

# Physician-Focused Payment Model Technical Advisory Committee

## Listening Session 1: *Best Practices for Measuring Quality and Outcomes Related to Caring for Patients with Complex Chronic Conditions or Serious Illnesses in PB-TCOC Models*

### Presenters:

#### *Subject Matter Experts*

- [Brynn Bowman, MPA](#) – Chief Executive Officer, Center to Advance Palliative Care
- [Paul Mulhausen, MD, MHS](#) – Chief Medical Director, Iowa Total Care, a Centene health plan
- [Caroline Blaum, MD, MS](#) – Assistant Vice President, National Committee for Quality Assurance
- [David Kendrick, MD, MPH](#) – Chief Executive Officer, MyHealth Access Network

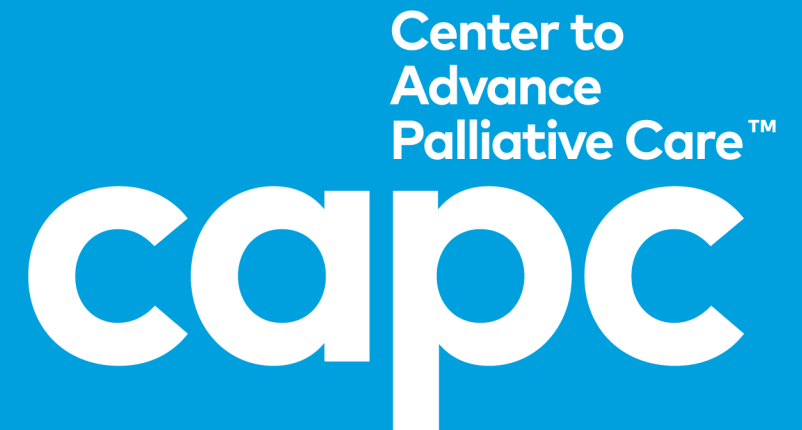
***Listening Session 1: Best Practices for Measuring Quality and Outcomes Related to Caring for Patients with Complex Chronic Conditions or Serious Illnesses in PB-TCOC Models***

**Brynn Bowman, MPA**

Chief Executive Officer, Center to Advance Palliative Care

# Measuring Quality of Care for Patients During the Last Year of Life

**Brynn Bowman**  
**Chief Executive Officer**  
**Center to Advance Palliative Care**  
**June 10, 2024**



# Defining the population

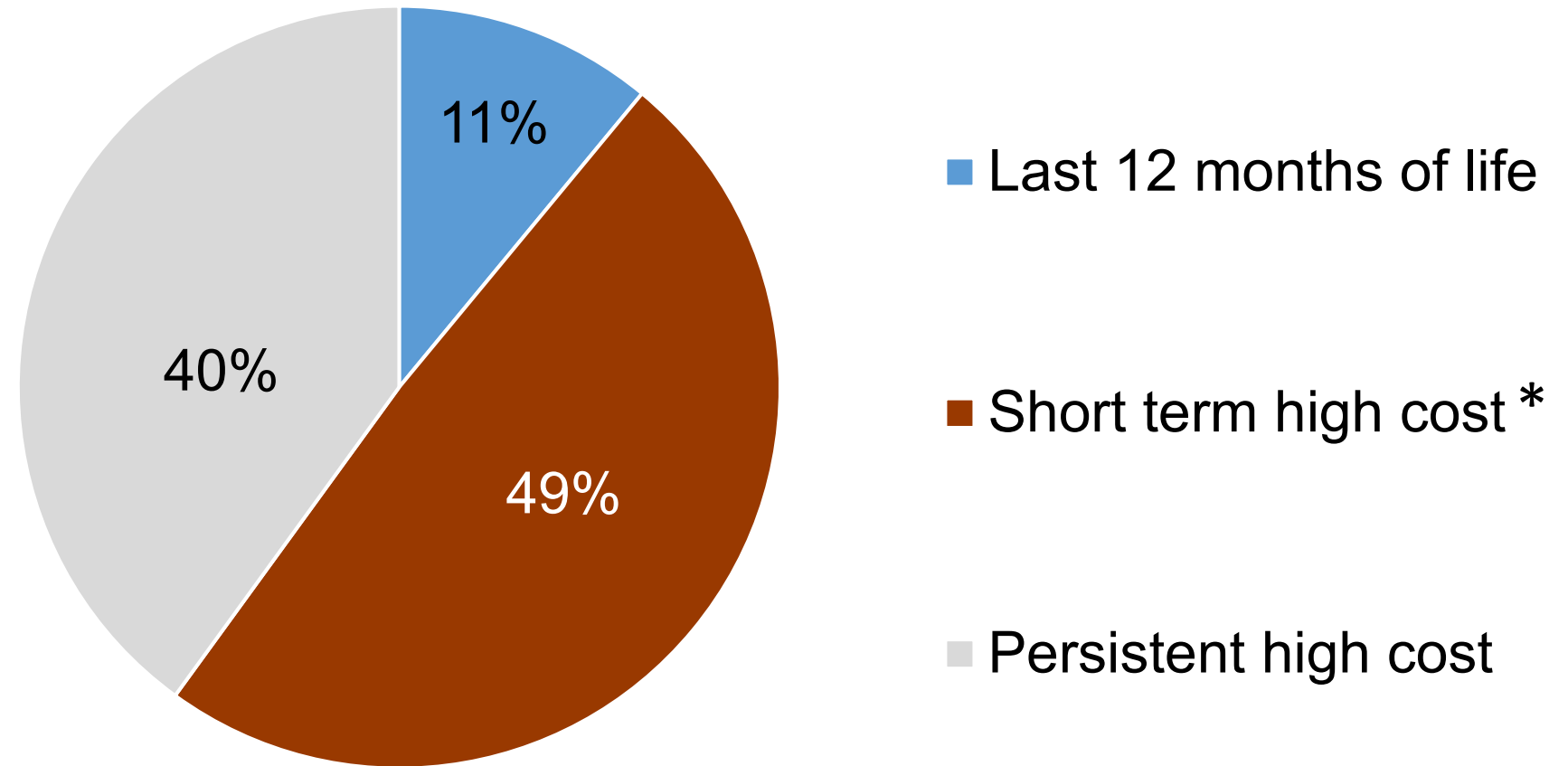
"Serious illness" is a health condition that carries a high risk of mortality AND either:

- Negatively impacts a person's daily function or quality of life

OR

- Excessively strains their caregivers

# Serious Illness, Utilization Patterns, and Health Care Costs



Source: Institute of Medicine,  
*Dying in America*, 2015

# Palliative Care Improves Value

## Hospital Palliative Care

- Improves patient & family satisfaction
- Reduces readmissions, ICU utilization, length of stay, cost per day

## Home-Based Palliative Care

- Saves up to \$12k per enrollee to plans and ACOs
- Reduces ED visits, admissions, readmissions, and hospital LOS

***What can we learn from this about what is important to measure?***

# Palliative Care: Reducing Suffering, Reducing Costs

“Beneficial **at any stage of a serious illness**, palliative care is an interdisciplinary care delivery system designed to anticipate, prevent, and manage physical, psychological, social, and spiritual suffering to **optimize quality of life** for patients, their families and caregivers. Palliative care can be delivered in any care setting through the collaboration of many types of care providers. Through **early integration** into the care plan of seriously ill people, palliative care improves quality of life for both the patient and the family.”

# **Quality Measurement Considerations for Patients with Serious Illness or Complex Chronic Conditions**

- We do not prognosticate accurately – and the majority of high-cost patients are not at the end of life
- Need QMs applied across the trajectory of an illness
- Few validated measures for this population



# Recommended Quality Measures

## “Feeling Heard & Understood” and “Experience of Receiving Desired Help for Pain”

- Developed by the American Academy of Hospice and Palliative Medicine and RAND, validated in outpatient palliative care population
- Patient-reported outcome performance measures (PRO-PMs)
- Endorsed by the National Quality Forum in 2021
- Not yet implemented in Medicare programs

# Targeting Quality Measures at Existing Disparities

- Black patients and caregivers report poor-quality clinician relationships and communication
- Black and Hispanic patients receive poorer-quality pain management than White patients

Lee P, Le Saux M, Siegel R, Goyal M, Chen C, Ma Y, Meltzer AC. Racial and ethnic disparities in the management of acute pain in US emergency departments: Meta-analysis and systematic review. *Am J Emerg Med.* 2019 Sep;37(9):1770-1777. doi: 10.1016/j.ajem.2019.06.014.

# Applying Hospice CAHPS Quality Measures to a Broader Population

## Rationale

Validated measures that speak to the quality of communication, coordination/timeliness of care are important for a patient population that experiences crises and exacerbations

## Items

- How often did you get the help you needed from the [hospice] team during evenings, weekends, or holidays?
- Did the [hospice] team give the training needed about [symptom management]?

## ACO REACH QMs:

- Claims-based measures
- Risk-standardized, all-condition readmission
- All-cause unplanned admissions for patients with MCCs
- Days at home for complex, chronic patients (high needs ACOs)
- Timely follow-up after acute exacerbations (standard/new ACOs)
- CAHPS survey

## ACO REACH CAHPS domains:

- **Getting timely care**
- **Communication**
- **Shared decision-making**
- How the patient rates the provider
- Care coordination
- Courteous/helpful office staff
- Health promotion and education
- Stewardship of beneficiary resources
- Access to specialists
- Activities of daily living

***Need to apply quality measures specific to the population with complex chronic conditions or serious illness.***

# Limitations of Claims-Based Measures: A Key Challenge for this Population

Cannot capture major drivers of utilization:

- Food/housing insecurity
- Cognitive impairment
- Ill-equipped caregiver
- Unsafe home
- Health education needs

**To know whether these needs are being identified and addressed, we have to ask – it's worth the cost.**

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**Paul Mulhausen, MD, MHS**

Chief Medical Director, Iowa Total Care, a Centene health plan

# Patient Reported Outcomes: Opportunities for Complex Populations

**Paul Mulhausen, MD, MHS, FACP, AGSF**

Chief Medical Officer

Iowa Total Care

June 10, 2024

# Disclosure

I am a medical director for a health plan in Iowa.

I am speaking as a geriatrician and my views should not be construed as the formal position of my employer.



# Why Patient Reported Outcomes?

- They amplify the voice of the patient in the assessment of value.
- They help stakeholders move beyond process measures.
- They promote patient-centeredness in care and performance measurement.

# The Language of Patient-Reported Outcome

- Patient Reported Outcomes: an outcome reported by the patient.
  - “I feel depressed.”
- Patient Reported Outcome Measure (PROM): a method by which the reported outcome can be collected into a single-item measure.
  - “Scores 13 on the Patient Health Questionnaire – 9 (PHQ-9)”
- Patient Reported Outcome – Performance Measure (PRO-PM): an aggregate of the patient information into a valid and reliable measurement of performance.
  - “Percent of patients with major depression disorder and PHQ-9 score > 9 scoring < 5 after six months of treatment. “ (NQF 0711)

# The Language of Population Complexity: The Five Ms

- **Multicomplexity:** multiple conditions, multiple providers, multiple locations of service, multiple caregivers, multiple medications.
- **Mobility:** maintaining balance, ability to walk, and avoid falls.
- **Medications:** adverse drug effects are amplified and drug interactions compound multicomplexity.
- **Mind:** maintaining mental activity, manage cognitive loss, managing mood disorders.
- **Matters Most:** person-centered goals of care; treatment plans that reflect goals of care.

# Domains of Patient Reported Outcomes

- Health-Related Quality of Life
- Functional Status
- Symptoms and Symptom Burden
- Health Behaviors
- Motivation and Activation
- Patient Experience and Satisfaction (PREMs)

# Inventory of PRO-PMs

- HealthMeasures: 615 Measures in English Language
- NQF: 52 Measures (30 endorsed by NQF)
- CMS Measures Inventory Tool (CMIT): 57 Measures (23 CBE Endorsed)
- Public Access FOTO measures (MIPS participants): 11
- Partnership for Quality Measurement: 56 Measures (31 CBE Endorsed)

# PRO-PMs Opportunities in Total Cost of Care

- Reliable and Valid PRO-PMs that cut across Domains and Conditions may promote accountability in Total Cost of Care payment models.
- Cross-Cutting PRO-PMs may address both quality and accountability needs in complex populations with serious illness.
- PRO-PMs that capture the performance of care coordination across comorbid disease states and providers may be uniquely valuable.
- Total Cost of Care Model demonstrations create opportunities for measure development and translational research that ensures reliability, validity, acceptance, feasibility, and alignment across payers.

# Barriers to PROM in Complex Populations

- Most PRO-PMs remain disease and episode specific
- Repeated Assessment for long term conditions
- Heterogeneity of measurement
  - Data source: patient vs. proxy
  - Mode of Collection: self-administration, survey
  - Method of Collection: paper and pencil, phone, digital platform
- Heterogeneity of engagement
  - Sensory changes
  - Cognitive loss
  - Health Literacy and Digital Dexterity
  - Disease Burden

# Summary

- PRO-PMs present a high value opportunity to bring the voice of the patient into the accountability and the quality needs of Total Cost of Care payment models.
- Most PRO-PMs are disease based or based on episodes of care and may not be valid or reliable performance measures in medically complex populations.
- Opportunities exist for measure developers and payers to develop cross-cutting PRO-PMs that more effectively meet the accountability and quality improvement needs of seriously ill, medically-complex populations.



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**Caroline Blaum, MD, MS**

Assistant Vice President  
National Committee for Quality Assurance



# Developing and Standardizing Health Equity Measures for Patients with Complex Chronic Conditions or Serious Illness

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**Caroline Blaum, MD, MS**

Assistant Vice President

National Committee for Quality Assurance (NCQA)

June 10, 2024



# *Agenda*

**CURRENT STATE: MEASURES IN USE**

**NCQA APPROACH**

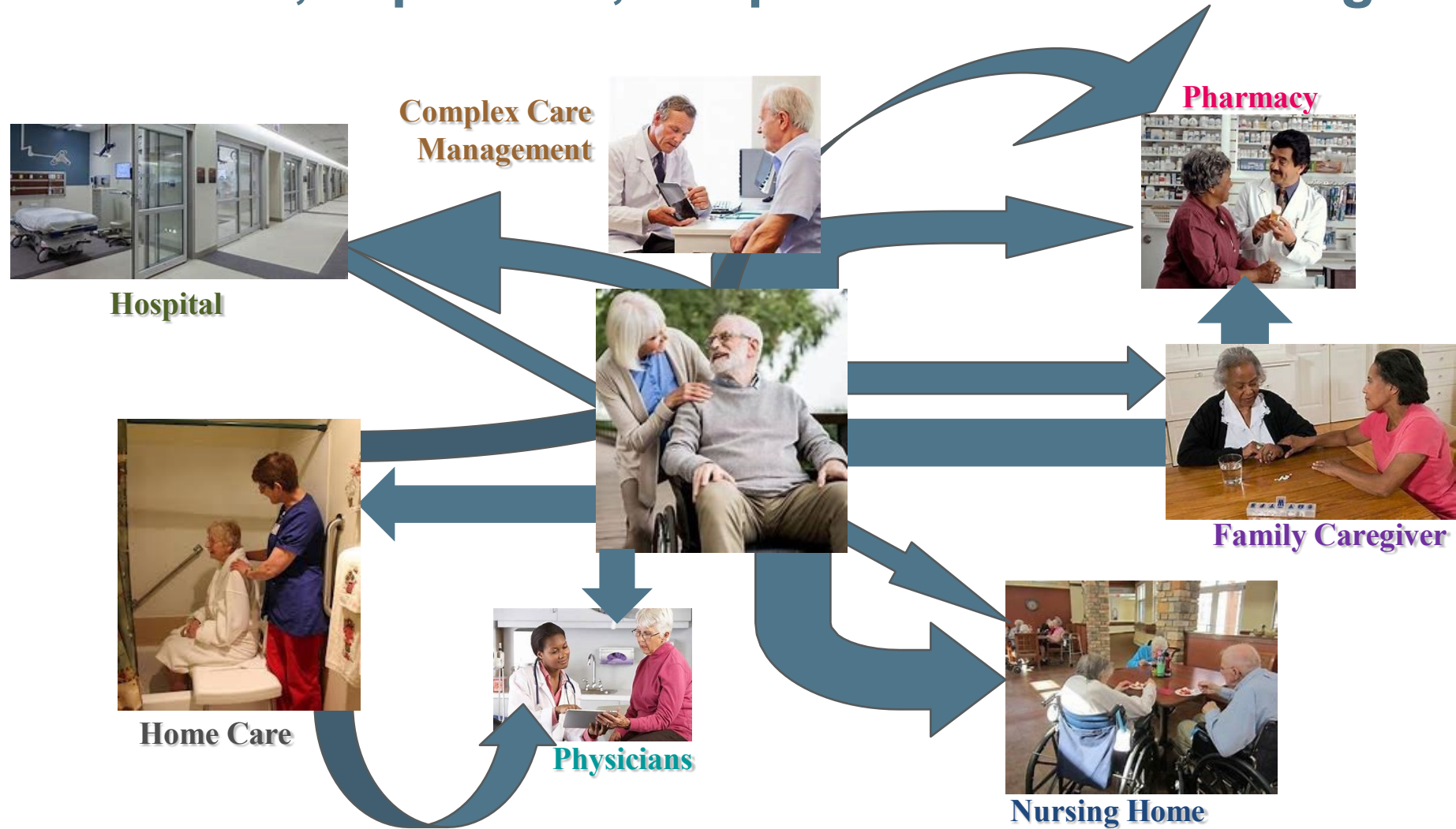
**FUTURE MEASURES**

**USE CASE: PERSON-CENTERED OUTCOME MEASURES**

**BEST PRACTICES**

*Dr. Blaum has no disclosures.*

# Complex patients experience fragmented care that is often burdensome, expensive, inequitable and even dangerous



# Care for seniors with complex health status is not based on evidence

- Major trials are disease specific and evaluate disease specific outcomes
  - People with multimorbidity, disability, or frailty are not usually in trials
  - Trials have minimal information on adverse events
  - Some areas (BH<sup>1</sup>, SUD<sup>2</sup>) are poorly covered
- Need new and different evidence
  - Treatment effects on common goals (function, symptoms, survival) for persons with multimorbidity/frailty or serious illness
- Need to consider trade-offs, uncertainty, trajectory and complexity
- Need to infuse Equity throughout, using community engagement and best practices

<sup>1</sup> BH – Behavioral Health

<sup>2</sup> SUD – Substance Use Disorder

# In order to provide quality care for complex patients, we need to keep three perspectives in mind – 1) Person, 2) Provider, 3) Payer



## Current Measures:

- Often **not relevant** for or exclude complex patients
- Sometimes cover important activities but **can feel like “box checking”**
- **Don’t clearly foster integration** of personal and medical care



## Future measures need to...

- Address **equity** and “**what matters most**” to the person
- **Improve communication** between providers and with people and their families
- **Can be flexible and usable in many clinical settings** with different people and different clinician types, improving care integration

# Populations with chronic conditions and/or serious illness

*Measure Types: How does equity fit in?*

Patient Populations	Process/Structure Measures	Outcome Measures:
<ul style="list-style-type: none"> <li>• Multiple chronic conditions</li> <li>• Frail</li> <li>• Behavioral Health</li> <li>• Substance Use Disorder</li> <li>• Disabled</li> <li>• SOGI<sup>3</sup></li> <li>• Socioeconomic challenges</li> <li>• End of Life</li> </ul>	<ul style="list-style-type: none"> <li>• Population Health – immunizations/screening</li> <li>• Structural/Operational</li> <li>• Effectiveness of Care</li> <li>• Patient Safety</li> <li>• Behavioral Health</li> <li>• Substance Use</li> <li>• Care Coordination</li> <li>• Social Needs</li> <li>• Social Connection</li> </ul>	<ul style="list-style-type: none"> <li>• Intermediate outcomes</li> <li>• Utilization – risk adjusted</li> <li>• Patient reported information</li> <li>• Patient reported outcomes</li> <li>• Patient engagement</li> <li>• Patient experience</li> <li>• Patient goal achievement</li> <li>• Burden – patient/ caregiver</li> </ul>

<sup>3</sup> SOGI – Sexual Orientation and Gender Identity

# Quality Care is Equitable Care

## *NCQA Approach*

### Existing measures

- Stratification by race, ethnicity and sociodemographic
- Inclusion of sexual orientation and gender identity (SOGI) – for relevant measures

### **New measures: Patient generated information, incorporating the patient voice**

- Social Needs Screening; Social connection
- Patient experience; Patient-reported outcome
- Patient goals → Current care planning and advance care planning

### **Patient partners and patient/care partner engagement throughout measure development**

### **Community engagement – lived experience and experts**

### **Learning communities and collaboratives**



# Race & Ethnicity Stratification – Goals

## Overall goal of this work:

Bring transparency to inequities in health care quality by **race and ethnicity** and incentivize equity with benchmarks and performance scoring.

## What has been done so far:

22 HEDIS measures stratified

Learning Network with health plans on collection and reporting of race and ethnicity data and sources to access those data

# Race & Ethnicity Stratification – Learning Network

*Pairing Quantitative and Qualitative Insights*

## Quantitative

**Plans submitted population-level HEDIS data on measures stratified by R/E in MY2022**



First look at performance in real-world settings.



Evaluate what patterns we might expect, inform questions we ask in first year analysis and in future maintenance.

*\*11 plans submitted data*

## Qualitative

**Plans interviewed with NCQA Equity in HEDIS Team to share insights**



Gain an understanding of how plans are integrating the stratification into their work.



Learn about challenges and successes with the data, and how different organizations use it to inform quality improvement efforts.

*\*13 plans participated in interviews*

# Social Need Screening and Intervention (SNS-E)

## *Measure Specification*

### Measure Description

The percentage of members who, during the measurement period, were screened at least once for unmet food, housing and transportation needs using a pre-specified screening instrument and, if screened positive, received a corresponding intervention.

<sup>4</sup>I-SNP – Institutional Special Needs Plan

<sup>5</sup>LTI – Long Term Institutional

### Product Lines

Commercial, Medicaid, Medicare

### Data Source

Electronic Clinical Data Systems

### Exclusions

Hospice

I-SNP<sup>4</sup>

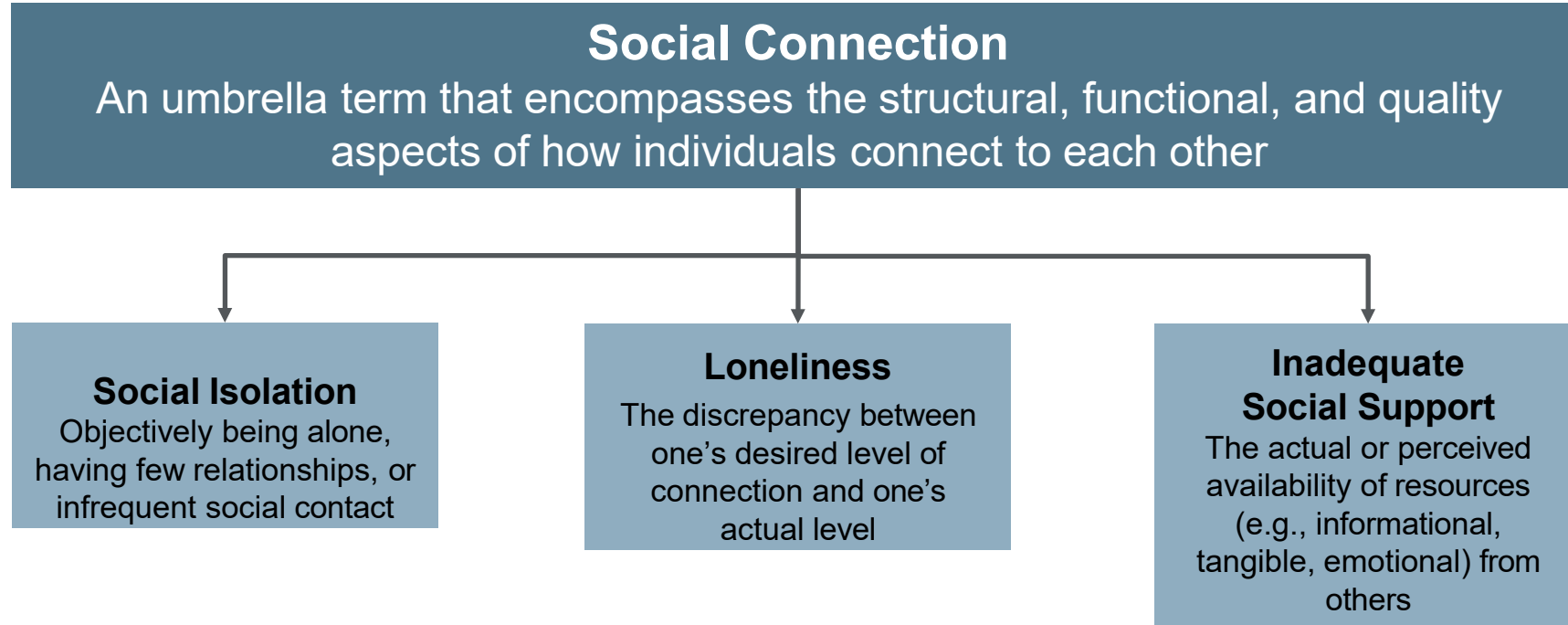
LTI<sup>5</sup>

### Age Stratification

- ≤17
- 18-64
- 65+

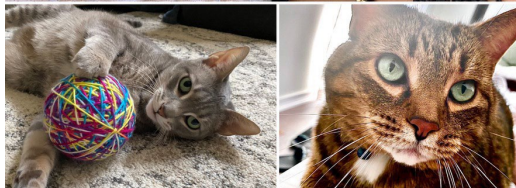
# Social Connection

*Evidence emerging*



Measure will capture social connection screening and interventions for initial population.

# What matters most?



# Promoting health equity through measuring what matters most

*Organizing a healthcare system around what matters to people, their families and their community*

- For **individuals with complex care needs**, care should align with what matters to them, their health outcome goals
- **Measurement can be used to drive care that matters** and encourage clinicians to deliver care aligned with health outcome goals
- For quality measures, health outcome **goals must be measured and tracked in a standardized way**



# Person-Centered Outcomes (PCO) Measures

## Initial Population

Individuals 18+ years of age with a complex care need

## Exclusions

Hospice  
Long Term Care (institutional)  
Died during measurement year

## Reporting Method

Electronic Clinical Data Systems (ECDS)

## Data Source

Administrative claims, EHR, case management, HIE

## Measure Description

**Measure 1 - Goal Identification:** % of individuals 18 years of age and older with a complex care need who had a PCO goal identified resulting in completion of goal attainment scaling (GAS) or a Patient-Reported Outcome Measure (PROM) and development of an action plan.

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**Measure 2 - Goal Follow-up:** % of individuals 18 years of age or older with a complex care need who received follow-up on their PCO goal within two weeks to six months of when the PCO goal and GAS or PROM were identified.

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**Measure 3 - Goal Achievement:** % of individuals 18 years of age or older with a complex care need who achieved their PCO goal within two weeks to six months of when the PCO goal and GAS or PROM were identified.

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# 2021 – 2024 Testing Efforts

*Funded by The John A. Hartford Foundation and The SCAN Foundation*

2018-2020 Testing	
<b>Site Descriptions</b> <ul style="list-style-type: none"> <li>• Medicaid Case Management</li> <li>• Traditional Case Management</li> <li>• Geriatric and Serious Illness Programs</li> </ul>	1300+ Individuals
	100+ Clinicians
	13 Sites
<b>Clinician Types:</b> RN, NP, SW, MD, Peer Navigator, Care Manager	
<b>Location:</b> California, Kansas, Maryland, Michigan, New York, North Carolina, Ohio, Oregon, Texas, Washington, Wisconsin	

2021-2024 Testing	
<b>Site Descriptions</b> <ul style="list-style-type: none"> <li>• Area Agencies on Aging</li> <li>• Care Coordination Organization</li> <li>• Certified Community Behavioral Health Clinics</li> <li>• Home Based Primary Care</li> </ul>	5000+ Individuals
	180+ Clinicians
	17 Sites
<b>Clinician Types:</b> RN, NP, SW, MD, Community Health Worker, Peer Navigator, Care Manager, Qualified Mental Health Professional, Counselors, Licensed Therapists	
<b>Location:</b> Arizona, California, New Jersey, Ohio, Tennessee, Texas	



# Person-Centered Outcome Measures & Health Equity

*High-quality care is equitable care.*

## **Investigate:**

- Analysis of measure data included **comparison of race, ethnicity, preferred language, social needs, and payer.**
- This helped NCQA understand how these measures **impact different populations** and **if these measures would benefit from measure stratification.**

## **Identify:**

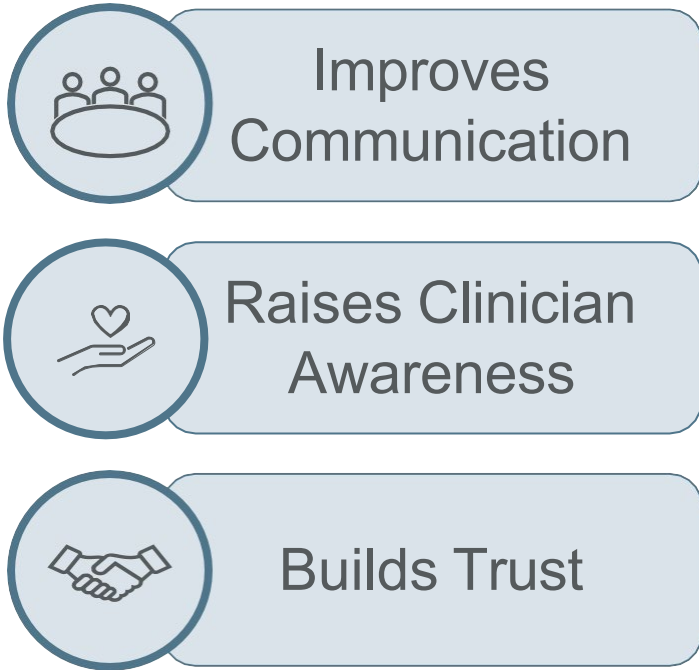
- Specific efforts were made during learning collaborative recruitment to **engage organizations serving diverse populations.** NCQA provided coordinated technical assistance and resources that addressed measurement, clinical workflow and clinical decision-making in diverse populations.
- To ensure patient-facing materials resonate with diverse populations, **measure resources are available in 7 languages** (Arabic, Chinese – Simplified and Traditional, English, Russian, Spanish, and Vietnamese) and Patient Partners reviewed all materials (including goal inventories) for clarity, direction, and appropriateness for use with patients and care partners.

## **Elevate:**

- NCQA developed and disseminated messages about the measures **using information, data and stories that resonate with, and demonstrate value for, diverse populations and viewpoints.**
- **Patient partners and expert panels** that included people with lived experience and community partners as well as experts and other stakeholders were involved at all stages of measure development and testing.

# What we've learned from testing

## Qualitative Results



## Quantitative Results

For a sub-group, we found 6-months post-intervention:

- Significant decrease in hospitalizations
- Non-significant decrease in ED use
- Improved patient experiences concerning care planning and patient activation

# Best Practices

Consider all areas of social demographic risk and location to better target inequities

Race/Ethnicity stratification is important but only a component

Link equity to whole person / person-centered care, and identify barriers to health and quality of life

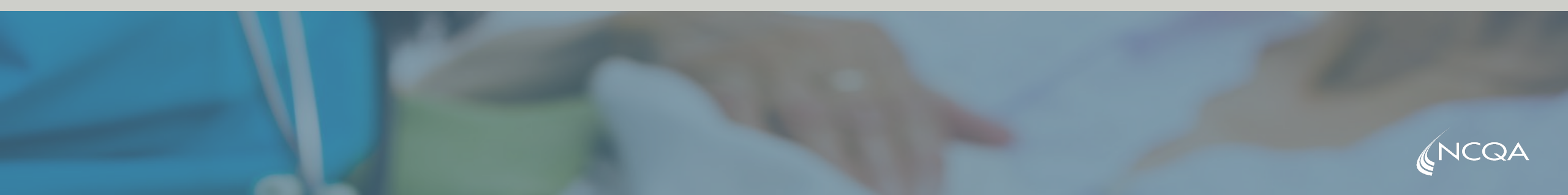
Take perspectives not just from the healthcare industry but also our patients, families and communities

Think deeply about our process of measurement

- Do no harm and remove privilege from the process
- Have people at the focus of our work and not payment



# Appendix

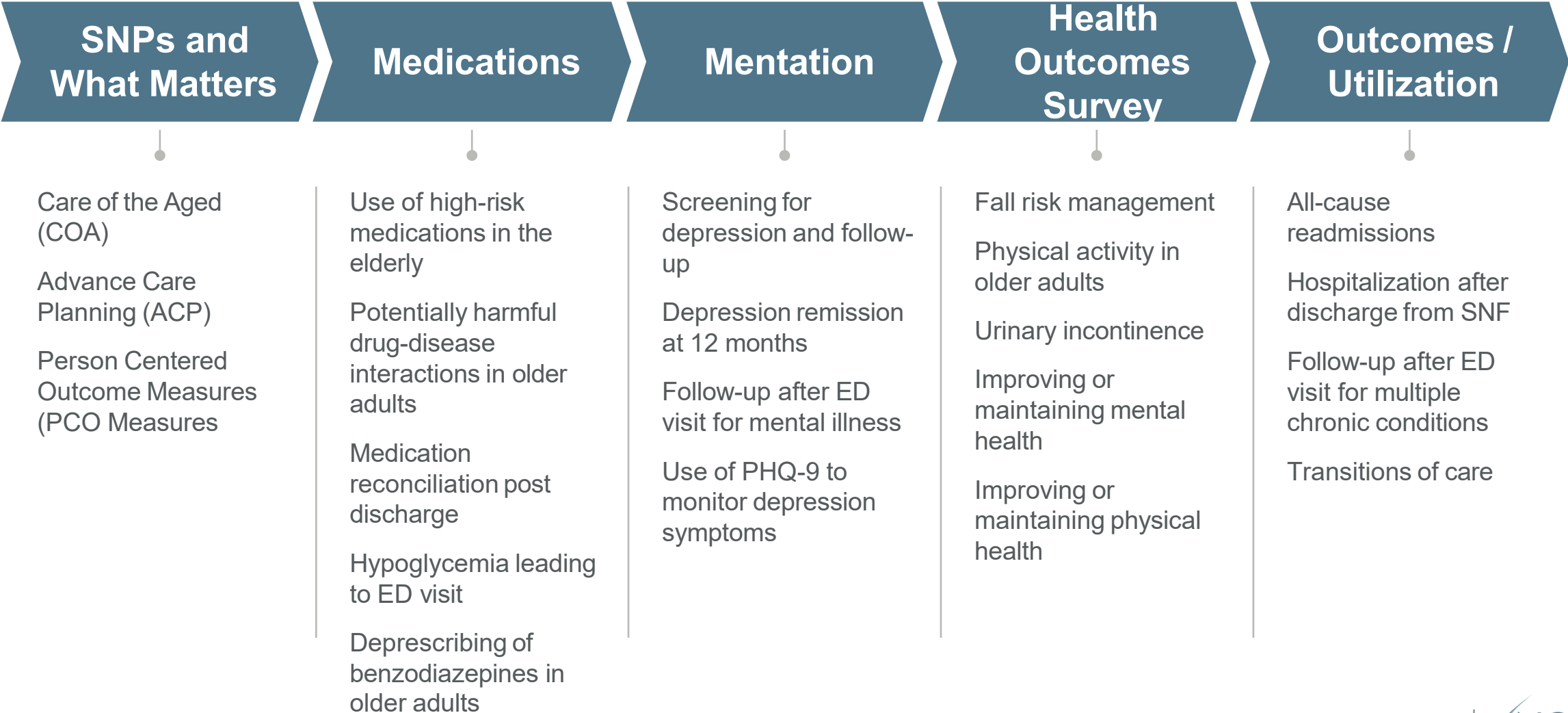


# Portfolio of Stratified Measures: Measurement Year 2024

Domain	Measure
Prevention and Screening	Prenatal Immunization Status
	Childhood Immunization Status
	Immunizations for Adolescents
	Adult Immunization Status
	Breast Cancer Screening
	Cervical Cancer Screening
	Colorectal Cancer Screening
Behavioral Health	Initiation and Engagement of Substance Use Disorder Treatment
	Follow-Up After Hospitalization for Mental Illness
	Follow-Up After Emergency Department Visit for Mental Illness
	Follow-Up After Emergency Department Visit for Substance Use
	Pharmacotherapy for Opioid Use Disorder
	Prenatal Depression Screening and Follow-Up
	Postpartum Depression Screening and Follow-Up
Chronic Conditions	Asthma Medication Ratio
	Controlling High Blood Pressure
	Glycemic Status Assessment for Patients With Diabetes
	Eye Exam for Patients With Diabetes
	Kidney Health Evaluation for Patients With Diabetes
Perinatal and Well Visits	Prenatal and Postpartum Care
	Child and Adolescent Well Care Visits
	Well-Child Visits in the First 30 Months of Life

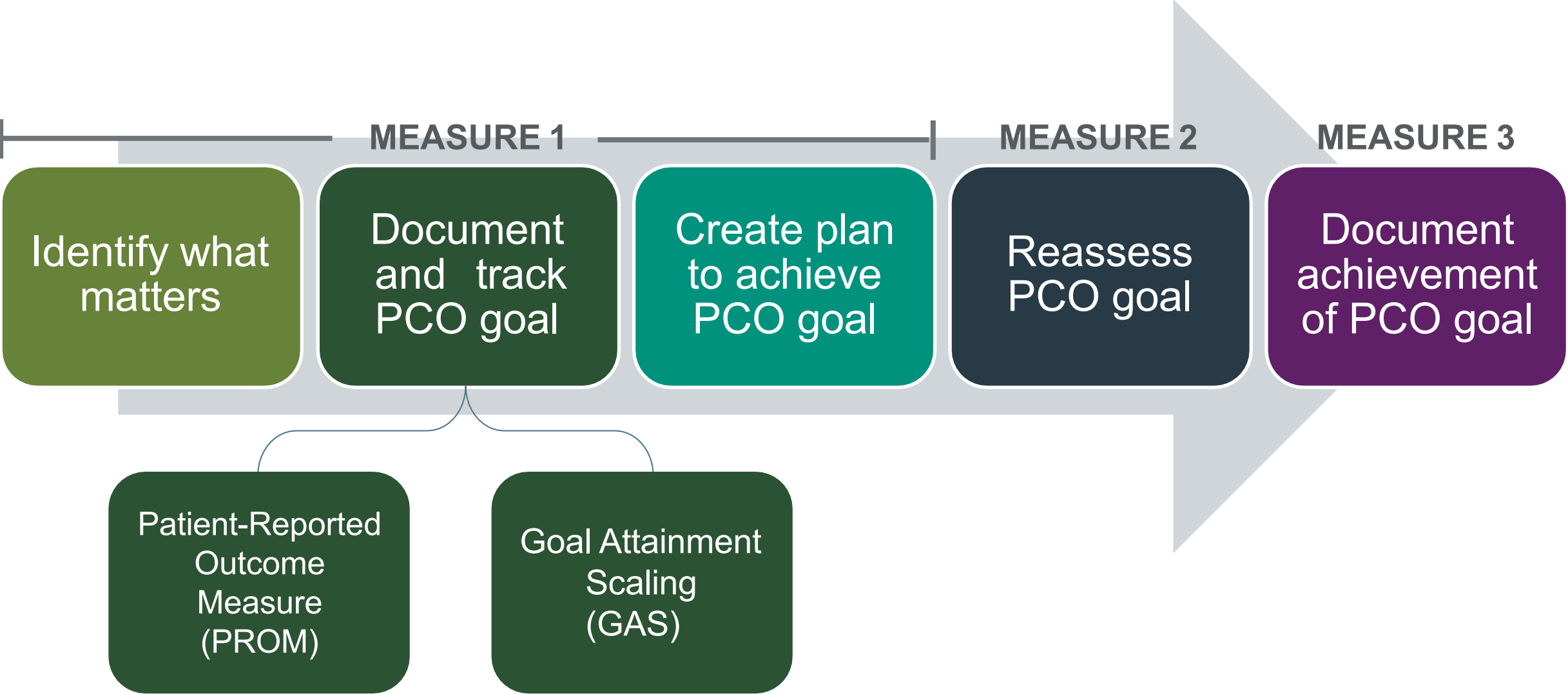
# Geriatric Measures: Overview

*Measures for people with complex health status. Varying sophistication*



# Person-Centered Outcomes Approach

*Measuring what individuals say matters most to them*



# Goal Attainment Scaling

*Example: 82-year-old person with mobility problem, depression, history of arthritis and heart failure*

**Goal:** Walk her dog outside once a week for the next 2 months.

<b>Worse (-2)</b>	<b>Current State (-1)</b>	<b>Realistic Goal (0)</b>	<b>Stretch Goal (+1)</b>	<b>Super Stretch Goal (+2)</b>
Unable to let the dog outside.	Does not go outside to walk her dog	Walk her dog outside once a week for the next 2 months.	Walk her dog outside twice a week for the next 2 months.	Walk her dog outside three times a week for the next 2 months.

**What could be worse**

**Current State**

**Where they want to be**



# Patient-Reported Outcome Measures (PROMs)

*Selecting the best PROM to fit the goal*

Examples		
Participant Goal	PROM Selected to Measure Progress	Reason PROM Chosen
<b><i>Match PROM to goal topic</i></b>		
Walk around the block 2 times per week	PROMIS Physical Function	PROM related to goal
Take medication regularly	PROMIS Self-Efficacy to Manage Medications/Treatment	Individual does not take daily medications regularly causing health condition to worsen
<b><i>Match PROM to barrier</i></b>		
Go out with friends 2 times per month	GAD-7	Individual has anxiety which is causing them to stay home
Be able to live at home	PROMIS Self-Efficacy to Manage Daily Symptoms	Individual has difficulty managing everyday activities
Apply to 5 jobs in the next 2 months.	PHQ-9	Individual is depressed, which has stopped them from looking for a job

# Learning Collaborative Demographic Data

## Primary Care/Long-Term Services and Supports (LTSS)

**N=2,651**

- Average Age = 65 years old
- Majority female (68.3%)
- **Majority of individuals either had Medicaid (50.7%) or were Dual Eligible (35.1%)**
- **49.8% of individuals were Black or another minority with 45.5% being White**
- 88% were not Hispanic, with 72.6% noting English as their preferred language
- Majority of individuals did not identify a social determinant of health need

## Behavioral Health – Certified Community Behavioral Health Clinics

**N=5,872**

- Average Age = 41 years old
- Majority female (52.4%)
- **Majority of individuals were either uninsured (39.9%) or had Medicaid (34.9%)**
- **65.7% individuals who participated were White**
- **39.9% were Hispanic**, with 91% noting English as their preferred language
- Majority of individuals did not identify a social determinant of health need

# PCO Measure Performance

**Measure 1: Goal Identification**

**Measure 2: Goal Follow-up**

**Measure 3: Goal Achievement**

	Primary Care/LTSS (N=5 sites)			Behavioral Health (N=8 sites)		
	Measure 1	Measure 2	Measure 3	Measure 1	Measure 2	Measure 3
<b>Mean</b>	51.8%	31.0%	13.9%	76.1%	13.2%	4.2%
<b>Min</b>	18.1%	11.8%	4.6%	6.9%	0.0%	0.0%
<b>Median</b>	40.1%	20.0%	9.7%	99.9%	9.7%	1.9%
<b>Max</b>	86.7%	60.6%	35.7%	100.0%	47.9%	12.1%

# Measure Performance Stratification

## *Race, Ethnicity and Preferred Language*

	Primary Care/LTSS			
	n	Measure 1	Measure 2	Measure 3
<b>Race</b>				
White	1205	64.8%	40.3%	23.9%
Black or African American	757	57.1%	29.7%	17.8%
Asian	331	29.6%	14.0%	8.4%
American Indian or Alaska Native	0	-	-	-
Native Hawaiian or Other Pacific Islander	0	-	-	-
Some Other Race	171	37.3%	17.3%	8%
Two or More Races	61	23.1%	11.5%	1.9%
<b>Ethnicity</b>				
Hispanic or Latino	216	27.4%	16.1%	5.6%
Not Hispanic or Latino	2338	55.6%	31.4%	18.1%
<b>Preferred Language</b>				
English	1925	65.6%	37.2%	19.8%
Spanish	107	31.3%	17.9%	10.4%
Other	530	34.5%	19.3%	14.0%

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**David Kendrick, MD, MPH**

Chief Executive Officer, MyHealth Access Network

# Quality and Outcomes Achievement in Complex Conditions and Serious Illness

Technology, Data, and Continuous Improvement

**David C. Kendrick, MD, MPH**

# Disclosures

## David C. Kendrick, MD, MPH

- CEO, MyHealth Access Network
  - Oklahoma's Statewide Health Information Exchange
- Chair, Department of Informatics, OU School of Community Medicine
- Assistant Provost for Strategic Planning, OU Health Sciences Center
- Founder of MedUnison, LLC and developer of Doc2Doc
- Immediate Past Chair, Board of National Committee for Quality Assurance
- Board, CIVITAS Networks for Health
- Board, Patient Centered Data Home, nationwide interoperability model

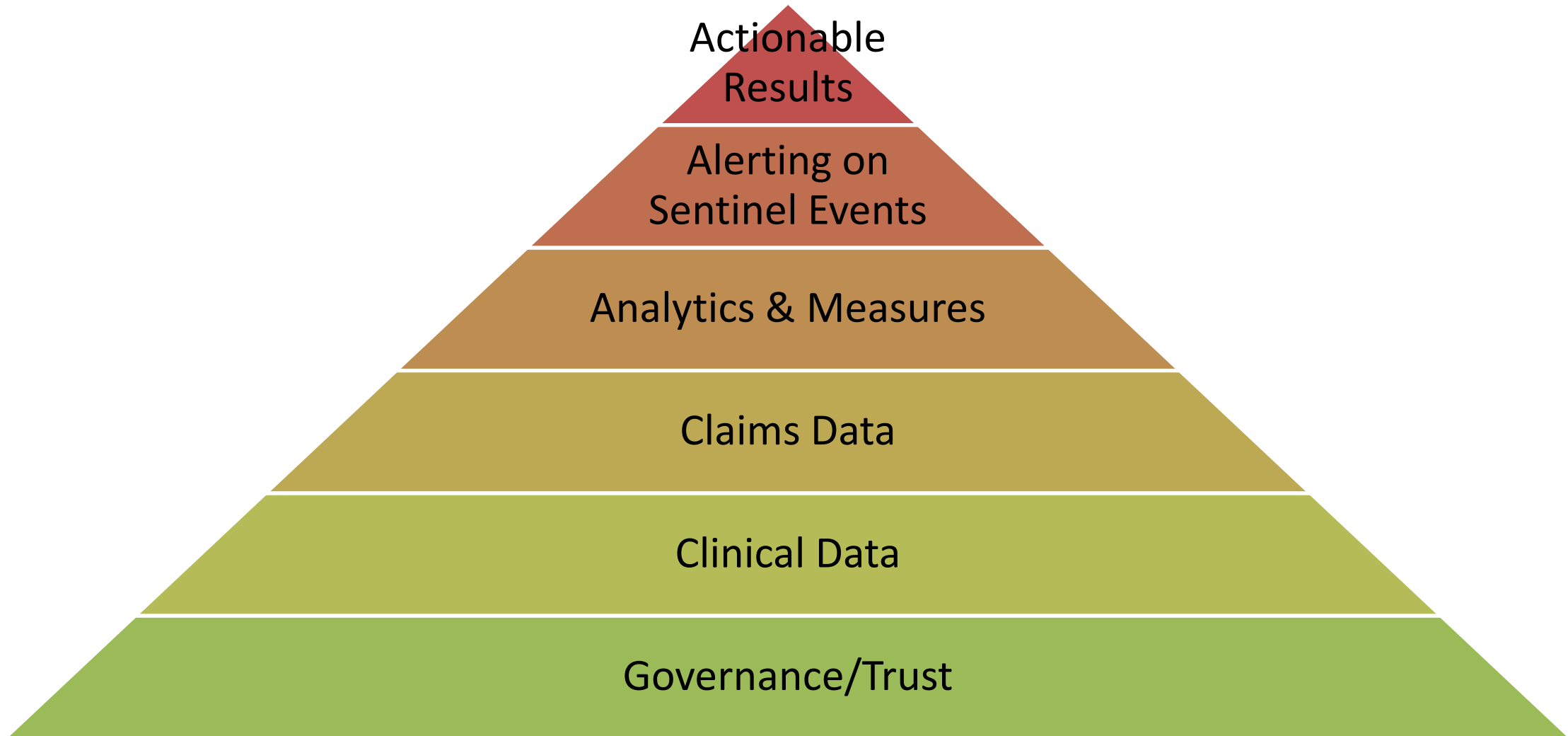


# Experience with CMMI Models

Model	Roles	Timing
Comprehensive Primary Care Initiative (CPC Classic)	<ul style="list-style-type: none"> <li>• Convener</li> <li>• National Faculty</li> <li>• Data Aggregator</li> </ul>	2012-2016
CPC+	<ul style="list-style-type: none"> <li>• Data Aggregator</li> <li>• National Faculty</li> <li>• Convener</li> </ul>	2017-2021
Accountable Health Communities	<ul style="list-style-type: none"> <li>• Principle Investigator</li> <li>• Bridging Organization</li> </ul>	2016-2022
Primary Care First	<ul style="list-style-type: none"> <li>• Event Alerting</li> <li>• Proposed:               <ul style="list-style-type: none"> <li>• Data Aggregator</li> <li>• Social Determinants of Health Screening</li> <li>• Convener</li> </ul> </li> </ul>	2022-?



# Choosing Sites for Testing Innovation

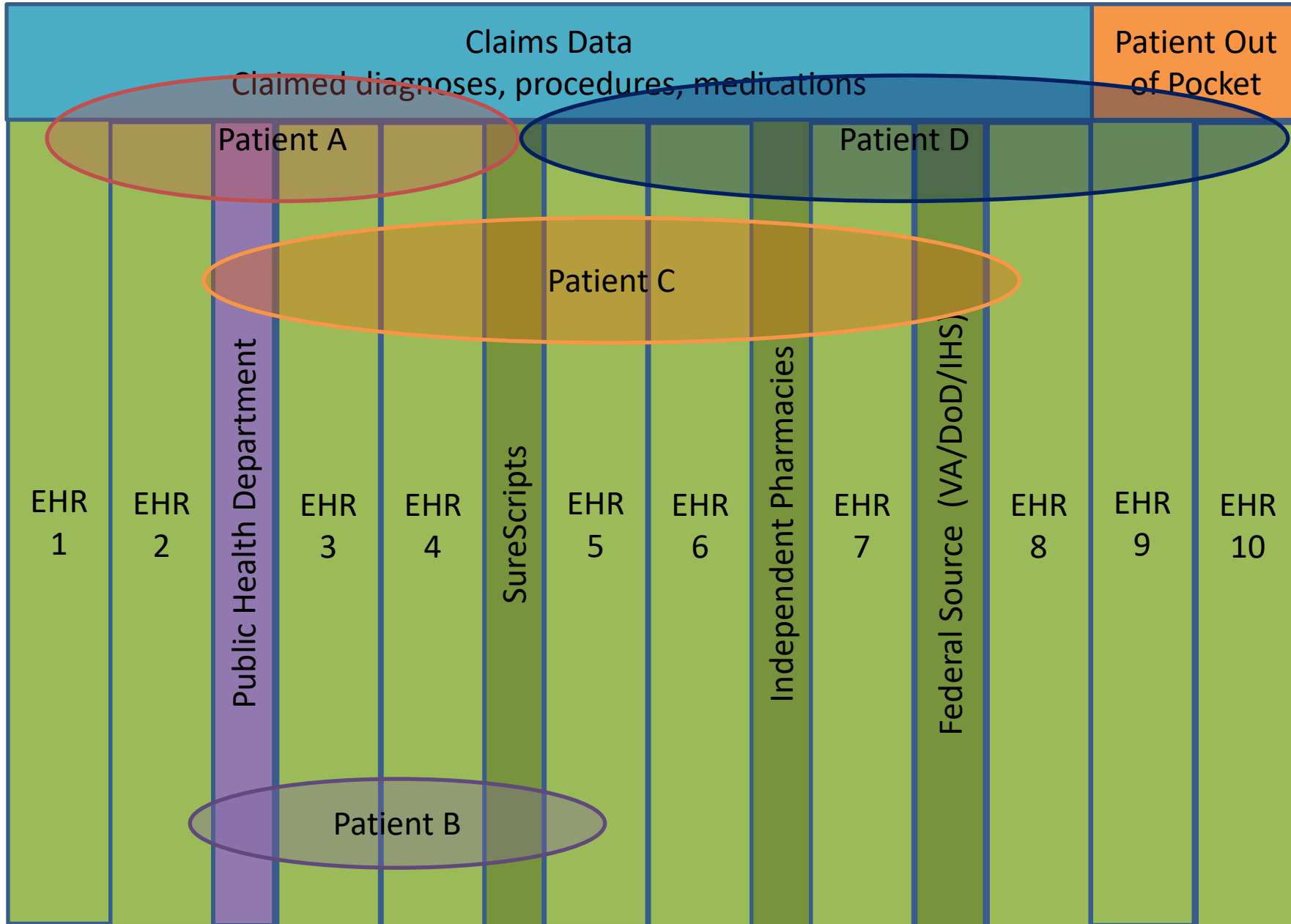


# Agenda

1. Is standardized patient data needed for multiple providers caring for patients with complex chronic conditions or serious illnesses in PB-TCOC models? If so, how?
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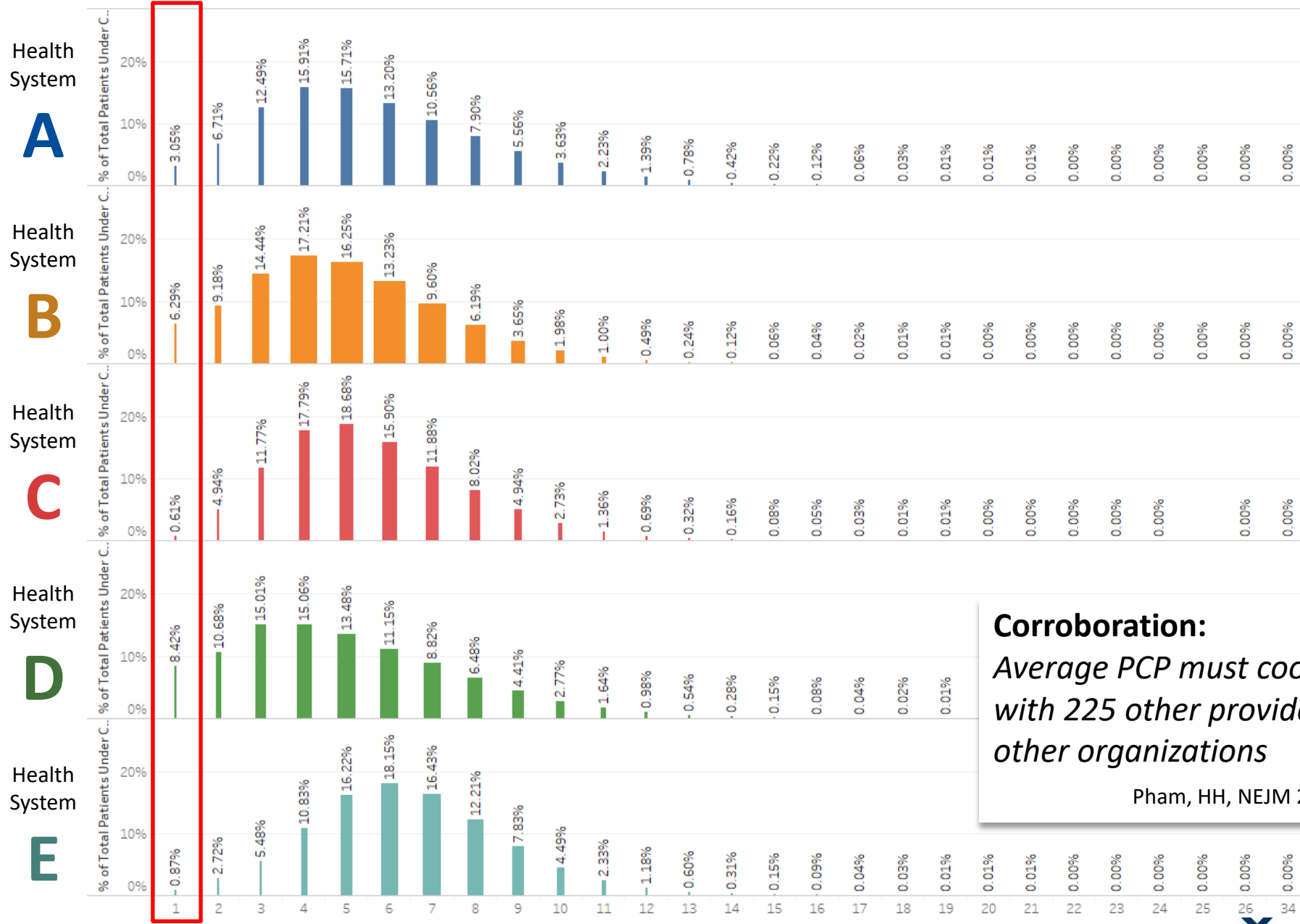
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Claims: Medicaid		Claims: Commercial 1		Claims: Commercial 2		Claims: Commercial 3		Claims: Commercial 4		Medicare Commercial				
Patient A		Patient D												
Patient C														
EHR 1	EHR 2	Public Health Department		EHR 3	EHR 4	SureScripts		Independent Pharmacies		Federal Source (VA/DoD/IHS)		EHR 8	EHR 9	EHR 10
Patient B														

# Data fragmentation by health system



**Corroboration:**  
*Average PCP must coordinate care with 225 other providers in 117 other organizations*  
 Pham, HH, NEJM 2007; 356: 1130-1139

Athena

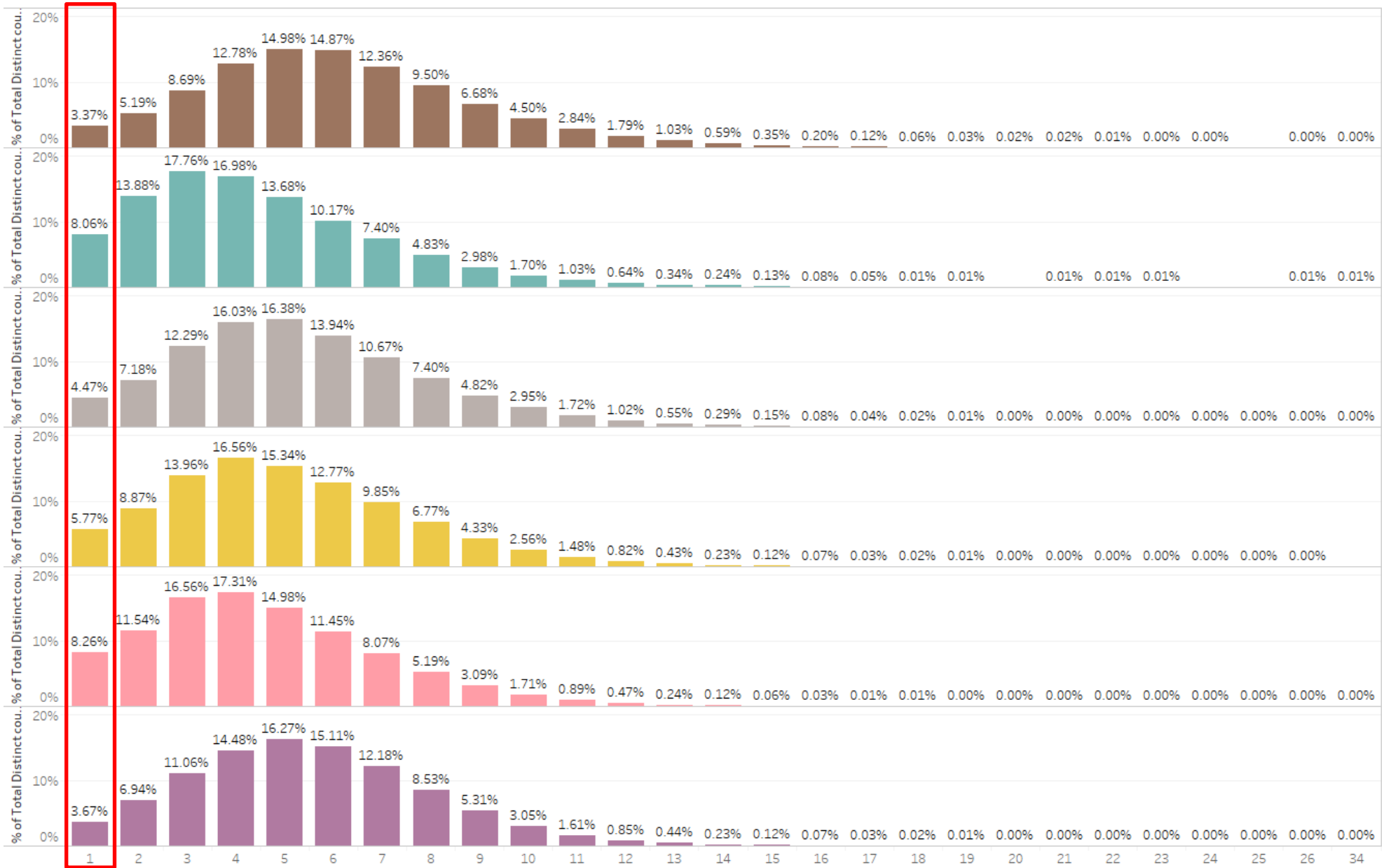
CPSI

Cerner

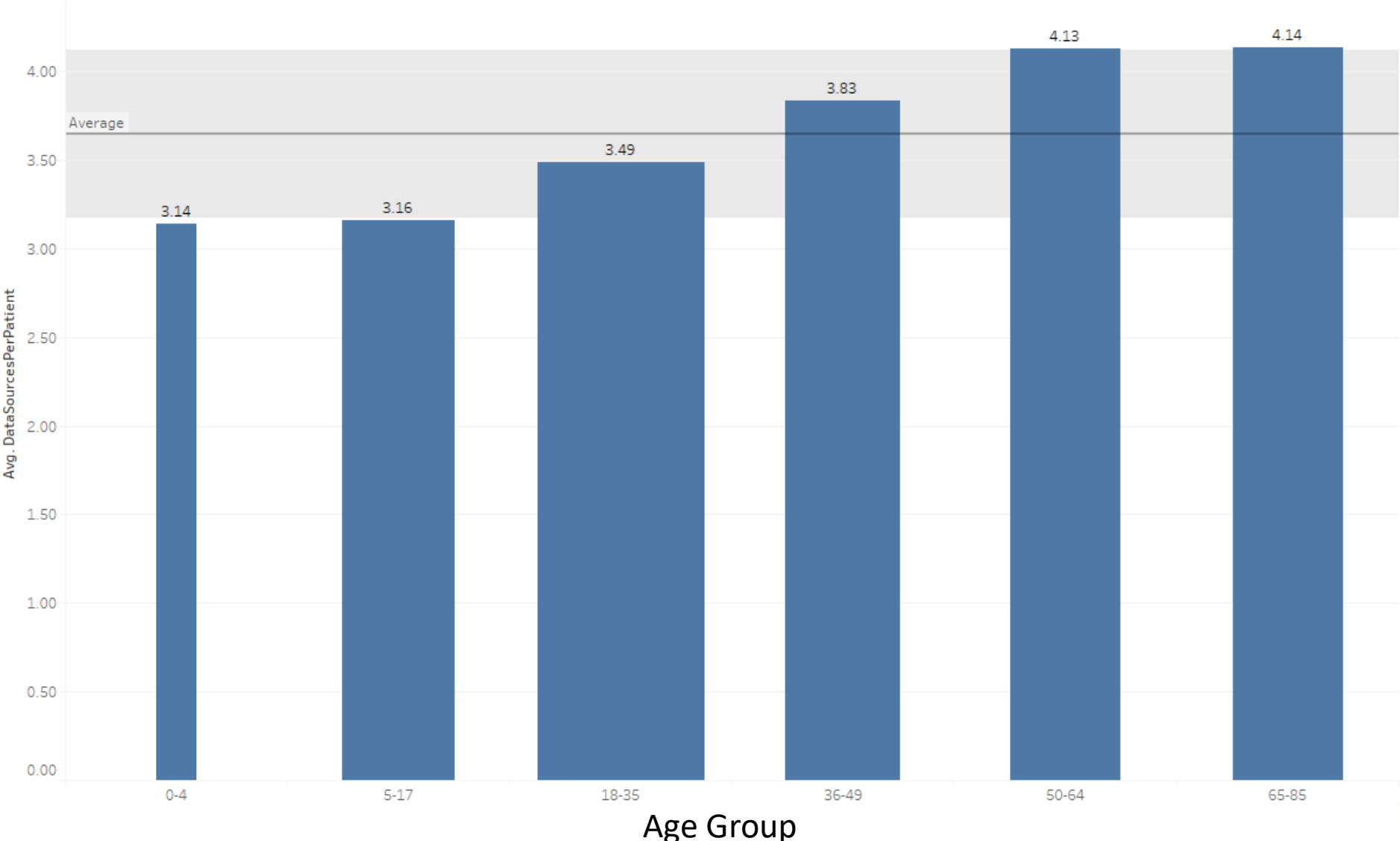
eCW

Epic

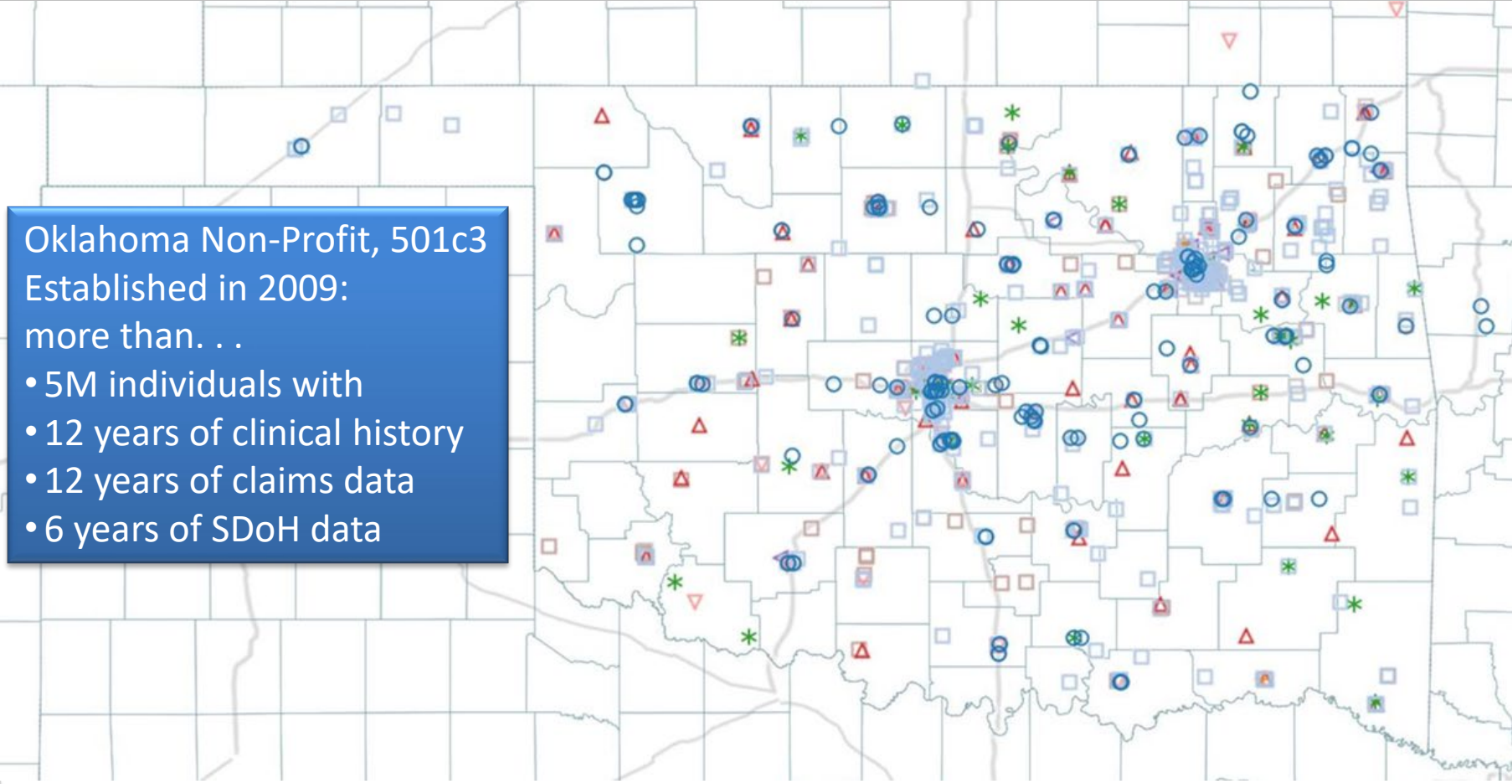
Meditech



# Number of Data Sources by Age Grouping







Oklahoma Non-Profit, 501c3  
 Established in 2009:  
 more than . . .

- 5M individuals with
- 12 years of clinical history
- 12 years of claims data
- 6 years of SDoH data

<b>Facility Type</b>				<b>Facility Type</b>			
Null	Emergency Services	Lab	Pharmacy	Null	Emergency Services	Lab	Pharmacy
Behavioral Health...	FQHC	Long Term Care ...	Public Health	Behavioral Health...	FQHC	Long Term Care ...	Public Health
Clinic	Hospice	Ophthalmology/Op...	Urgent Care Facility	Clinic	Hospice	Ophthalmology/Op...	Urgent Care Facility
Community/Social...	Hospital	Payer		Community/Social...	Hospital	Payer	

# Health Data Utility: Rich Clinical, Claims, SDoH Data

- Diagnoses
- Medications
- Allergies
- Vital signs
- Clinical documents
  - H&P
  - D/C summary
  - Operative/Procedure notes
  - Progress notes
  - POLST/MOLST
  - Advanced Directives/Power of Attorneys for Health Care
- Labs/Observations/Assessments
- Insurance
- Dispensed Medications
- Equipment Devices
- Related Persons
- Social History
- Family History
- Radiology
- Care Team
- Goals of treatment

# MyHealth Provider Portal + FHIR API



Patient Charts

Patient Results Query

Community data displayed All sources

Wolf, Jesus D. (M, 88)  
DOB: 05/07/1932

Address: 98 Trusel Ave., Oklahoma City, OK 73109, USA

Clinician Dashboard

Patient Charts

Summary | Graphs | Enco... | Allerg... | Radio... | Immu... | Vitals | Social... | Medic... | Proce... | Probl... | Dispe... | Relat... | Docu... | Lab | Famil... | Equip... | Insur...

### Encounters

Encounter Type	Admit - Discharge Dates	Source
Inpatient	07/19/2018 13:19 - 08/07/2018 18:57	[Redacted]

### Medical conditions

Problem/Condition	Onset Date	Source
Dementia	07/19/2018	[Redacted]
Multiple wounds	07/19/2018	[Redacted]
UTI (urinary tract infection)	07/19/2018	[Redacted]

### Medications

Medication	Source
amikacin 500 mg in sodium chloride 0.9 % 100 mL IVPB	[Redacted]
Hydrocodone-Acetaminophen 7.5-325 Mg/15ml Po Soln	[Redacted]
Magnesium Sulfate 2 Gm/50ml IV Soln	[Redacted]
Pantoprazole Sodium 40 Mg IV Solr	[Redacted]
amikacin (AMIKIN) 500 mg in sodium chloride (NS) 0.9 % 100 mL IVPB	[Redacted]
Docusate Sodium 50 Mg/5ml Po Liqd	[Redacted]
Potassium Chloride 20 Meq/15ml (10%) Po Soln	[Redacted]
Insulin Aspart 100 Unit/ML Sc Soln	[Redacted]
Insulin Aspart 100 Unit/ML Sc Soln	[Redacted]
dextrose 50 % injection 25 mL	[Redacted]
Vancomycin Hcl In Dextrose 1-5 Gm/200ml-% IV Soln	[Redacted]
cefTAZidime (FORTAZ) 500 mg in sodium chloride (NS) 0.9 % 50 mL IVPB	[Redacted]
Vancomycin 1250 Mg In 250 ML Ns Repackaging Formula	[Redacted]
Hydrocodone-Acetaminophen 7.5-325 Mg/15ml Po Soln	[Redacted]
Vancomycin Hcl In Dextrose 1-5 Gm/200ml-% IV Soln	[Redacted]
Metoprolol Tartrate 25 Mg Po Tabs	[Redacted]
Docusate Sodium 100 Mg Po Caps	[Redacted]
Piperacillin-Tazobactam In Dex 4-0.5 Gm/100ml IV Soln	[Redacted]
Sodium Chloride 0.9 % IV Soln	[Redacted]
Pantoprazole Sodium 40 Mg IV Solr	[Redacted]

[Show more results](#)

### Labs (last 5 panels)

Panel	Test	Value	Interpretation	Elapsed Time
Glucose Level, Bedside by Glucometer	Lab Interpretation	Abnormal		1y 9m
	EID	E064493		
	Gluc Bedside	171 H		
CBC	The following orders were created for panel order CBC; Procedure			1y 9m
	Abnormality Status; -----			
	-----			
	; CBC with Differential[281034036] Abnormal Final result; Please view results for these tests on the individual orders.			
BMP	Lab Interpretation	Abnormal		1y 9m
	GFR, non-African-American	>=60		
	GFR, African-American	>=60		
	Ca	9.5		
	K	4		
	Na	141		
	Cl	108		
	CO2	26		
	Creat	0.87		
	BUN	21		
	Gluc	133 H		
Magnesium Level	Lab Interpretation	Normal		1y 9m
	Mg	1.7		
CBC with Differential	Lab Interpretation	Abnormal		1y 9m
	Absolute Basophils	0.0 K/cmm		
	Absolute Eosinophils	0.6 K/cmm		
	Absolute Monocytes	0.6 K/cmm		
	Absolute Lymphocytes	1.3 K/cmm		
	Absolute Neutrophils	5.4 K/cmm		
	Baso (%)			
	Eos (%)	7 H		


# Health Data Utility vs. Health Information Exchange

HDU is more than a Health Information Exchange

- **Like an HIE:**
  - Governance with transparency, broad participation of stakeholders
  - Trust of stakeholders
  - Committed service to a specific geography (i.e. state or region)
  - Substantial if not 100% connectivity of health data within service area
  - Cleaning and organization of individual identities and data for secondary uses
- **A Health Data Utility that is more than an HIE:**
  - Like other utilities (electric, water, etc.), only 1 is needed, and provides infrastructure for all community needs
  - Use cases can be implemented within the HDU or through a range of partnerships
  - Integrate data from sources beyond healthcare (social services, education, crime, etc.)
  - Work with stakeholders beyond healthcare (state agencies, tribal governments, employers, policy-makers, homeless shelters, correctional systems, etc.)

# Four Problems HDUs Solve

The Health Data Utility (HDU) is a public-private resource providing a source of robust clinical and non-clinical data.



**1**

**The cost of U.S. health care continues to increase.**

Health care spending hit almost 20% of total GDP in 2020. That's up from 5% of total U.S. GDP in 1960.

Source: Statista. <https://www.statista.com/statistics/184688/us-national-health-expenditure-since-1960/>



**2**

**The quality of U.S. health care must improve.**

Two results of improved health care quality are an increase in the proportion of adults who get recommended, evidence-based preventive health care and a reduction in the proportion of emergency department visits.

Source: Healthy People 2030.



**3**

**The patient experience must improve.**

Patients are continually surveyed about their experiences in the health care system; a poor experience can impact their health care provider's reimbursement.



**4**

**The U.S. must prepare to respond to infectious disease outbreaks.**

Evolving risk factors associated with external drivers such as globalization, displacement of people, and climate change reinforce the need for robust and sound public health infectious disease programs.

**Contact us to learn more about the Health Data Utility Maturity Model**

Visit [thecsri.org/contact](https://thecsri.org/contact)

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# Examples of Standardized Patient Assessment and Performance Measures

- **Patient-centric:** How well is our patient (and their family) doing?
  - PHQ-9, GAD7, SBIRT, AHC SDoH, Edmonton, goals of care
- **System-centric:** How well is our team working to support
  - Achievement of POLST/MOLSTs and immediate availability to any new providers involved in care
  - Care-giver support and FUNDING where available
  - Family supports
  - Cultural sensitivity including communication in preferred language
  - Drug diversion protection

# Resource: National Coalition for Hospice & Palliative Care

- [Clinical Guidelines for Excellence in Palliative Care](#) in 8 Domains
  1. Structures & Processes of Care
  2. Physical Aspects of Care
  3. Psychological and Psychiatric Aspects of Care
  4. Social Aspects of Care
  5. Spiritual, Religious, and Existential Aspects of Care
  6. Cultural Aspects of Care
  7. Care of the Patient Nearing End of Life
  8. Ethical and Legal Aspects of Care



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# Strategies

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6. Leverage AI well– for example to communicate rapidly in the patient’s preferred language and honor their cultural heritage and background

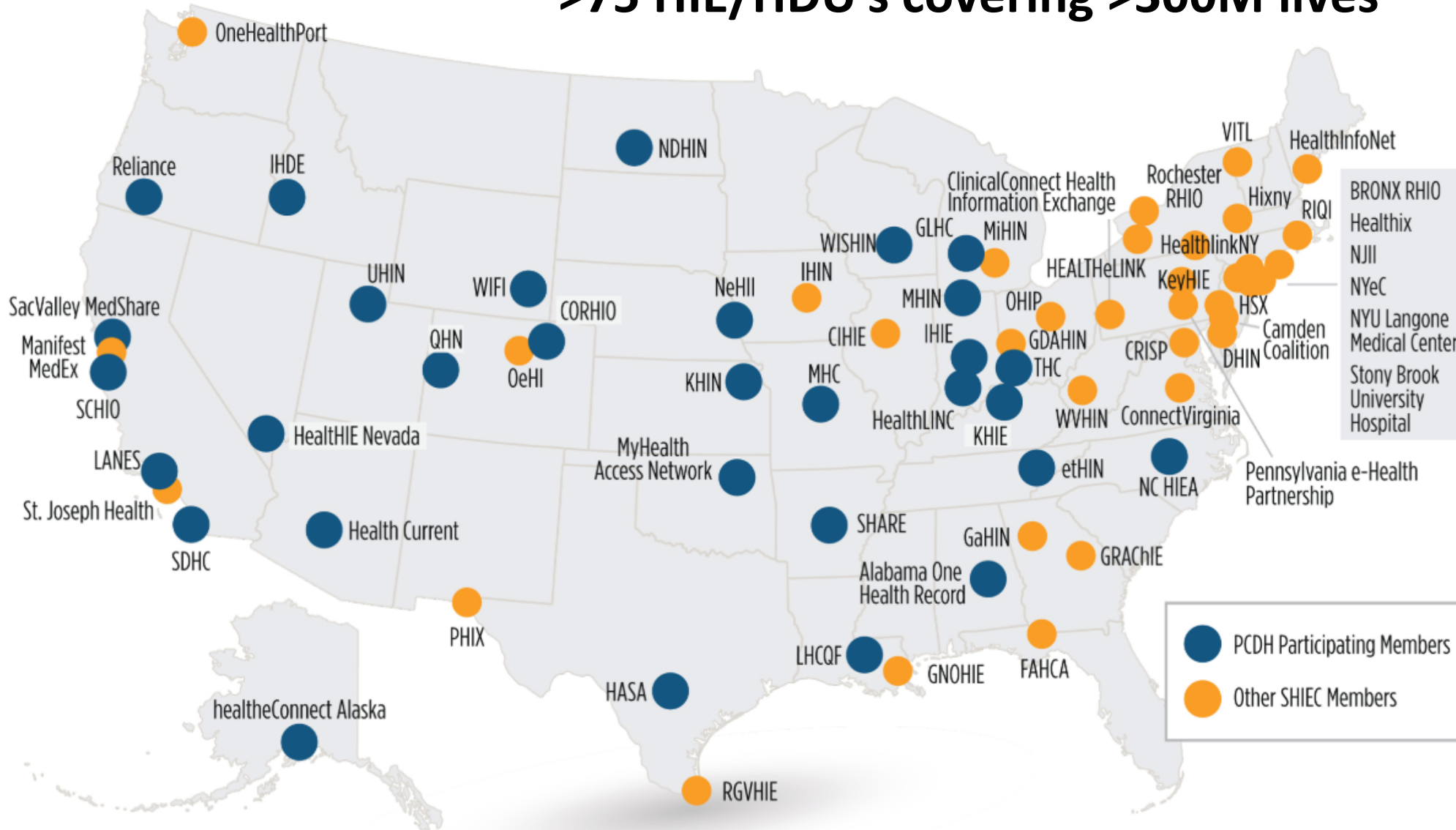
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## Participation in a Health Data Utility

>75 HIE/HDU's covering >300M lives



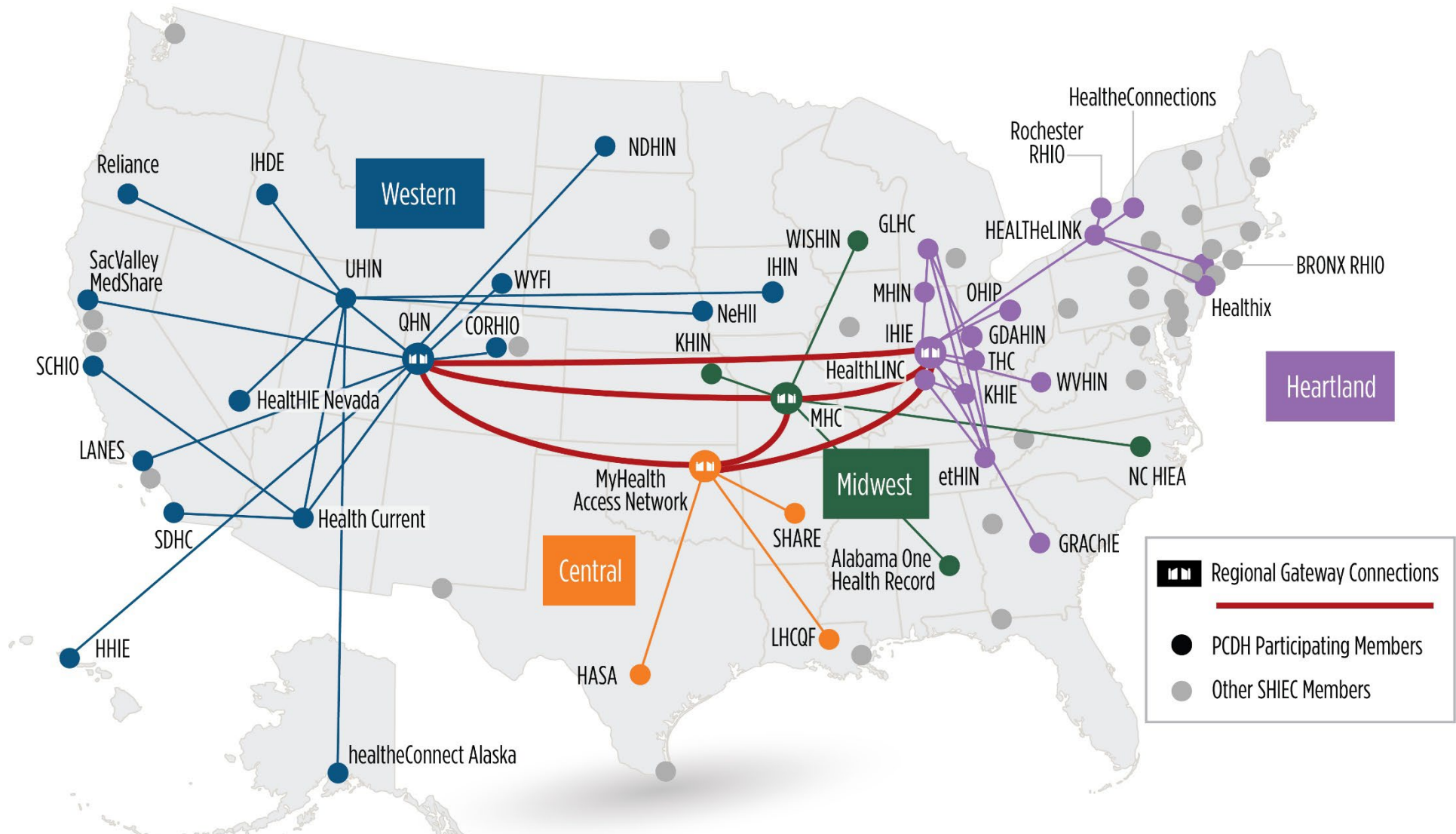
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## Patient Centered Data Home™ Coverage



# Strategies

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# Alerting to Unplanned Critical Events

The screenshot displays the MyHealth Access Network interface. The main content area shows a table titled "PatientActivityByProvider" with columns for various patient attributes and a grid of activity indicators. A blue box highlights the "Home Clinic" column header. On the right, a sidebar contains configuration options for "1. Select Home Clinic", "2. Choose look-back period" (set to "Last 24 hours"), and "3. Exclude source" (listing various medical centers).

Home Clinic	Outside Facility	PatientDeidentified	Has Visit	Has Allergy	Has Diagnosis	Has Document	Has Vitals	Has Labs	Has Pharmacy Order	Has Procedure
Home Clinic	AF Purcell Municipal Hospital	S046F7, M046F7 (29)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Bailey Medical Center	C1D82C, S1D82C (53)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		J78D24, E76D24 (46)	X*	X*	X*	X*	X*	X*	X*	X*
		P0F0A2, B0F0A2 (46)	+	+	+	+	+	+	+	+
	Claremore Medical Center	J8DB9D, W8DB9D (50)	X	X	X	X	X	X	X	X
		P4CB75, E4CB75 (2)	X	X	X	X	X	X	X	X
		P24E34, J24E34 (40)	X	X	X	X	X	X	X	X
		W93969, J93969 (38)	X	X	X	X	X	X	X	X
	Community Health Connection	A08D73, A08D73 (59)	X	X	X	X	X	X	X	X
		M357F5, H357F5 (32)	X	X	X	X	X	X	X	X
		P609CE, S609CE (4)	X	X	X	X	X	X	X	X
		R98369, A98369 (33)	X	X	X	X	X	X	X	X
	East Central Oklahoma Family Health Center, Inc.	W9EC58, R9EC58 (57)	X	X	X	X	X	X	X	X
	Hillcrest Hospital	A9DB58, A9DB58 (26)	*	*	*	*	*	*	*	*
		A30EA1, J30EA1 (59)	X	X	X	X	X	X	X	X
		AD133A, AD133A (73)	X	X	X	X	X	X	X	X
		AE6C3D, CE6C3D (28)	X	X	X	X	X	X	X	X
		B2B8A3, K2B8A3 (37)	+	+	+	+	+	+	+	+
		B168BA, D168BA (61)	*	*	*	*	*	*	*	*
		B534D2, R534D2 (55)	X	X	X	X	X	X	X	X
		B719C6, C719C6 (60)	X	X	X	X	X	X	X	X
		B3746C, S3746C (37)	X	X	X	X	X	X	X	X
		B15308, D15308 (48)	X	X	X	X	X	X	X	X
		B42115, A42115 (25)	X	X	X	X	X	X	X	X
		BA1607, MA1607 (12)	X	X	X	X	X	X	X	X
		BAE2D7, MAE2D7 (71)	X	X	X	X	X	X	X	X
		BD9E9D, BD9E9D (60)	X	X	X	X	X	X	X	X
		COC54A, LOC54A (64)	X	X	X	X	X	X	X	X
		C32D1B, S32D1B (56)	X	X	X	X	X	X	X	X
		C69FED, A69FED (56)	*	*	*	*	*	*	*	*
		C72E04, J72E04 (1)	X	X	X	X	X	X	X	X
		C831B5, M831B5 (61)	X	X	X	X	X	X	X	X
		CC89AC, I C89AC (51)	X	X	X	X	X	X	X	X

# 30-day Readmission Monitoring

**30-day Readmission Monitoring by Discharging Facility and Home Clinic**

Home Organization	Day of Discharge Date	Discharging Organization	Patient Deidentified	10/1/2016	10/4/2016	10/5/2016	10/6/2016	10/10/2016	10/12/2016	10/13/2016	10/15/2016	10/16/2016	10/17/2016	10/18/2016	10/19/2016	10/20/2016	10/21/2016	10/23/2016	10/24/2016	10/25/2016	10/26/2016	10/27/2016	10/28/2016	10/29/2016	10/30/2016		
Home clinic/ Index Hospital	10/1/2016	St John Hospitals	B396B7, G396B7 (65)	I																							
	10/2/2016	Hillcrest Hospital	L444EB, A444EB (67)																								
	10/3/2016	St John Hospitals	B396B7, G396B7 (65)																								
	10/4/2016	Saint Francis Hospitals	EAD0A7, PA0A07 (67)																								
		St John Hospitals	BB9D79, PB9D79 (66)																								
			M25715, M25715 (69)																								
	10/7/2016	Saint Francis Hospitals	G7B6F4, T7B6F4 (64)																								
		St John Hospitals	H1EC38, L1EC38 (66)																								
	10/8/2016	Saint Francis Hospitals	B5BF4D, R5BF4D (64)																								
	10/9/2016	Hillcrest Hospital	P0EECE, M0EECE (66)																								
	10/13/2016	Hillcrest Hospital - South	WE54A0, GE54A0 (82)																								
		Saint Francis Hospitals	D0B289, N0B289 (66)																								
		St John Hospitals	J2AEAF, R2AEAF (77)																								
	10/14/2016	Hillcrest Hospital	M0DCCC, T0DCCC (68)																								
		Saint Francis Hospitals	R04849, L04849 (69)																								
	10/15/2016	Hillcrest Hospital	P0EECE, M0EECE (66)																								
		St John Hospitals	PE3403, LE3403 (86)																								
	10/18/2016	Saint Francis Hospitals	SD6F75, FD6F75 (76)																								
	10/19/2016	Hillcrest Hospital	TC4813, DC4813 (77)																								
		Saint Francis Hospitals	BBD072, HBD072 (75)																								
	10/21/2016	Saint Francis Hospitals	R04849, L04849 (69)																								
	10/24/2016	St John Hospitals	H92EE7, P92EE7 (77)																								
	10/25/2016	Hillcrest Hospital	B642D4, J642D4 (78)																								
		St John Hospitals	WEBC08, JEBC08 (73)																								
	10/26/2016	St John Hospitals	J2AEAF, R2AEAF (77)																								
	10/28/2016	Saint Francis Hospitals	SD6F75, FD6F75 (76)																								
		St John Hospitals	C5067C, D5067C (69)																								
			TC4813, DC4813 (77)																								
	10/30/2016	Hillcrest Hospital	S2E99C, J2E99C (65)																								
		St John Hospitals	M71229, C71229 (65)																								

**1. Choose Home Organization(s)**

(All)

Home clinic/ Index Hospital

**2. Select Discharging Facility**

(All)

Null

4

B

E

I

M

O

P

**Optional: Exclude Event Types**

(All)

Null

4

B

E

I

M

O

P

**Optional: Exclude Activity from Source:**

Cleveland Area Hospital

**Discharging Facility**

(All)

AF Beaver County Hospital

AF Cordell Hospital

AF Fairview Regional Medical Center

AF Harper County Hospital

AF Jefferson County Memorial Hospital

AF Newman Memorial Hospital

AF Okeene Municipal Hospital

AF Purcell Municipal Hospital

**Qualified Events:**

**E**

**R04849, L04849 (69)**

Patient Deidentified: [REDACTED]

Discharging Organization: [REDACTED]

Home Organization: [REDACTED]

Day of Activity Date: 10/25/2016

Day of Discharge Date: 10/14/2016

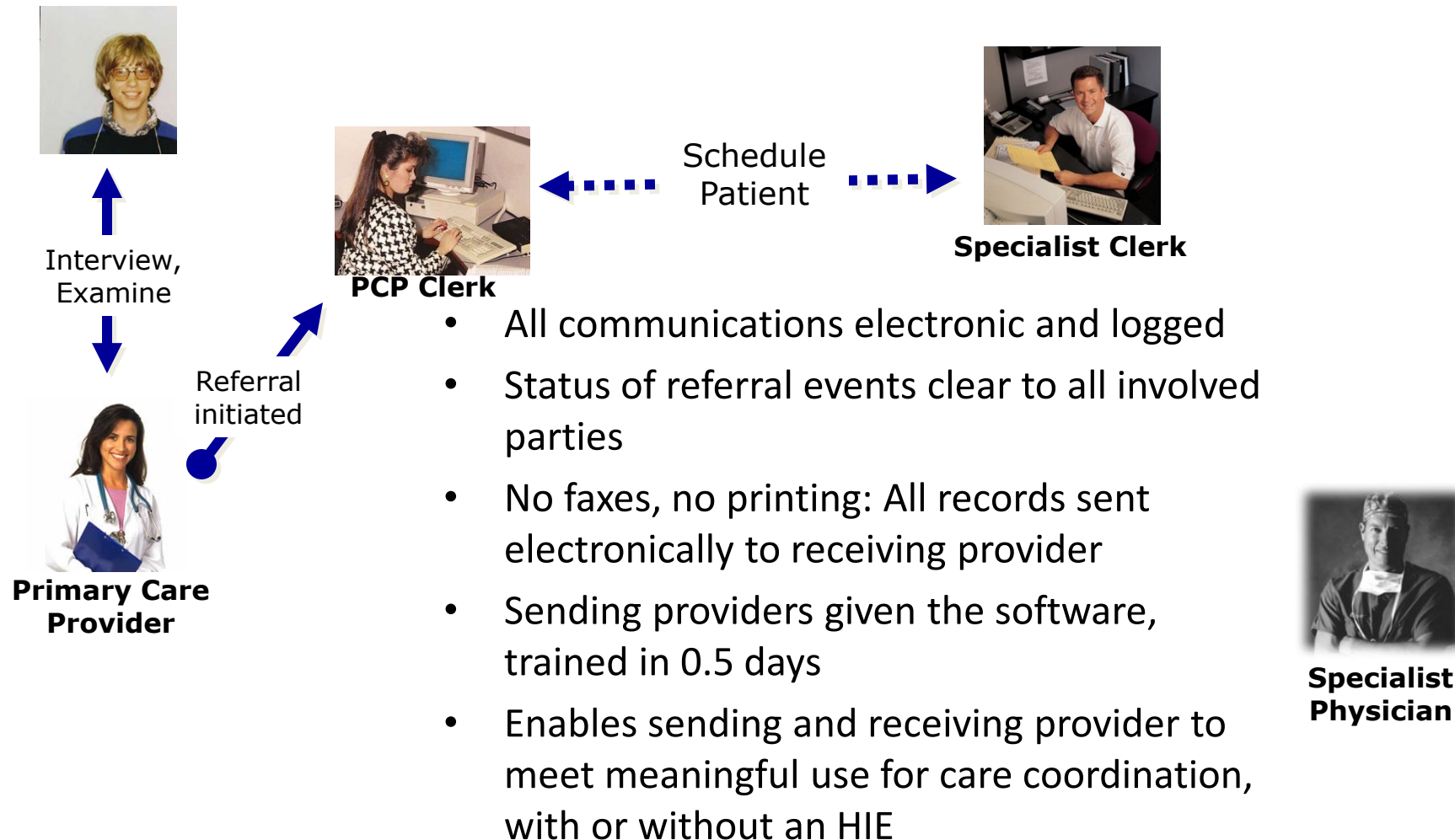
Facility Name: [REDACTED]

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# Planned Events: Community-wide Care Transition Coordination Process

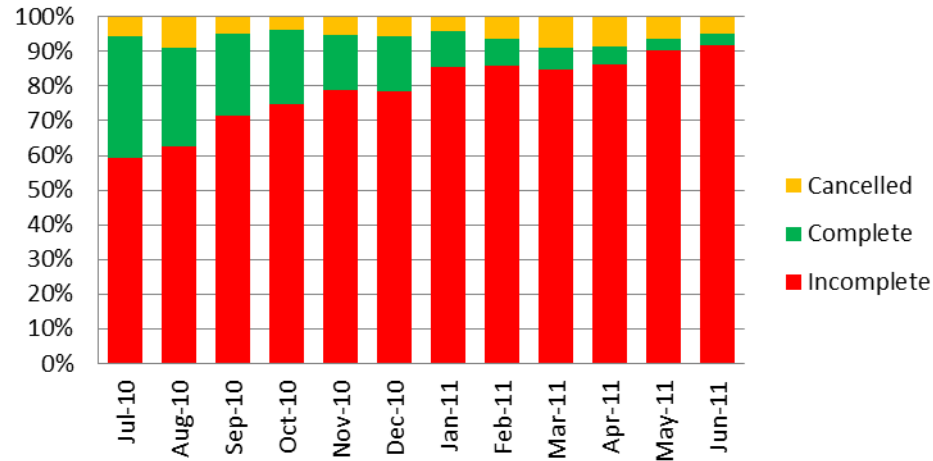


# Electronic Referral Management

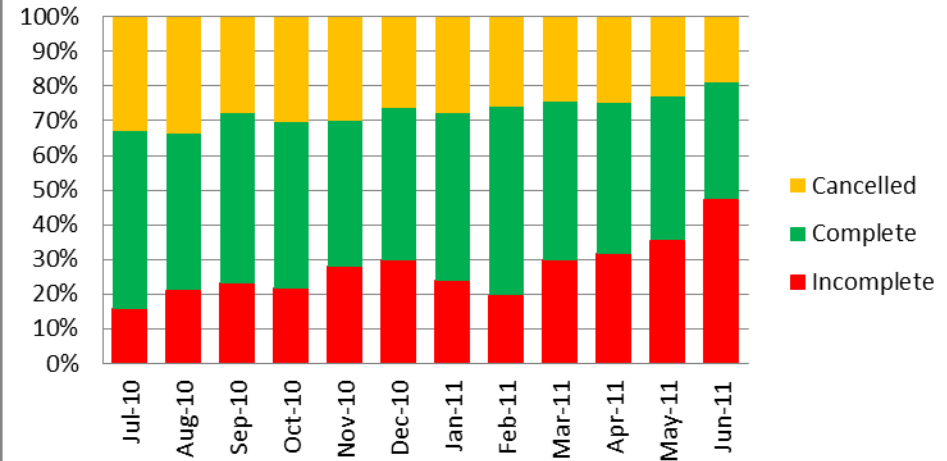
## Clinic 1:

Visit Request Status as of August 31, 2011 by Month Initiated:																												
	JUL 2010		AUG 2010		SEP 2010		OCT 2010		NOV 2010		DEC 2010		JAN 2011		FEB 2011		MAR 2011		APR 2011		MAY 2011		JUN 2011		JUL 2011		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
<b>Total Number Initiated</b>	<b>409</b>		<b>361</b>		<b>442</b>		<b>363</b>		<b>362</b>		<b>324</b>		<b>325</b>		<b>285</b>		<b>438</b>		<b>426</b>		<b>433</b>		<b>457</b>		<b>392</b>		<b>5,017</b>	
Pending Appointment	154	37.7%	172	47.6%	227	51.4%	210	57.9%	165	45.6%	171	52.8%	211	64.9%	199	69.8%	296	67.6%	272	63.8%	306	70.7%	314	68.7%	280	71.4%	2,977	59.3%
Scheduled	79	19.3%	49	13.6%	71	16.1%	55	15.2%	99	27.3%	65	20.1%	57	17.5%	37	13.0%	61	13.9%	75	17.6%	67	15.5%	90	19.7%	71	18.1%	876	17.5%
Consult in Progress	4	1.0%	2	0.6%	3	0.7%	3	0.8%	4	1.1%	4	1.2%	2	0.6%	0	0.0%	2	0.5%	8	1.9%	9	2.1%	10	2.2%	6	1.5%	57	1.1%
Visit Occurred: Report Pending	5	1.2%	3	0.8%	14	3.2%	4	1.1%	18	5.0%	14	4.3%	8	2.5%	9	3.2%	12	2.7%	13	3.1%	9	2.1%	5	1.1%	9	2.3%	123	2.5%

**Clinic 1: 12 months of care transitions**

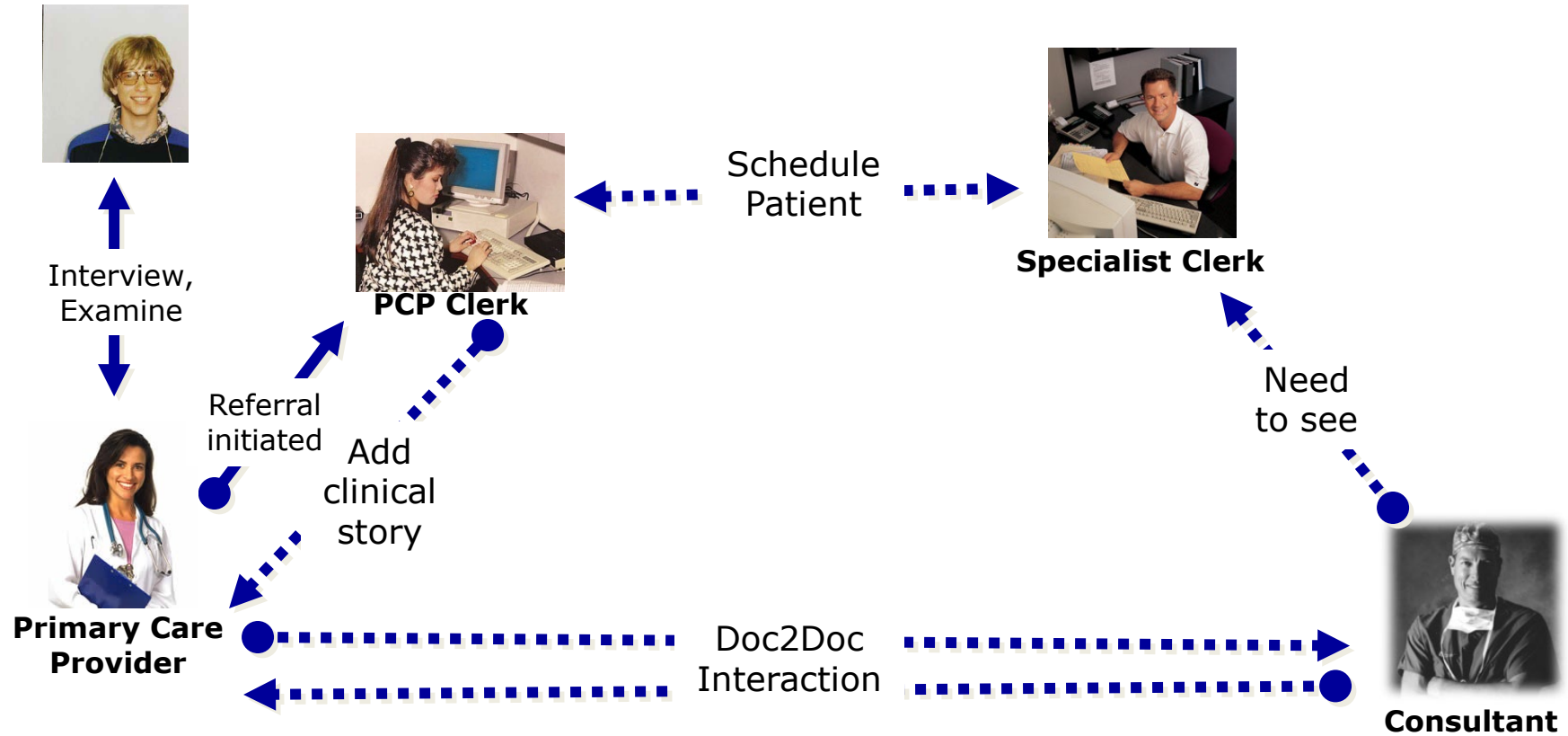


**Clinic 2: 12 months of care transitions**



Cancelled by Receiving Provider	31	3.8%	49	5.6%	34	3.7%	34	4.7%	30	3.6%	22	3.3%	18	3.0%	14	2.6%	32	3.4%	25	2.8%	42	5.1%	26	3.5%	14	1.6%	371	3.6%
Cancelled by Sending Provider	77	9.5%	77	8.7%	58	6.3%	44	6.1%	37	4.5%	32	4.9%	54	8.9%	46	8.7%	50	5.3%	56	6.3%	43	5.3%	36	4.8%	25	2.9%	635	6.2%
Failed Appointment	93	11.4%	96	10.9%	92	9.9%	82	11.4%	90	10.9%	70	10.7%	51	8.4%	28	5.3%	84	9.0%	76	8.5%	51	6.2%	37	4.9%	29	3.4%	879	8.6%
Rejected by Receiving Provider	10	1.2%	22	2.5%	24	2.6%	14	1.9%	23	2.8%	8	1.2%	11	1.8%	10	1.9%	9	1.0%	13	1.5%	15	1.8%	20	2.7%	33	3.9%	212	2.1%
Not Specified	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

# eConsultations to Optimize Care Transitions



# Results: eConsultations in Medicaid

- Patients receiving an online consult had a significant reduction in PMPM cost of care when compared with themselves as historical controls:
  - *\$140.53 Pre Consult vs. \$78.16 Post Consult*
  - *Net savings of **\$62.37, p=0.021***
- Compared with patients who received a referral but NOT a consult:

Cost Type	Mean PMPM Cost Change	Mean Percentage Change
Facility Costs (UB92)	-\$13.00	-20%
Professional Costs (HCFA 1500)	-\$108.04	-34%
Pharmacy Costs (PBM)	-\$9.14	-14%
Total Costs	-\$130.18	

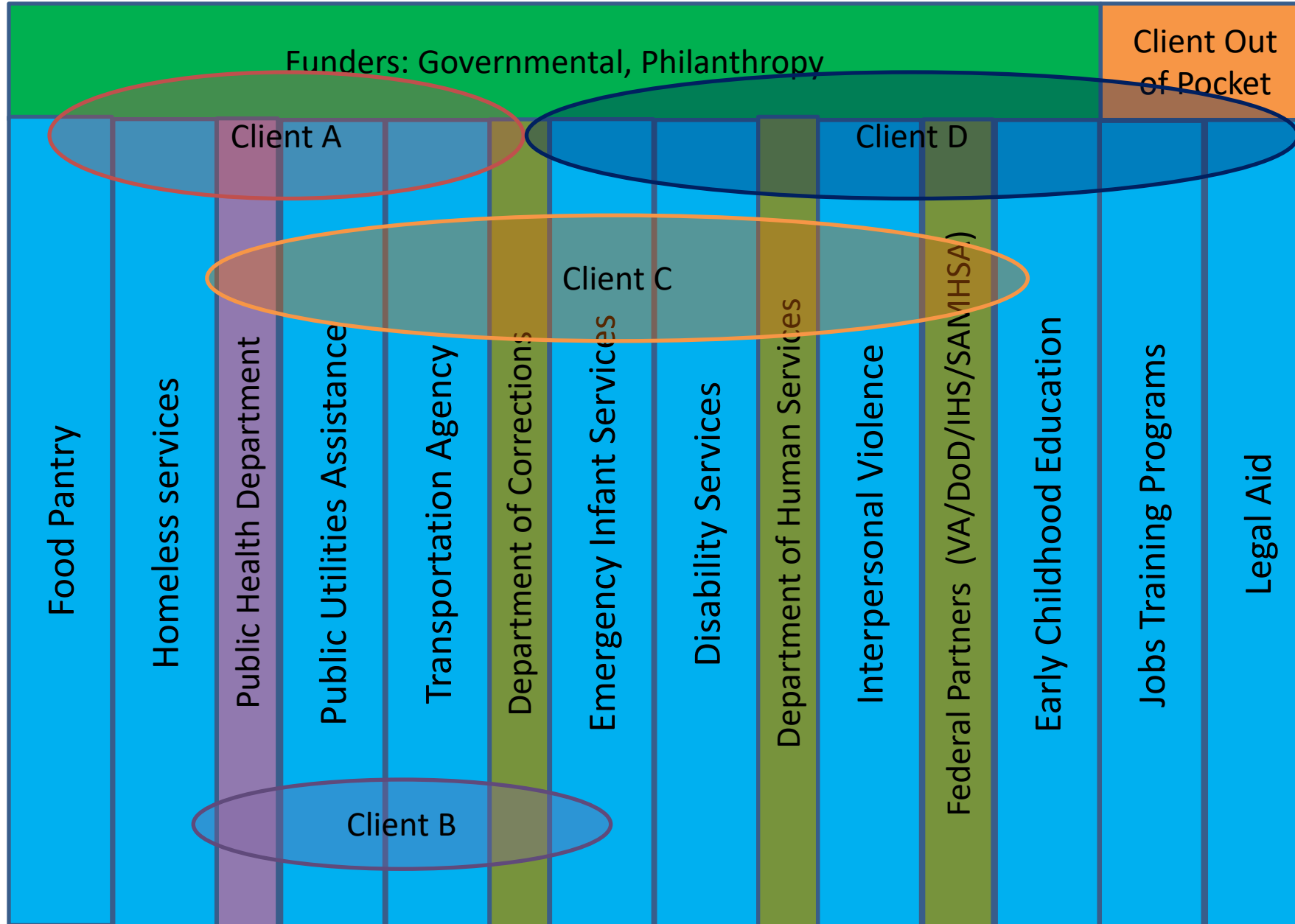
# Strategies

What strategies can be taken to improve the technology used to collect data from this patient population, the timeliness of data collection, and the sharing of resulting data with providers?

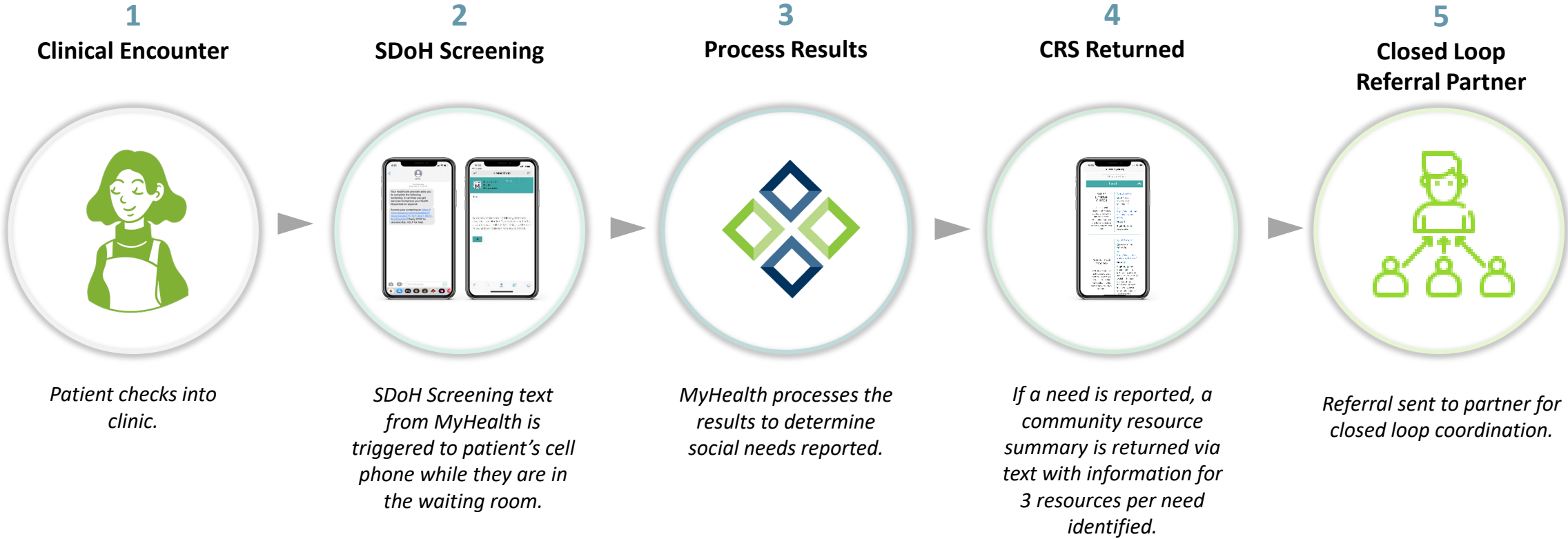
1. Participation with Health Data Utility/HIE by all parties engaged in care of the patients
2. Connection of live data from as many sources as possible to the network
3. Unexpected or unintentional events: Subscribe to alerting services from HDU for all admissions, discharges and transfer events
4. Expected and Planned Events: Utilize referral coordination and management systems to plan and coordinate intentional care transitions
5. **Utilize patient-centric standardized screening and referral systems for SDoH, depression, pain, happiness, and any number of patient reported outcomes**
6. Leverage AI well– for example to communicate rapidly in the patient’s preferred language and honor their cultural heritage and background



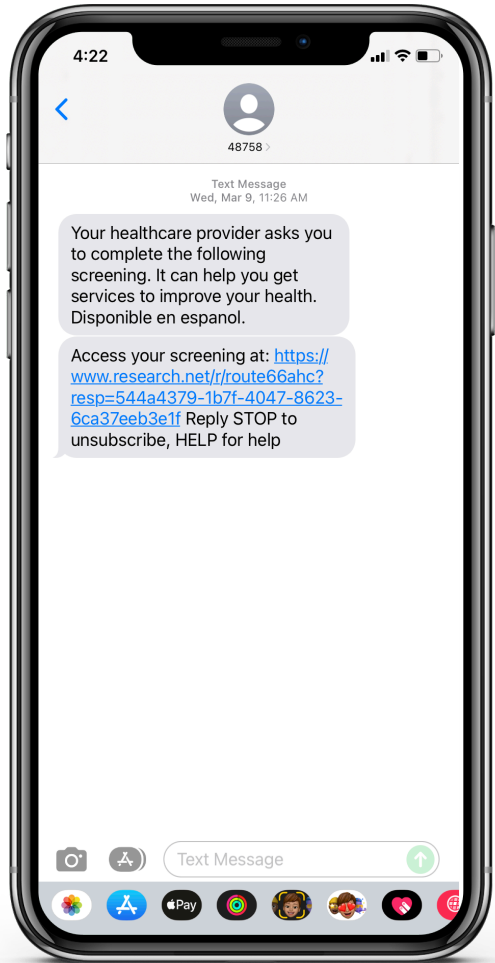
# Health Data Utilities Uniquely Support Addressing SDoH and Equity




# SDOH Mobile Screening & Referral



# Mobile Screening



11:29  
Messages  
research.net

 Accountable Health Communities Screening Tool

Language

\*1. Which of the following languages would you feel comfortable completing a survey in?

English  
 Spanish

Click the link below if you would like to view the Privacy Act Notice for the Accountable Health Communities  
Model: <https://myhealthaccess.net/MyHealth-Accountable-Health-Communities-Screening-Privacy-Notice-Final.pdf>

OK

7. Within the past 12 months, you worried that your food would run out before you got money to buy more.

- Often true
- Sometimes true
- Never true

9. In the past 12 months, has lack of reliable transportation kept you from medical appointments, meetings, work or from getting to things needed for daily living?

- Yes
- No

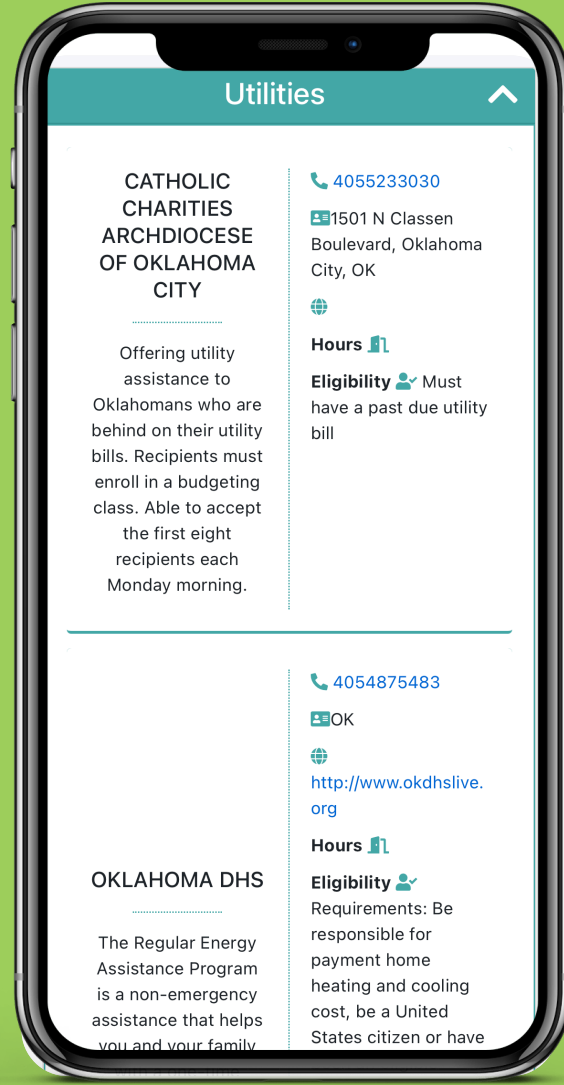
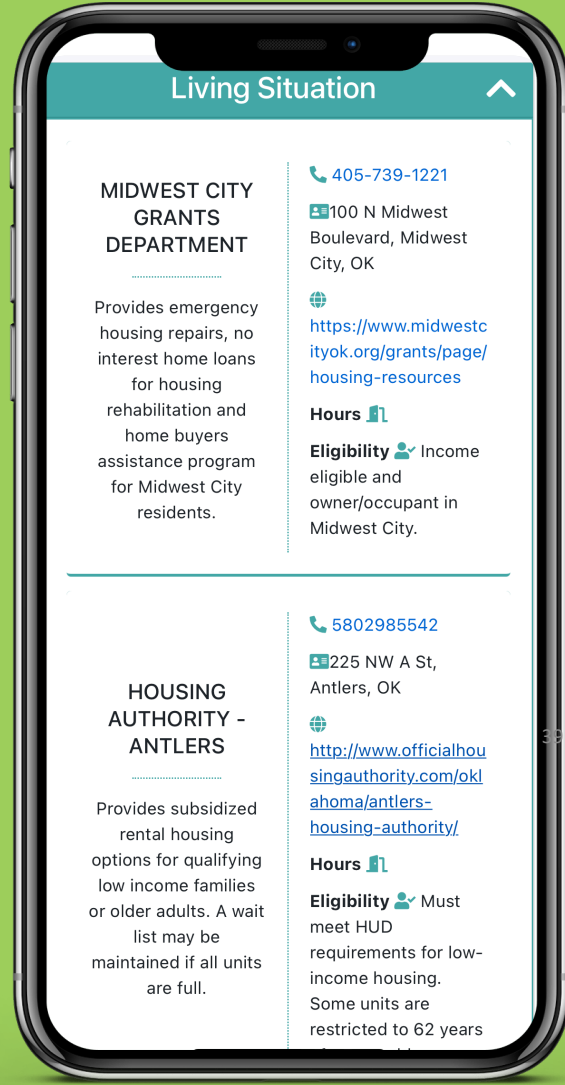
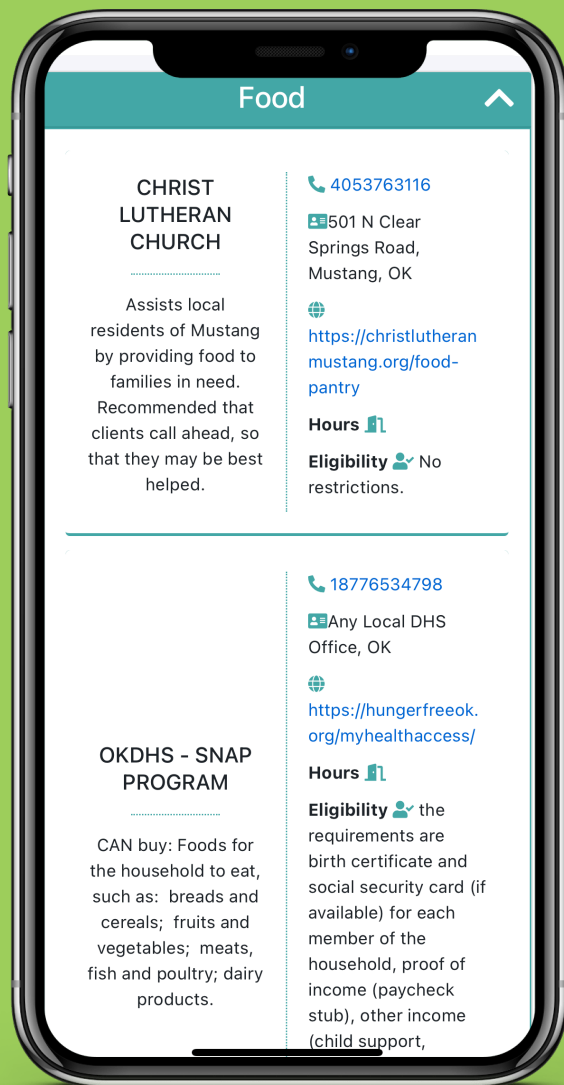


Accountable Health Communities

Screening Tool

Thank you for completing our survey! Based on your survey results you may receive an additional text message with a link to help connect you to services in your community that may improve your health. Many of these services are low cost or free of charge.

DONE



# Community Resource Summary

Texted back to patient after completion of the screening



# SDOH Program Metrics

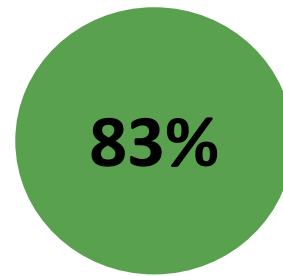
August 2018–May 30, 2024



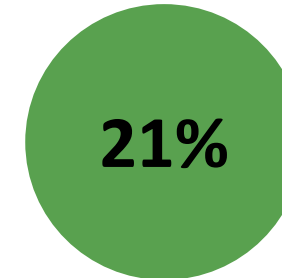
## By the numbers:

- ✓ **4.5+** million offers to screen
- ✓ **900,000+** responses
- ✓ **300,000+** responses with needs
- ✓ **400,000+** individual needs reported & addressed

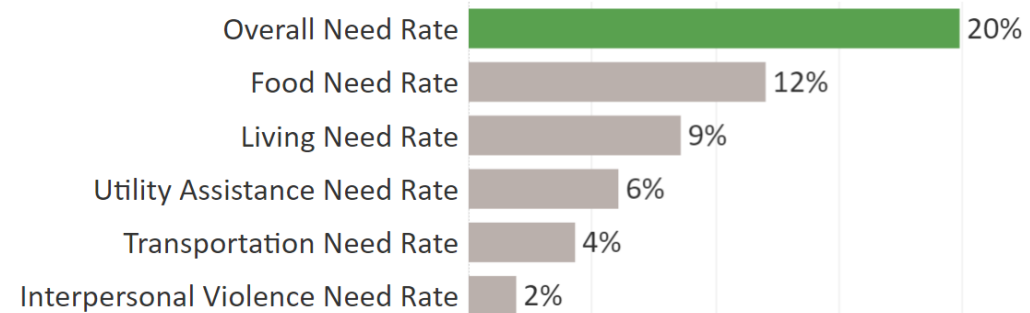
### Screening Delivery Rate



### Screening Response Rate



Need Rates for 5 Core Needs Screened for through MyHealth's SDoH Screening



**24%** of responses report 2+ needs

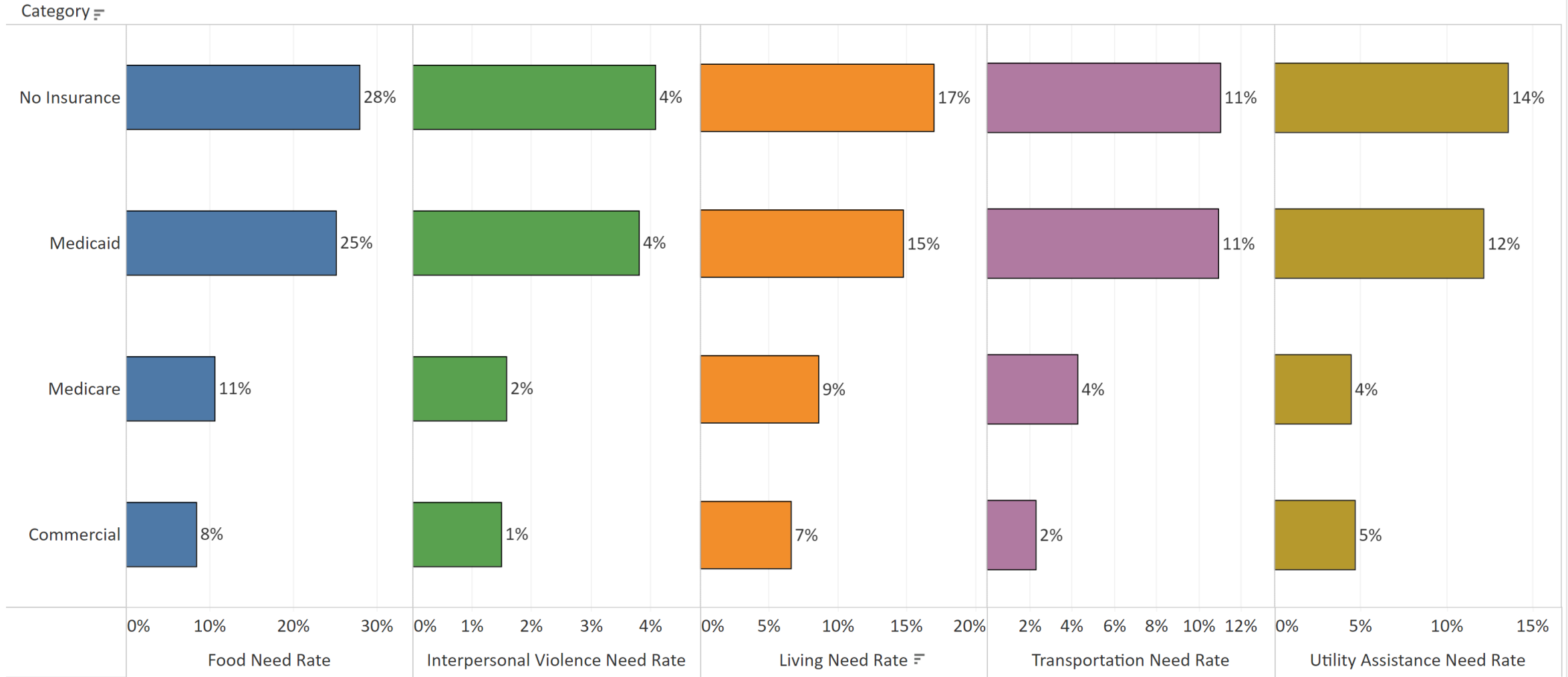
average of **1.7** needs are reported per need positive screening

**85%** of responses with a living need is due to living conditions\* rather having a place to stay

# SDOH Screening Metrics

## Year to Date

Needs Rate for each of the 5 Core Needs Screened for through MyHealth's SDoH Screening

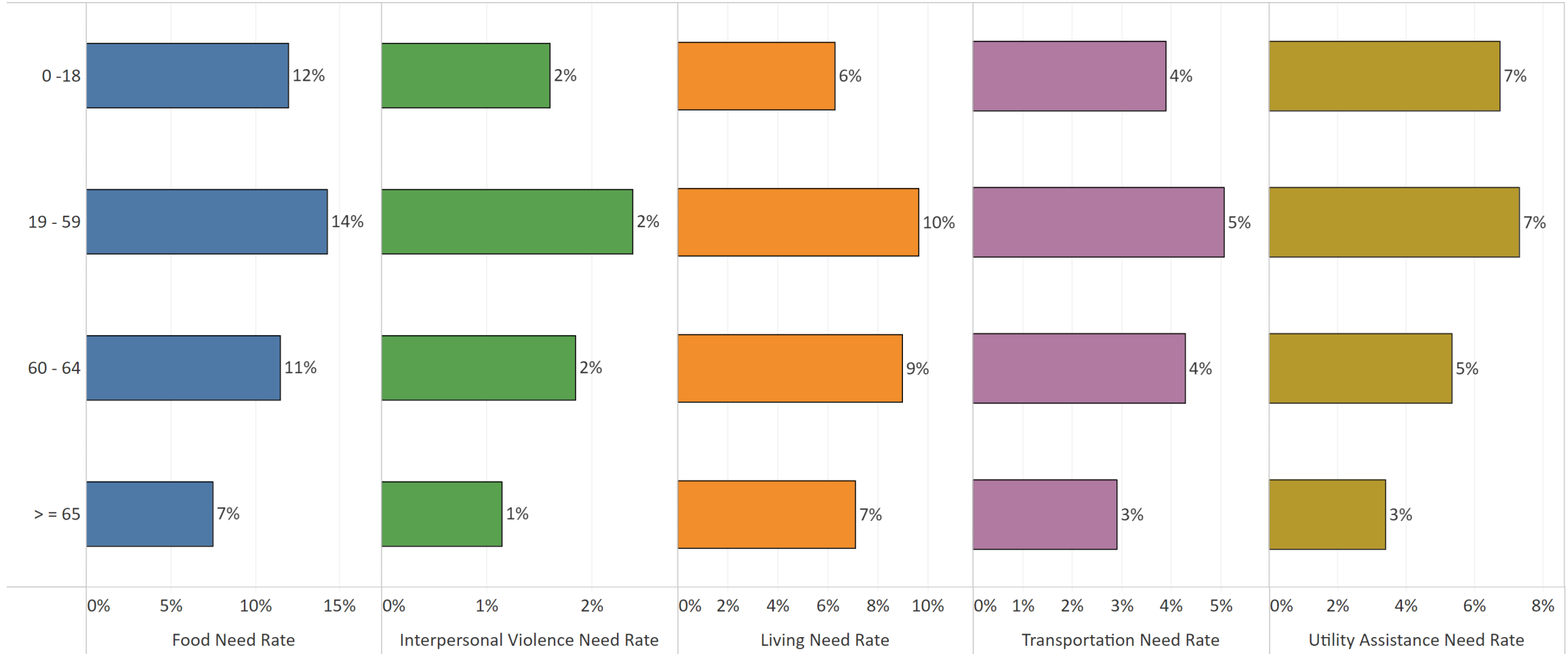


# SDOH Screening Metrics

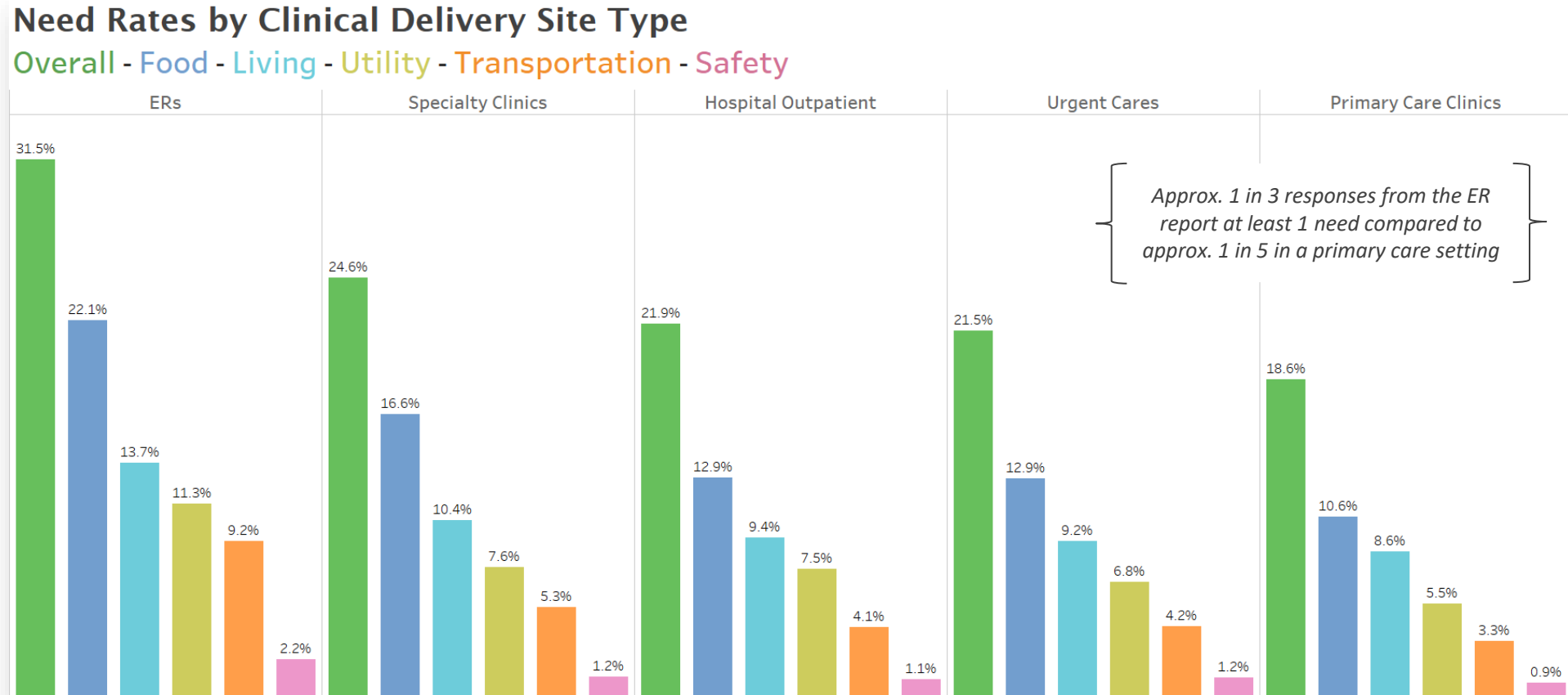
## Year to Date

Needs Rate for each of the 5 Core Needs Screened for through MyHealth's SDoH Screening by Age Bucket

(group)

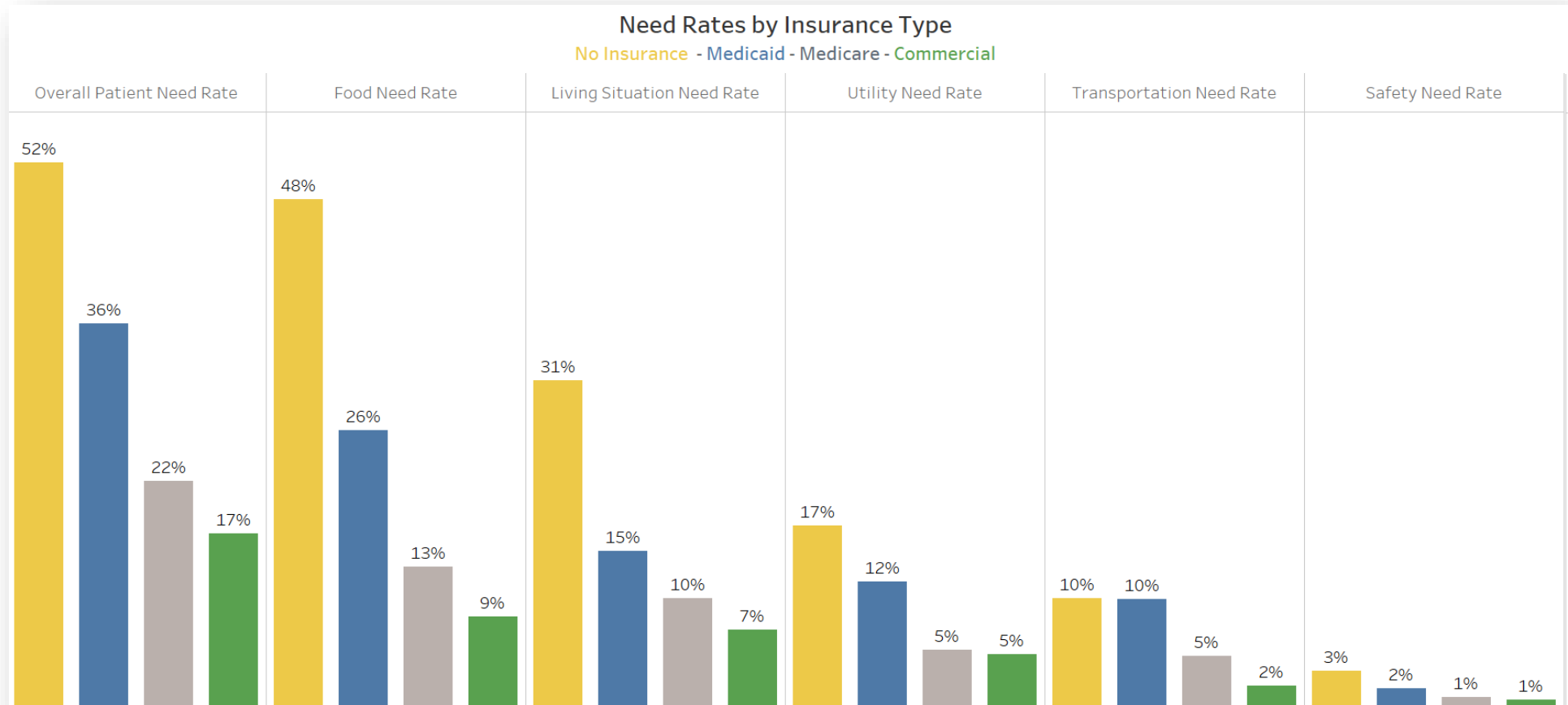


# MyHealth AHC Need Rates by Clinical Site Type





# MyHealth AHC Need Rates by Insurance Type



# Strategies

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6. **Leverage AI well– for example to communicate rapidly in the patient’s preferred language and honor their cultural heritage and background**

# Smart Use of Artificial Intelligence

- **Basic:**

- Cultural sensitivity
- Live translation of ANY LANGUAGE
- Rapid creation of written training materials in any language

- **Advanced:**

- Leverage Health Data Utility data to train AI models for risk identification and treatment optimization
- Live decision support based on model trained on each patients record
  - Tens of thousands of data points per patient incorporated

# Discussion

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