'd)

- Aim 2: assess prescription patterns of antivirals
 - Identify a list of common antivirals for treating COVID-19 (Paxlovid, Lagevrio, etc.) and influenza
 - Compare descriptive statistics of prescription patterns of these medications in NH residents with COVID-19 diagnosis generated from original medication name fields and validated/corrected medication name fields

Collaboration

PI/Scholar :

Jinying Chen, PhD,

Boston University Chobanian & Avedisian School of Medicine

Co-investigators/Mentors:

Andrew Zullo, PharmD, PhD, School of Public Health, Brown University

Kevin McConeghy, PharmD, School of Public Health, Brown University

Acknowledgements

- This project is sponsored by the Real World Data Scholars Program from the LTC Data Cooperative that is funded by the National Institute on Aging (U54AG063546-S6). The funders had no decisional role in study design or preparation of the presentation.

Validation of the LTCDIC Cognitive Assessment Data

Lindsay White, PhD, MPH
Senior Research Investigator

Describe the cognitive assessment data



Type and frequency of assessments within resident episodes and stays and within specific resident populations

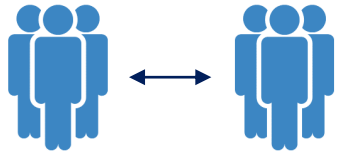


Type and frequency of assessments at the facility level



Variation over time

Examine validity of the scores



Compare scores across populations where differences are expected



Examine correlations with measures typically associated with cognitive status

Deeper dive into the Confusion Assessment Method (CAM) data

- Delirium is understudied in the nursing home setting
- Existing literature
 - Dated
 - Based on small, non-generalizable samples
 - Focuses on newly admitted post-acute care patients
- Objectives:
 - Describe CAM data among short and long-stay residents
 - Determine incidence of delirium among short and long-stay residents
 - Explore clinical correlates of incident delirium within each population



Using LTC Data Cooperative EHRs to Study T2D among Nursing Home Residents

Yongkang Zhang, PhD

Department of Population Health Sciences

Weill Cornell Medical College

April 4, 2024



Background

- Approximately 25-34% of nursing home residents have diabetes
- Diabetes is associated with significant disease burden and higher cost
 - Diabetes-attributable nursing home costs were \$9.6 billion and total nursing home costs of diabetic patients were \$30 billion in 2022 (Parker, et al., 2024)

Background

- Challenges of diabetes management in nursing homes
 - Extensive and heterogenous comorbidities
 - ADL dependence
 - Inadequate diabetes education for staff
 - High risk for severe hypo- and hyperglycemia
 - Variation in practices
- Data limitations have been a significant barrier for studying diabetes management in nursing homes
 - MDS file has limited information about diabetes

Objective

- What is the prevalence and trends of type 2 diabetes (T2D) among nursing homes residents?
- What is the agreement between different computable phenotypes to identify patients with T2D?
- What is the frequency, periodicity, and completeness of key measures (e.g., HbA1c test) related to T2D treatment and management?
- How do the results from this study compare to findings from other similar studies?

Data Elements

Concepts	Measures	Tables and Variables
T2DM	ICD-9/10 and SNOMED code	Episode: admission and discharge diagnosis codes. Condition: diagnosis codes.
	Laboratory test results	Observation: blood glucose level test based on LOINC codes or test names.
	Medication prescription	Medication: GLM use based on NDC, SNOMED, or RXNORM.
Patient factors	Demographics and vitals	Patient: sex, year and date of birth, race, ethnicity. Observation: weight and height.
	Comorbidities	Episode: admission and discharge diagnosis codes. Condition: diagnosis codes.
Nursing home stays	Facility	Facility: ownership, geographic location, and size (based on number of certified beds).
	Date of stay	Episode: admission and discharge dates
	Payers	Stay: payer (e.g., Medicare or Medicaid)

Preliminary Explorations

- Patients with T2D based on ICD-9/10 diagnosis codes in condition table
 - 276,548 unique patients with T2D were identified (master patient ID)
 - Onset date of T2D ranges from 1974 to 2024 (>99% after 2011)
- Patients with T2D based on HbA1c test results ($\geq 6.5\%$) in observation lab table
 - A total of 87,799 HbA1c tests were identified (any results)
 - Testing results are missing for 7% of HbA1c tests
 - LOINC is not well populated. I ended up using test names.
 - 19,423 unique patients with T2D were identified

Preliminary Explorations

- Patients with T2D based on prescriptions
 - All medication identifiers have missing values
 - Generic name has the lowest missing rate (~10%)
 - 157,246 unique patients with any oral anti-diabetic medication were identified
 - 168,238 unique patients with any insulin use were identified

Thank You!

Session 6: ePCTs in High Need Populations with PLWD

Moderator:

Daniela Meeker, PhD – Yale University

Presenters:

Lisa Juckett, PhD, OTR/L, CHT – The Ohio State University

A. Lynn Snow, PhD – The University of Alabama

Ellen McCreedy, PhD, MPH – Brown University School of Public Health

Panelists:

James Rudolph, MD, SM – Brown University

Katherine Abbott, PhD, MGS – Scripps Gerontology Center, Miami University (Oxford, OH)

Zainab Osakwe, PhD, MSN, NP, RN – Adelphi University

Lisa Onken, PhD – National Institute on Aging



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Upskilling Care Partners to Provide Nutritional Support for People Living with Dementia

Lisa Juckett, PhD, OTR/L

Assistant Professor

School of Health and Rehabilitation Sciences

The Ohio State University

Career Development Award Mentors:

Shannon E. Jarrott, PhD
The Ohio State University

Lorraine C. Mion, PhD, RN
The Ohio State University

Kali S. Thomas, PhD
Johns Hopkins University

Overview

- 1) Review home-delivered meal systems and their role in dementia care
- 2) Present barriers that limit participation in mealtime activities among home-delivered meal clients living with dementia
- 3) Present care partner-led solutions to improve mealtime participation
 - a) Implementation considerations

Background

- Home-delivered meal (or Meals on Wheels) systems



A network of 5,000+ community-based organizations nationwide



Up to 2.4 million older adults served annually by paid staff and volunteer drivers



Funded through a combination of federal appropriations, tax levies, and private donations

Meals on Wheels America, 2024

Background

- Home-delivered meal clients living with dementia
 - Approximately 30% of home-delivered meal clients are living with Alzheimer's Disease or related dementias
 - Suboptimal dietary intake compared to older adults without cognitive impairment
 - 60% of meal clients with dementia require care partner assistance with mealtime participation



Juckett & Robinson, 2018; Administration for Community Living, 2018; Shan et al., 2019

Knowledge gaps

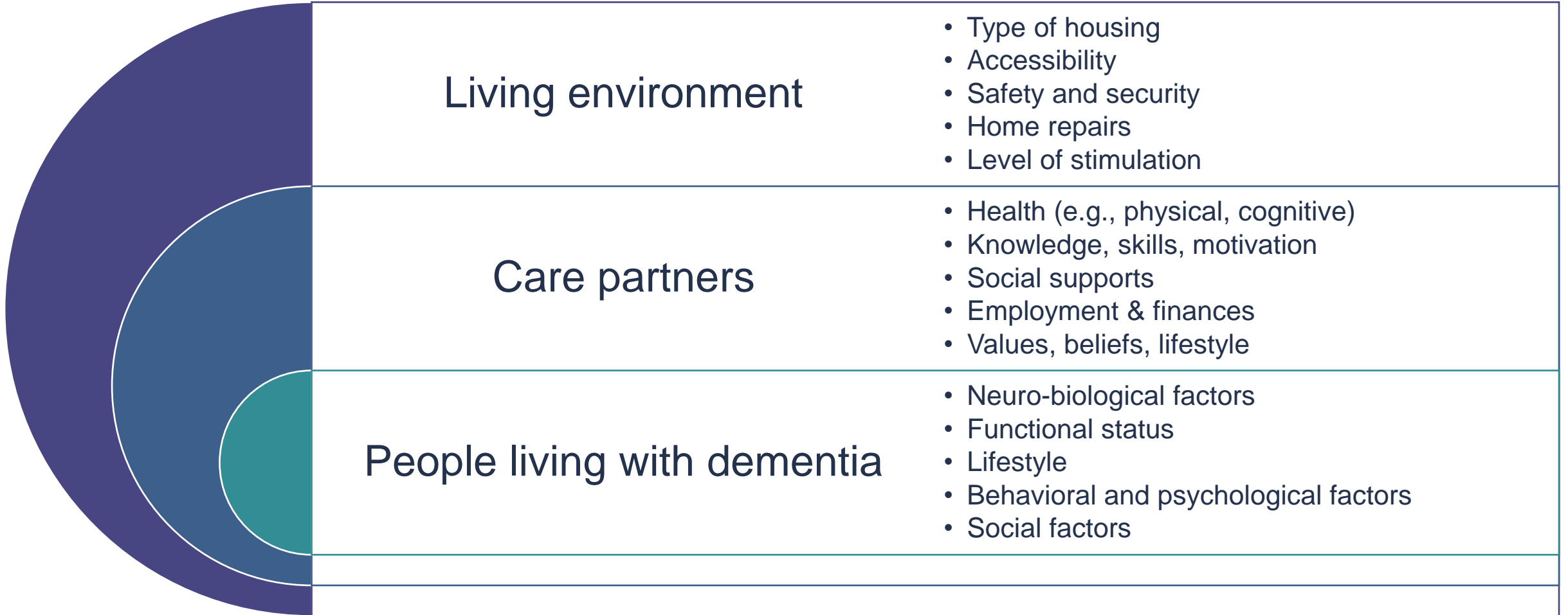
- What are the barriers that limit mealtime participation among home-delivered meal clients with ADRD?
- What solutions can care partners implement to support mealtime participation?
 - Family members
 - Home-delivered meal agencies
 - Agency staff
 - Paid or volunteer drivers

Methods

- Setting: One, large home-delivered meal agency based in the greater Columbus, OH area
- Design: Descriptive qualitative study (semi-structured 1:1 interviews; dyad interviews)
- Participants: 1:1 interviews = Professionals/providers in dementia care; dyad interviews = meal recipients with dementia and their care partners
- Analysis: Directed content analysis with codes mapped to the socio-ecological model for developing and implementing comprehensive dementia care
 - Barriers to mealtime participation
 - Care partner-led solutions to overcome barriers

Gitlin & Hodgson, 2018

Socio-ecological model for developing and implementing comprehensive dementia care



Results - Barriers

- Interviewed professionals/providers (n = 20); PLWD-care partner dyads (n = 18)
- Barriers to mealtime participation
 - Functional status
 - Decreased visual-perceptual and motor skills
 - Neuro-biological factors deficits
 - Problem-solving, sustained attention
 - Behavioral factors
 - Food preferences, “playing” with food
 - Safety of the living environment
 - Fall hazards, clutter, poor lighting



Juckett et al., 2023

Specific examples of barriers

- Difficulty reading food labels or numbers/dials on appliances
- Incorrectly setting microwave timers (too long or too short)
- Difficulty choosing which foods to eat first on plate
- Confusing cups, napkins, glassware, etc. as food items
- Becoming distracted by decorative patterns on tablecloths or plateware
- Eating too quickly or too slowly
- Standing up while eating
- Fluctuating food preferences and dislikes

Results - Solutions

- Care partner-led solutions
 - Reducing distractions
 - Auditory, visual, tactile
 - Providing written cues
 - Reminders, instructions
 - Eliminating clutter
 - Along hallways, on counters/tabletops
 - Initiating community-based services
 - Home-delivered meals



Specific examples of care partner-led solutions

- Present meal at a consistent dining location
- Eliminate or reduce background noise and visual or tactile distractions
- Present foods one at a time (on separate dishes)
- Ensure sufficient dining area lighting and color contrast
- Provide written instructions for how to prepare simple meals
- Obstruct microwave buttons so only pre-set times can be selected
- Prepare healthy, “finger foods” that can be easily accessed
- Leverage home-delivered meal programs to conduct wellness checks

Agency feedback

- In February 2024, solutions were vetted with leadership at our partner home-delivered meal agency

How can we embed these solutions into home-delivered meal programming?

Potential ideas and implementation barriers

- Establish a “memory care” delivery route assigned to specially trained paid drivers
 - Implementation barrier: Would add 10-15 minutes per delivery to implement solutions; limited incentive for training; paid driver supply is low
- Establish a “memory care” delivery route assigned to specially trained volunteer drivers
 - Implementation barrier: Too much variability in volunteer behavior
- Appoint staff to teach solutions to family care partners
 - Implementation barrier: Outside staff’s scope of practice; limited incentive

Potential ideas and implementation barriers

- Develop and distribute web-based training materials to family care partner
 - Implementation barrier: Unclear who would provide care partner with instructions for how to access materials
- Deliver printed educational materials to family care partner
 - Implementation barrier: No current process to ensure care partner received materials
- Appoint agency volunteers to call clients and ask about meal consumption
 - Implementation barrier: Clients may not be accurate historians; unclear follow-up steps

Now what?

Going forward...

- Delphi panel methodology
 - Survey 30-40 home-delivered meal providers
 - Identify the most feasible solutions to embed in home-delivered meal programming
- Experience-based co-design methodology to create an “enhanced” home-delivered meal service for clients with ADRD
 - Care partners
 - Home-delivered meal providers
 - Allied health professionals in dementia care

Bate & Robert, 2006

Acknowledgements

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 - Kali S. Thomas, PhD
 - Shannon E. Jarrott, PhD
 - Lorraine C. Mion, PhD, RN
- Implementation Core Mentor
 - Nancy A. Hodgson, PhD, RN
- Training Core Mentors
 - Alexia Torke, MD, MS
 - James Rudolph, MD



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THANK YOU!

How did you sleep last night?

Does how you sleep affect your
health?

Does how you sleep affect your
behavior?

Enhancing Sleep & Activity Quality for
Nursing Home Residents with Dementia:
Pragmatic Trial of an
Evidence-Based Frontline Huddling Program



A. Lynn Snow, PhD, Corresponding Principal Investigator
Christine W. Hartmann, PhD Multiple Principal Investigator

Today

- 40 Winks* Aims & Design Overview
- 40 Winks Intervention Overview
- Evidence Base - How we got to the 40 Winks Sleep Intervention
- Progress So Far (end of Year 1)

Now

- NIA 1R33AG065619-01
- NIA 1R61AG065619
 - *Enhancing Sleep Quality for Nursing Home Residents with Dementia: Pragmatic Trial of an Evidence-Based Frontline Huddling Program*
- VA QUERI QIS 19-315
 - *Frontline Huddling for Quality Improvement Implementation Strategy Learning Network Hub*
- GEC Operations Funds
 - *CONCERT (CLCs Ongoing National Center for Enhancing Resources & Training) established*
- QUERI QUE-15-271
 - *Improving safety and quality through evidence-based de-implementation of ineffective diagnostics and therapeutics QUERI Center*
- GEC Operations Funds
 - *Preparation for RAISE tool national rollout*
- HSR&D IIR-1-I01-HX001552-01
 - *Developing a Roadmap for Best Practices in CLC Resident-Centered Care*
- GEC Operations Funds
 - *RAISE Summit National Meeting*
- HSR&D CRE-11-349
 - *Developing and Implementing a Toolkit for Measuring CLC Cultural Transformation*
- OPCC&CT
 - *Building the Positive Chain of Leadership to meet the Patient-Centered Care Challenge*
- HSRD PPO 09-266-1
 - *Two CLCs Implementing The Green House Model: A Mixed-Methods Baseline Assessment*

2010

Aims & Design Overview

40Winks Overview



- Improving sleep for nursing home residents with dementia
- NIA-funded pragmatic trial
 - 1 pilot year
 - 4 intervention years (if approved for R61->R33 transition)
- Huddle- and relational coordination-based intervention

Study Objectives

- Improve clinical outcomes for an important, growing, and vulnerable population— nursing home resident with Alzheimer’s disease or related dementias—by implementing an evidence-based intervention to improve these residents’ sleep.
- Increase our understanding of how to implement and sustain nursing home interventions.

40 WINKS Team

The logo features the text "40 WINKS Team" in a blue, sans-serif font. The number "40" is significantly larger than the words "WINKS" and "Team". Below the word "WINKS", there are two stylized, blue, curved lines representing eyelashes, one on each side.

- **University of Alabama: UA Administrative Coordinating Center**
 - [A. Lynn Snow, PhD – PI](#), expertise in LOCK sleep intervention, dementia, nursing home health services research; clinical geropsychologist.
 - [Vanessa Aguilar](#), MS - Project Manager
 - [Brian Cox, BS](#) – Study Administrator
- **University of Massachusetts at Lowell**
 - [Christine Hartmann, PhD – co-PI](#), expertise in LOCK sleep intervention, implementation science, mixed methods implementation evaluation, nursing home health services research; social worker
 - [Megan McCullough, PhD](#) – expertise in qualitative research; medical anthropologist
- **Brown University**
 - [Rosa Baier, MPH](#) – director of Brown Center for Quality Innovation, expertise in quality improvement implementation
 - [Ellen McCreedy, PhD](#) – expertise in nursing home pragmatic clinical trial implementation
- **University of Texas – Houston: UT Data Coordinating Center**
 - [Robert Morgan, PhD](#) – Data center site PI, methodologist; expertise in CMS secondary data analysis and management including MDS data
 - [Data analyst](#), [Data manager](#)
- **University of Texas School of Nursing – Austin**
 - [Kathy Richards PhD, RN](#) – expertise in sleep, nursing home sleep trials, sleep measurement in dementia; nurse
- **University of Texas Medical School & Austin Geriatric Specialists**
 - [Liam Fry, MD](#) - geriatrician; CEO and Owner of Austin Geriatric Specialists which provides the medical services for over 30 nursing homes across 6 corporations in Austin metroplex, Chair of Geriatrics, UT Medical School
- **Barbara Frank & Cathie Brady, B&F Consulting**
 - National experts in NH quality improvement implementation, NH intervention refinement, train the trainer development, and frontline huddling approaches

Study Aims

R61 phase (1 year; n = 3 NHs; 1 NH per corporation):

- Refine the LOCK sleep program train-the-trainer protocol by implementing and pilot-testing.
- Refine the research methods to effectively identify eligible NHs and residents, obtain consent, collect primary data from residents and staff, explore staff impressions of additional sleep measurement devices (Fitbits), transfer primary and secondary data to our data center, and merge all data.

R33 phase (4 years; n = 24 NHs; 8 NHs per corporation):

- Implement the LOCK sleep program for residents with ADRD using the train-the-trainer model.
- Estimate impact of the LOCK sleep program on sleep (primary outcome) and on psychotropic medication use, pain and analgesic medication use, and activities of daily living decline (secondary outcomes).
- Examine factors, using mixed methods, associated with variation in the program's implementation and its sustainability.

Pilot Results Indicate Feasibility, Acceptability, & Effectiveness

- The Forty Winks Pilot was conducted in 3 nursing homes (one per corporation)
- For enrolled NH residents with 9+ weeks of exposure to the intervention (n = 11), total daytime activity increased an average of 19 minutes per day (SD = 95). Total night-time sleep increased an average of 37 minutes per night (SD = 39)
- Participating staff indicated at exit interviews that the intervention was feasible, and acceptable and staff found it worthwhile (n = 37)

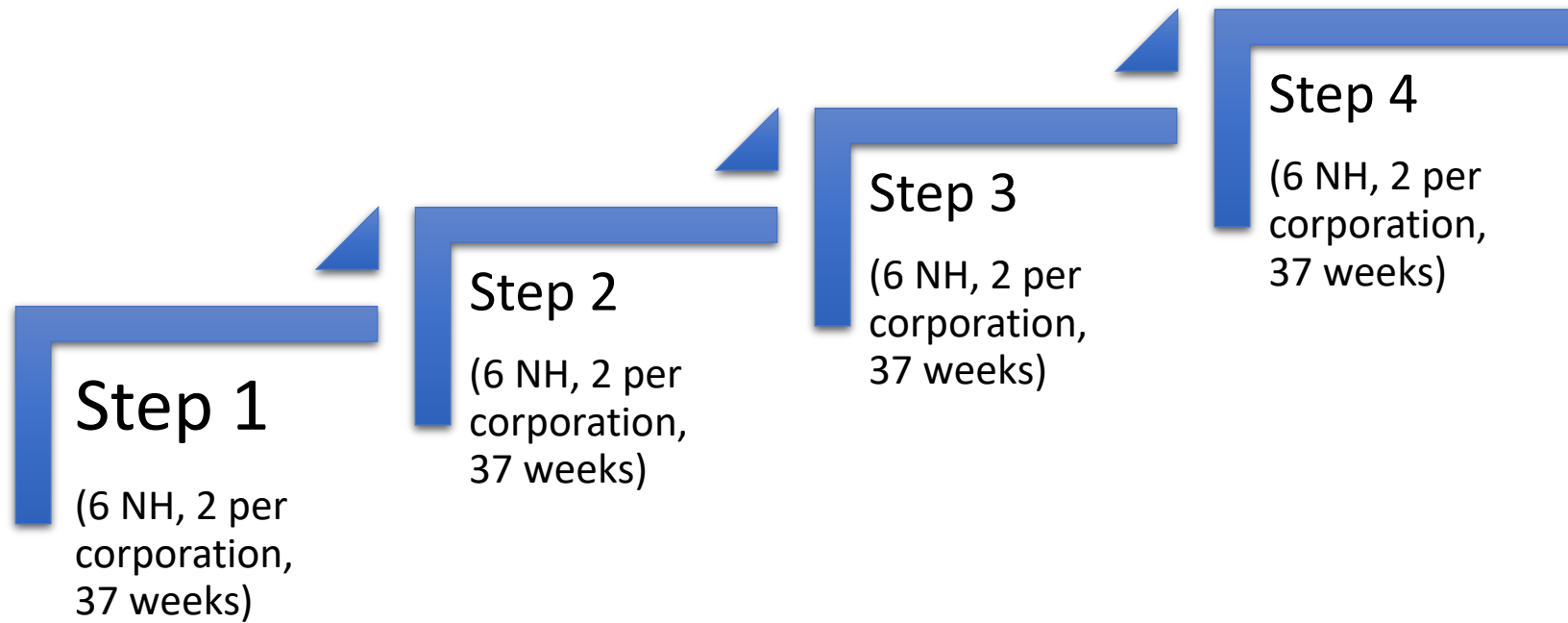
R33 Design Overview

R33 Participants

- Corporate/Facility Level
 - 3 corporations, each provides 1 corporate coach 50% FTE
- NH Residents
 - Residents with ADRD diagnosis,
 - 50 years old or older, identified by staff as would benefit from improved sleep/daytime activity
 - No bilateral arm paralysis or bilateral significant tremor
- NH Staff
 - Project leadership team participates in weekly coaching calls
 - Implementation interviews at mid-, post- and six-month sustainment with leadership team and front-line staff

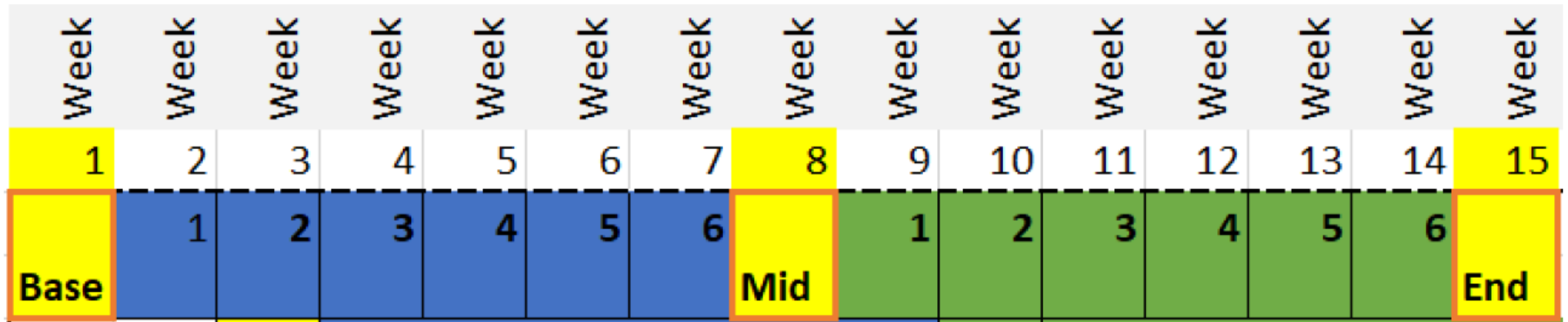
R33 Study Design

- Incomplete stepped-wedge cohort design; unit of random assignment is the NH
- NH serves as own control, phased into intervention grp by intervals (steps)
- Randomly assign the order in which the NHs are phased into the intervention group
- NHs stratified by 3 corporations for assignment to implementation step; randomize NHs within corporations to steps after clustering/matching



Each Resident Involved for 15 Weeks

NH team huddles multiple times per week about resident sleep/activity interventions



Actiwatch measurement for 7 days at Baseline, Mid-point, and End-point

Research Data

Outcomes & Supplementary Data	Data Sources	Relevant MDS Sections
Primary outcome: Sleep	- Actigraph	
Secondary outcome: Psychotropic medication use	- MDS	N0410A-C, N0450A, V0200A17A
Secondary outcome: Pain and analgesic medication use	- MDS	J0100A-C; J0300-J0600; J0800A-D
Secondary outcome: Activities of daily living decline	- MDS	G0110A-J and G0120A-B; QM N028.01
Supplementary sleep data: Sleep via staff rating	- Staff rating	
Supplementary sleep data: Staff-identified sleep-related concerns	- Staff rating	
Supplementary sleep data: Inter-resident sleep variability	- NH's medical record	
Supplementary sleep data: Sleep from MDS	- MDS	D0200C, J0500A

EHR Supplementary Data:
medications, diagnoses, conditions, demographics

Sleep Supplementary Data:
Brief resident, family, and staff rating of resident sleep

Implementation Supplementary Data:
Huddle checklist
Brief staff survey
Staff interviews (group and individual)

Intervention Overview

Two Guiding Principles

1. Whole Person (Individualized Care)
2. Whole Team (Relationally Coordinated Teams)

LOCK Sleep Program

- Learn from Bright Spots
- Observations by Everyone
- Collaborate in Huddles
- Keep it Bite-Size



LOCK Tenet**Explanation****Fictional Example****Look for the bright spots**

Look for positive outliers (e.g., “positive deviants”) to identify instances of success from which to learn

A neighborhood has 35% active resident engagement/week. Staff pinpoint areas of highest engagement and investigate what contributes to those bright spots.

Observations by everyone

Have staff step back from regular routines and conduct specific observations to collect data

Each staff member conducts a 5-minute observation of resident engagement during a meal, using a structured observation form.

LOCK Tenet**Explanation****Fictional Example****Collaborate in huddles**

Discuss (a) risk factors for an issue, (b) what can be learned from bright spots, (c) results of observations, and (d) changes to pilot.

Charge nurse uses 5 minutes at start of shift-change huddle to get staff input on risk factors for residents not being engaged and discuss bright spots of resident engagement identified through observation. Based on lessons learned from the bright spots, staff identify small action items to try.

Keep it bite sized

Keep all LOCK components to 5-15 minutes.

Existing meetings are shortened by 5-10 minutes to make room for stand-up huddles. Pilot changes are chosen to be small but meaningful.

The LOCK Sleep Program Emphasizes Huddling *Around* The Frontline Staff

- Frontline staff involvement in QI is critical
 - Building on frontline staff-resident relationships by empowering frontline and problem-solving with frontline produces higher quality care
- Huddles are realistic way to ensure input from frontline staff, who spend most time with residents
 - Huddles are bite-size, occur on the floor, and, when facilitated skillfully, support group collaboration and two-way dialogue

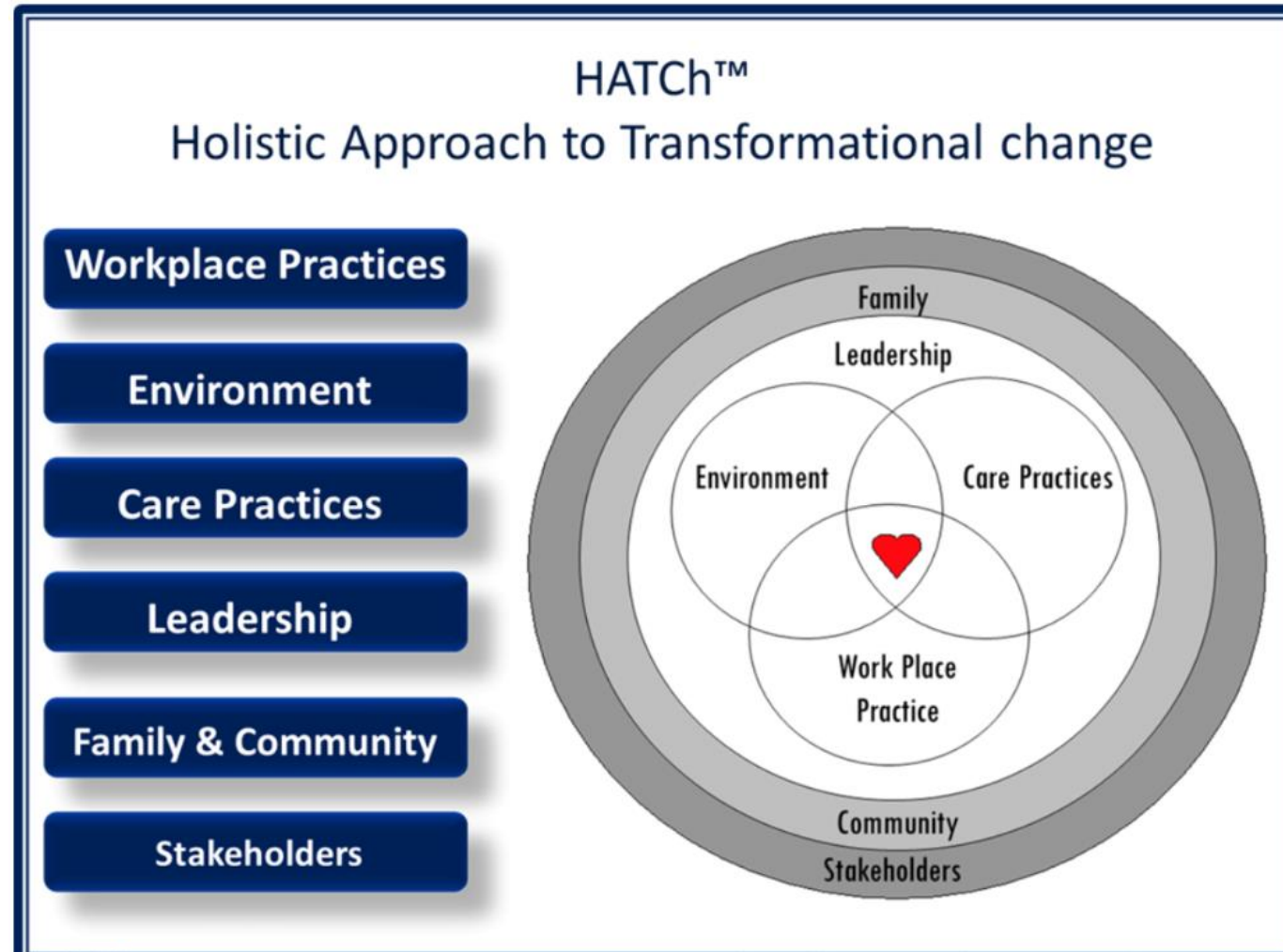
Note: Frontline staff need strong invitations to share their knowledge

- Authority/power differentials & history of not being systematically included means more than usual effort is needed

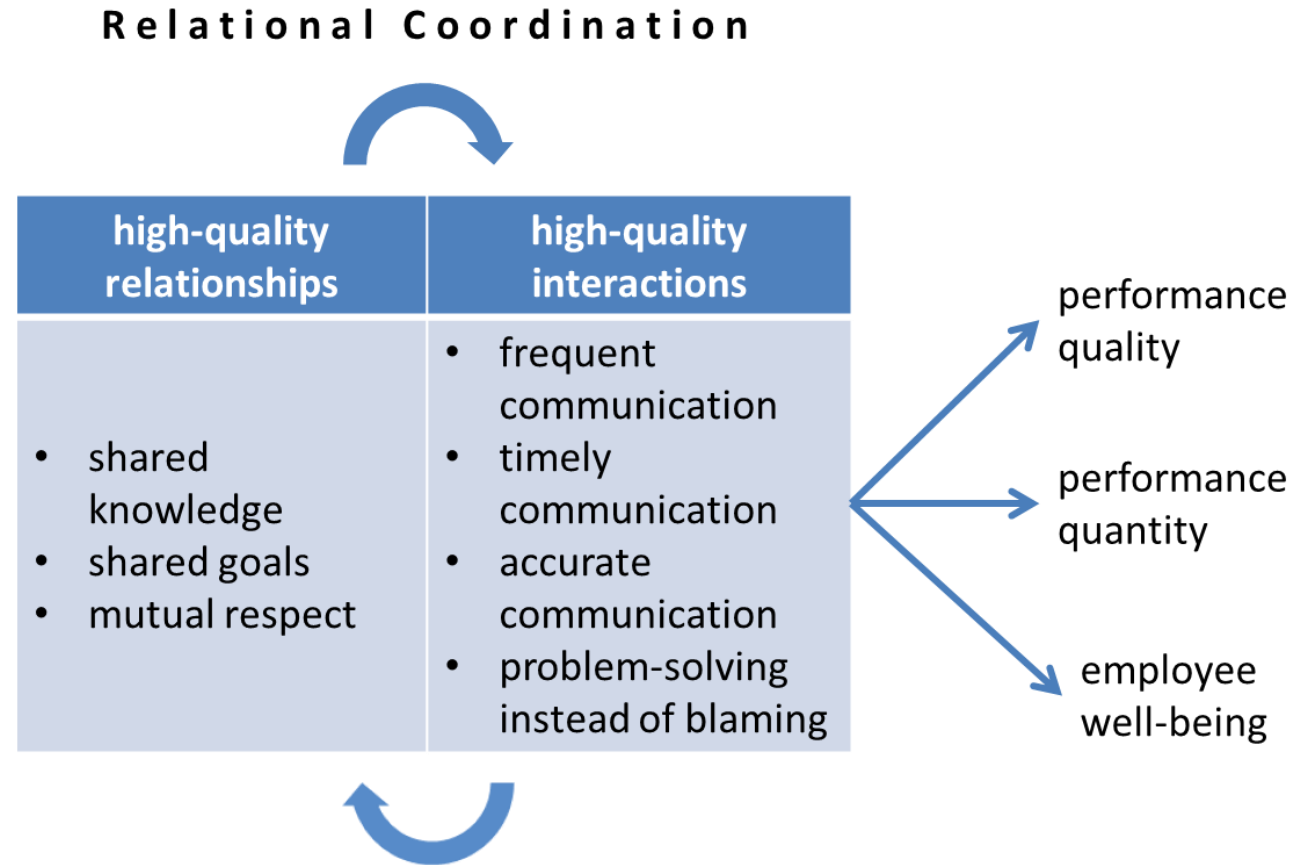
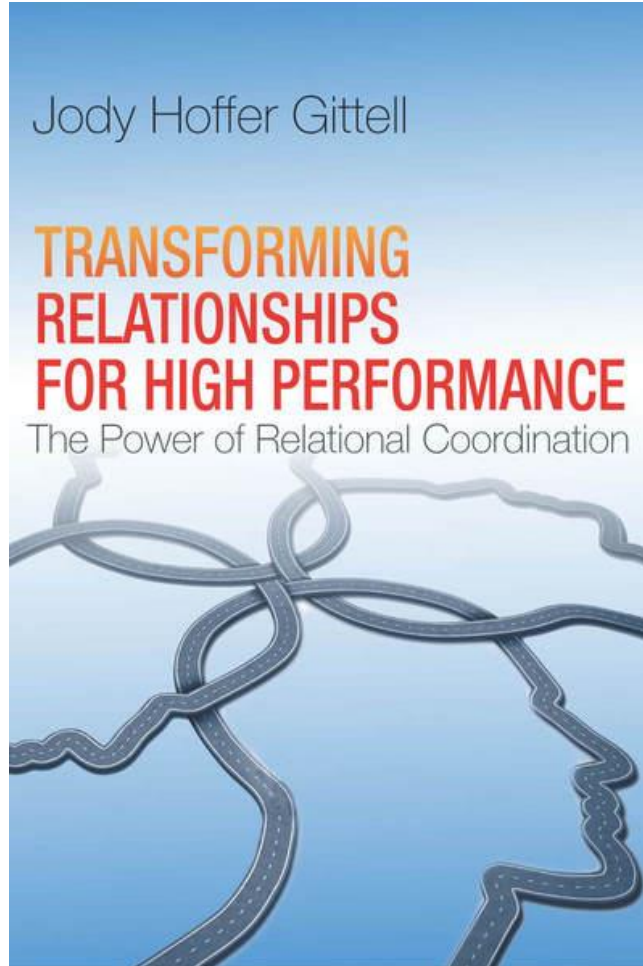




Whole Person (Individualized Care Model)



Whole Team (Relational Coordination Model)



No **significant** work
happens without a
significant relationship.

James Comer

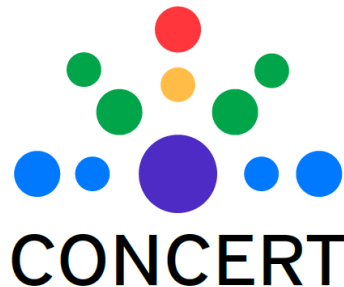
R33 Current Status

Evidence Base Overview

Our Team Huddling Approach led to the founding of VA's nursing home Quality Improvement Organization, CONCERT.

Begun in 2016, CONCERT expanded in 2019 to serve all VA community living centers (VA nursing homes) nationwide, and was expanded again in 2022 to serve all VA state nursing homes nationwide.

Drs. Snow & Hartmann served as the founding co-directors (Frank & Brady as founding faculty), and still serve as consultants to the full-time CONCERT staff of 9 coaches and a director.



PROGRAM PROFILE

Development of a Program to Support VA Community Living Centers' Quality Improvement

Christine W. Hartmann, PhD; Lisa Minor, RN, MSSL; and A. Lynn Snow, PhD

Through implementation of the LOCK bundle of practices, VA Community Living Center staff develop, pilot, and spread new systems for communication, teamwork, and collaborative problem solving as well as for developing skills to participate effectively in these systems.

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US Department of Veterans Affairs (VA) Community Living Centers (CLCs) provide a dynamic array of long- and short-term health and rehabilitative services in a person-centered environment designed to meet the individual needs of veteran residents. The VA Office of Geriatrics and Extended Care (GEC) manages CLCs as part of its commitment to "optimizing the health and well-being of veterans with multiple chronic conditions, life-limiting illness, frailty or disability associated with chronic disease, aging or injury."¹

CLCs are home to veterans who require short stays before going home, as well as those who require longer or permanent domicile. CLCs also are home to several special populations of veterans, including those with spinal cord injury and those who choose palliative or hospice care. CLCs have embraced cultural transformation, creating therapeutic environments that function as real homes, with the kitchen at the center, and daily activities scheduled around the veterans' preferences. Data about CLC quality are now available to the public, highlighting the important role of support for and continual refinement to quality improvement (QI) processes in the CLC system.^{2,3}



CONCERT PROGRAM

High-functioning teams are critical to achieving improvement in such processes.⁴ In fiscal year (FY) 2017, GEC launched a national center to engage and support CLC staff in creating high-functioning, relationship-based teams through specific QI

practices, thereby aiming to improve veteran experience and quality of care. The center, known as the CLCs' Ongoing National Center for Enhancing Resources and Training (CONCERT), is based on extensive VA-funded research in CLCs⁵⁻⁷ and builds on existing, evidence-based literature emphasizing the importance of strengths-based learning, collaborative problem solving, and structured observation.⁸⁻¹³ The CONCERT mission is to support CLCs in ongoing QI efforts, providing guidance, training, and resources. This article summarizes the previous research on which CONCERT is based and describes its current activities, which focus on implementing a national team-based quality improvement initiative.

Earlier VA-funded CLC research included a VA Office of Patient Centered Care and Cultural Transformation local innovation project and 2 VA Office of Research and Development-funded research studies. The local innovation project focused on strengthening staff leadership and relational skills in 1 CLC by engaging leaders and staff in collaborative work to reduce stress. The goal was to build high-functioning team skills through shared projects that created positive work experiences and reduced job-related stress while also improving veteran experience and quality of care.^{14,15} Over the course of a year, 2 national consultants in nursing home quality improvement worked with CLC leadership and staff, including conducting nine 4-day site visits. Using an approach designed to foster development of high-functioning teams,

Our Team-Huddling Approach Results Have Been Published In Upper Tier Peer-Reviewed Journals

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Intervention Research

Applying a Theory-Driven Framework to Guide Quality Improvement Efforts in Nursing Homes: The LOCK Model

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Intervention Research

Impact of Intervention to Improve Nursing Home Resident-Staff Interactions and Engagement

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Methods Discussion

Blended Facilitation as an Effective Implementation Strategy for Quality Improvement and Research in Nursing Homes

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ABSTRACT
Background: Blended facilitation, which leverages the complementary skills and expertise of external and internal facilitators, is a powerful strategy that nursing stakeholders and researchers may use to improve implementation of quality improvement (QI) innovations and research performed in nursing homes.
Problem: Nursing homes present myriad challenges (eg, time constraints, top-down flow of communication, high staff turnover) to QI implementation and research.
Approach: This methods article describes the theory and practical application of blended facilitation and its components (external facilitation, internal facilitation, relationship building, and skill building), using examples from a mixed QI and research intervention in Veterans Health Administration nursing homes.
Conclusions: Blended facilitation invites nursing home stakeholders to be equal partners in QI and research processes. Its intentional use may overcome many existing barriers to QI and research performed in nursing homes and, by strengthening relationships between researchers and stakeholders, may accelerate implementation of innovative care practices.
Key words: evidence-based practice, implementation science, nursing homes, quality improvement, research design


Huddles and their effectiveness at the frontlines of clinical care: a scoping review

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Snow et al. *BMC Geriatrics* (2021) 21:281
<https://doi.org/10.1186/s12877-021-02189-8>
BMC Geriatrics

STUDY PROTOCOL **Open Access**

Enhancing sleep quality for nursing home residents with dementia: a pragmatic randomized controlled trial of an evidence-based frontline huddling program



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Hartmann et al. *Implementation Science Communications* (2021) 2:91
<https://doi.org/10.1186/s43058-021-00195-w>
Implementation Science Communications

RESEARCH **Open Access**

De-implementing and sustaining an intervention to eliminate nursing home resident bed and chair alarms: interviews on leadership and staff perspectives



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Measurement Article


Development of a New Tool for Systematic Observation of Nursing Home Resident and Staff Engagement and Relationship

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n et al. *Implementation Science Communications* (2021) 2:66
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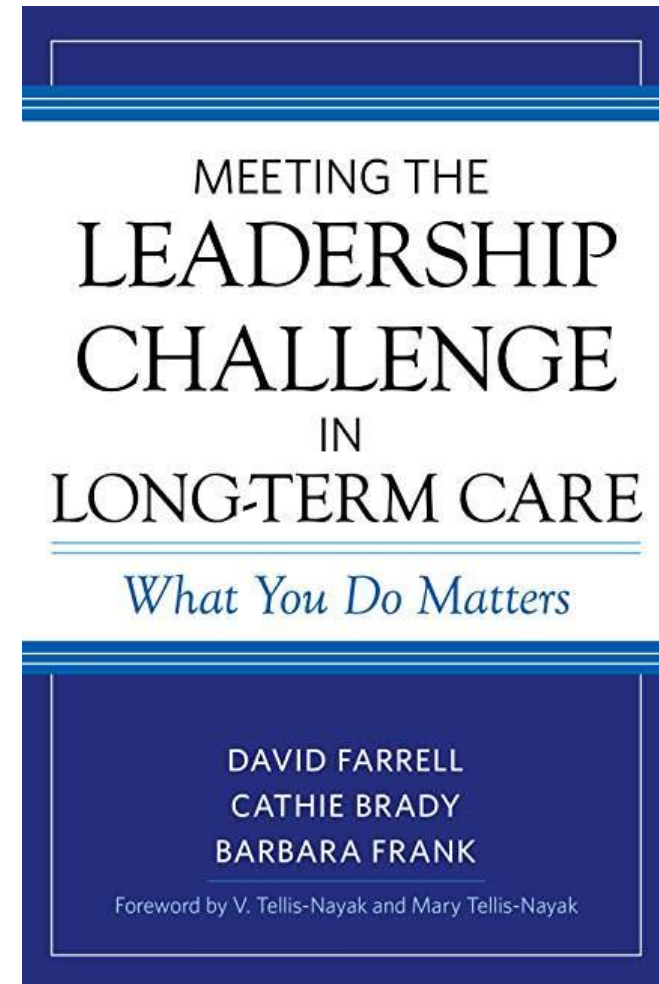
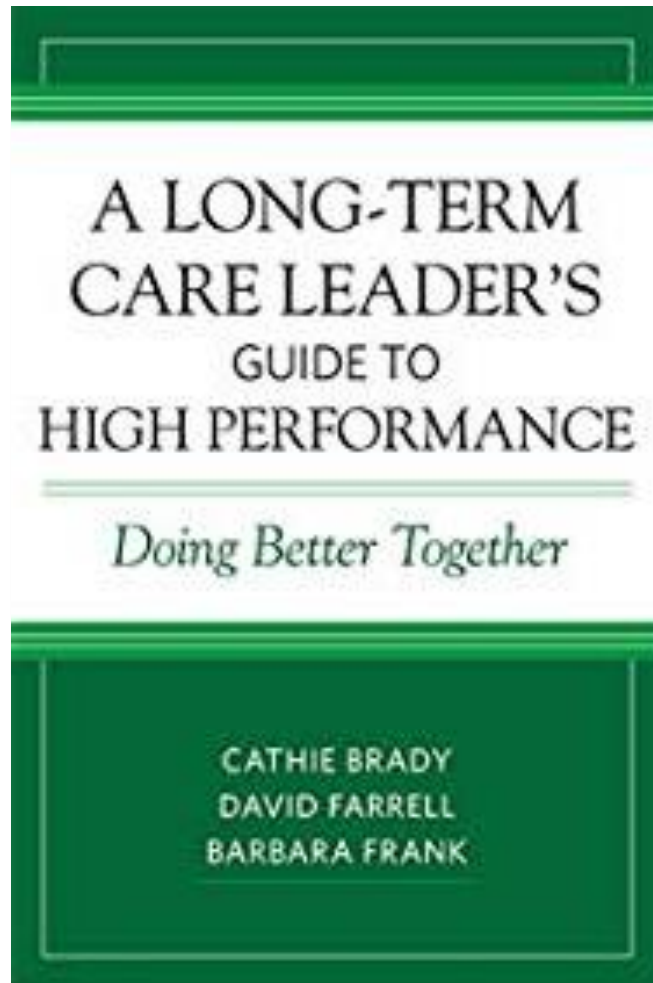
METHODOLOGY **Open Access**

Virtual external implementation facilitation: successful methods for remotely engaging groups in quality improvement



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Our Team Huddling Approach Builds on Foundation Developed by Our Implementation Specialists (Cathie Brady & Barbara Frank)



Lessons learned from two pragmatic trials of personalized music interventions for nursing home residents with ADRD and agitated behaviors

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Disclosures

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- ClinicalTrials.gov identifiers: NCT03821844 & NCT04850807
- The sponsor did not have a role in the design, methods, subject recruitment, data collection, or analyses
- The authors declare no conflicts of interest.

Background

- METRICAL tested the effectiveness of a personalized music intervention for management of agitated behaviors in long-stay nursing home residents with ADRD
- Two parallel trials conducted in 2019 (pre-COVID) and 2021-22 (post COVID vaccine)
- The pre-COVID trial was designed as a Stage III trial (researcher supported trainings, monthly check-in calls, on-site implementation monitoring / support, primary data collection)
- The post-vaccine trial was designed as a Stage IV trial (corporate led trainings, monthly check-in calls, and on-site implementation monitoring / support, rely on administrative data sources)

Preview of Key Findings

- Personalized music reduced verbally agitated behaviors and increased pleasure, as measured using structured observations of residents at standardized times of day
- Personalized music had no effect on agitated behaviors, as measured by asking staff to report the frequency of resident behaviors in the past week
- In the Stage III trial, *some* lower-quality nursing homes serving greater proportions of Black and African American residents were able to achieve high implementation fidelity
- In the Stage IV trial, *no* lower quality nursing homes serving greater proportions of Black and African American residents were able to achieve high implementation fidelity
- We are unable to disentangle the effects of moving to a Stage IV design and COVID effects

Methods

- Trial 1 enrolled 976 residents (483 treatment, 493 control) from 54 NHs (27 treatment, 27 control)
- Trial 2 enrolled 850 residents (431 treatment, 419 control) from 54 NHs (27 treatment, 27 control)
- Target 15 residents per NH, 30 minutes of music per exposed resident day
 - Trial 1: 13 residents per NH, 27 minutes per exposed day
 - Trial 2: 8 residents per NH, 3 minutes per exposed day
- Intervention: Music that was popular when the resident was a young adult, loaded on individual music players, used at early signs of agitation or times when behaviors were likely
- Control: Typical use of music in nursing home, includes music groups, music on tv, and ambient music

Sample Characteristics



Images courtesy of Michael Rossato-Bennett accessed from musicandmemory.org; ucoa.utah.edu/musicandmemory



- 80.3 Years Old
- 70% Female
- 73% white, 25% African American or Black
- 29% had severe ADL impairments
- 80% had ADRD diagnosis in MDS
- 30% receiving antipsychotics at baseline (Trial 1)
37% receiving antipsychotics at baseline (Trial 2)

Methods

- Outcomes assessed at baseline and after four months of intended exposure or usual care
- Agitated Behaviors
 - Researcher observed **verbal** and physical behaviors (Agitated Behavior Mapping Instrument)
 - Staff reported behaviors (Cohen Mansfield Agitation Inventory)
 - Staff reported behaviors (Minimum Data Set, Agitation and Reactive Behavior Scale)
- Other outcomes
 - Researcher observed **pleasure**, anger, anxiety, sadness (Observed Emotion Rating Scale)
 - Resident or staff reported depressive symptoms (Minimum Data Set, PHQ-9)
 - Any *antipsychotic*, antidepressant, or antianxiety medication in past week (Minimum Data Set)

Results

Type	Tool	Trial 1 (2019)	Trial 2 (2021-22)	Interpretation
		Marginal Interaction Effect (95% CI)	Marginal Interaction Effect (95% CI)	
Staff reported behaviors	Cohen-Mansfield Agitation Inventory	1.33 (-1.37, 4.03)	-0.4 (-6.9, 6.0)	No effect
Staff reported behaviors	Minimum Data Set	-0.11 (-0.30, 0.08)	.10 (-0.06, 0.26)	No effect
Researcher observed verbal behaviors	Agitated Behavior Mapping Instrument	0.06 (0.03, 0.09)	NA	6 pp increase in the adjusted proportion of observations displaying no verbal agitation in the intervention group, compared to the control group
Researcher observed physical behaviors	Agitated Behavior Mapping Instrument	0.00 (-0.03, 0.02)	NA	No effect

Takeaways

- Personalized music likely reduces verbal (nonaggressive) behaviors for some residents
 - Treatment: 75% of observations at baseline had no verbally agitated behaviors, compared to 80% at follow-up
 - Control: 81% of observations at baseline had no verbally agitated behaviors, compared to 80% at follow-up
- **BUT**, doesn't reduce behaviors enough to affect staff reporting of behaviors in the past week
- What value do we place on interventions that increase momentary quality of life?
- How do we measure these “moments” pragmatically?

Results

	Trial 1 (2019) Stage III		Trial 2 (2021-22) Stage IV	
	Low Implementation Fidelity Nursing Homes	High Implementation Fidelity Nursing Homes	Low Implementation Fidelity Nursing Homes	High Implementation Fidelity Nursing Homes
African American or Black (%)	24.9	15.8	36.3	1.0
Beds	124.9	84.8	106.4	97.9
CMS quality star rating	2.7	2.4	1.7	3.3
Nursing hours per resident day	3.0	3.3	3.2	3.8

*27 Intervention nursing homes per study (9 low fidelity, 9 medium fidelity, 9 high fidelity)

**Low and high fidelity based on several quantitative measures: the number of residents exposed (coverage), percent of residents with nursing use of music in past week (frequency), dose per day (duration), and adherence to core components (details of content)

Takeaways

- With researcher support, lower quality nursing homes, which disproportionately serve minoritized residents, can implement behavioral interventions with high fidelity
- **BUT**, growing evidence that COVID intensified existing structural inequities, particularly in the nursing home setting
- **AND**, researchers do not provide direct implementation supports in Stage IV pragmatic trials
- What is our responsibility to lower quality nursing homes when we enroll them in ePCTs?

“Perhaps the most important criteria when identifying partners are that the long-term care organization is motivated to change and has the capacity to implement the trial or quality improvement project with fidelity...Unfortunately, these criteria may be at odds with the capacity of poorer performing settings that are most in need of change; if those organizations are excluded, inequity in access may result...it may be reasonable to provide differential implementation support to those providers in acknowledgement of their preexisting disadvantage.”

Zimmerman S, Resnick B, Ouslander J, Levy C, Gaugler JE, Sloane PD, Mor V. Pragmatic Trials and Improving Long-Term Care: Recommendations From a National Institutes of Health Conference. *J Am Geriatr Soc.* 2022 Mar;70(3):688-694.

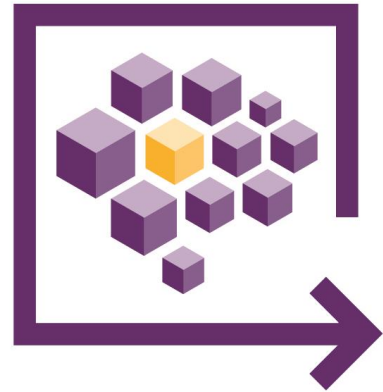
Thank You

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Meeting Adjourns