Leveraging Technology and Learning Health Systems to Improve Person-Centered Care Planning

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The Challenge of Multiple Chronic Conditions (MCC)

- **Disease-specific vs. person-centered approaches.** Disease-specific approach to care delivery and research is misaligned with the **whole person-centered needs** of patients and caregivers.
- **Interoperability obstacles in complex care.** People with MCC require care in multiple settings, from multiple providers. **Data do not easily move across settings of care**.
- **Differences in outcomes.** People from low-income backgrounds and racial or ethnic minority groups develop **MCC at higher rates and earlier ages** and are **more likely to experience health-related social needs (HRSN)**. Settings serving these populations are **less likely to benefit from Health IT** tools and **less likely to have access to HRSN data**. **These challenges exacerbate misalignment of care delivery and interoperability obstacles.**

People with MCC account for:

64%	70%	83%	71%	93%
OF ALL **Clinician Visits**	OF ALL **In-Patient Stays**	OF ALL **Prescriptions**	OF ALL **Healthcare Spending**	OF ALL **Medicare Spending**

NEARLY

1 IN 3 American Adults & **4 IN 5** Medicare Beneficiaries

ARE LIVING WITH MCC, THE **MOST COMMON CHRONIC CONDITION**

CMS 2018: *https://www.cms.gov/data-research/statistics-trends-and-reports/chronic-conditions/chartbook-and-charts*;
AHRQ 2010: https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/prevention-chronic-care/decision/mcc/mccchartbook.pdf;
Quiñones, et al. Racial/ethnic differences in multimorbidity development and chronic disease accumulation for middle-aged adults. *PLoS One*, 2019;14(6), PMID: 31206556.

NIDDK-AHRQ e-Care Plan for Multiple Chronic Conditions Project

Build capacity for pragmatic, patient-centered outcomes research (PCOR) by developing an **interoperable electronic care plan** to facilitate aggregation and **sharing of critical patient-centered data** across **home-, community-, clinic- and research-** based settings for people with **multiple chronic conditions** (MCC)

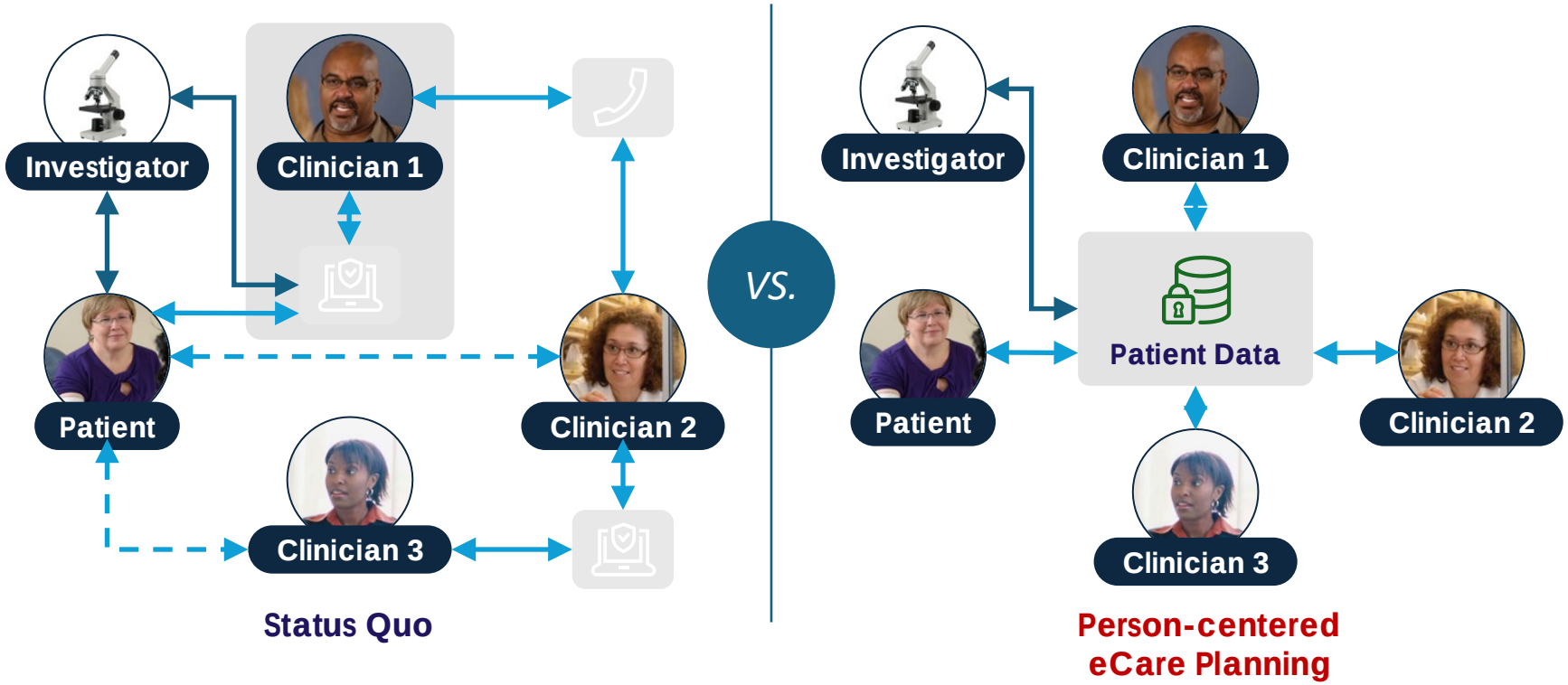
https://ecareplan.ahrq.gov

Comprehensive Shared Care Plan Definition

1. Gives the person **direct access to health data**
2. Puts the **person's goals at the center** of decision-making
3. Holistic, including **clinical & nonclinical data** (e.g., home-/community-based, HRSNs)
4. **Follows the person** through both high-need episodes (e.g., acute illness) and periods of health improvement and maintenance
5. Allows **care team coordination**. Care team able to 1) view information relevant to their role, 2) identify which clinician is doing what, and 3) update other members of an interdisciplinary team

U.S. Department of Health and Human Services 2015 stakeholder panel

Comprehensive Standards-Based eCare Planning



U.S. Department of Health and Human Services 2015 stakeholder panel

Care Planning Components

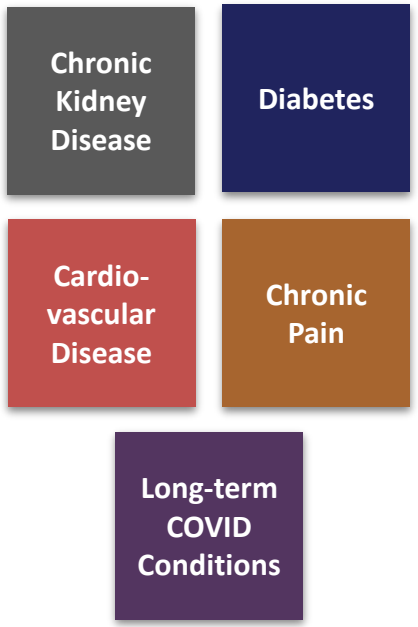
Person & Plan	Health Concerns	Goals	Interventions	Outcomes
Plan type, demographic, administrative and care team information including unpaid caregivers.	Existing or potential health states, conditions, social issues, and risks.	Desired outcomes or conditions to be achieved as a result of the interventions provided for health concerns.	Actions taken to treat health concerns and achieve goals.	Observations about or related to the health concerns with respect to interventions performed and progress towards goals.

Care Coordination

The deliberate organization of patient care activities between two or more participants (including the patient) involved in patient care to facilitate and ensure that the delivery of healthcare services is appropriate, safe, and efficient. Organizing care involves the marshalling of personnel and other resources needed to carry out all required patient care activities, and often is managed by the exchange of information among participants responsible for different aspects of care.

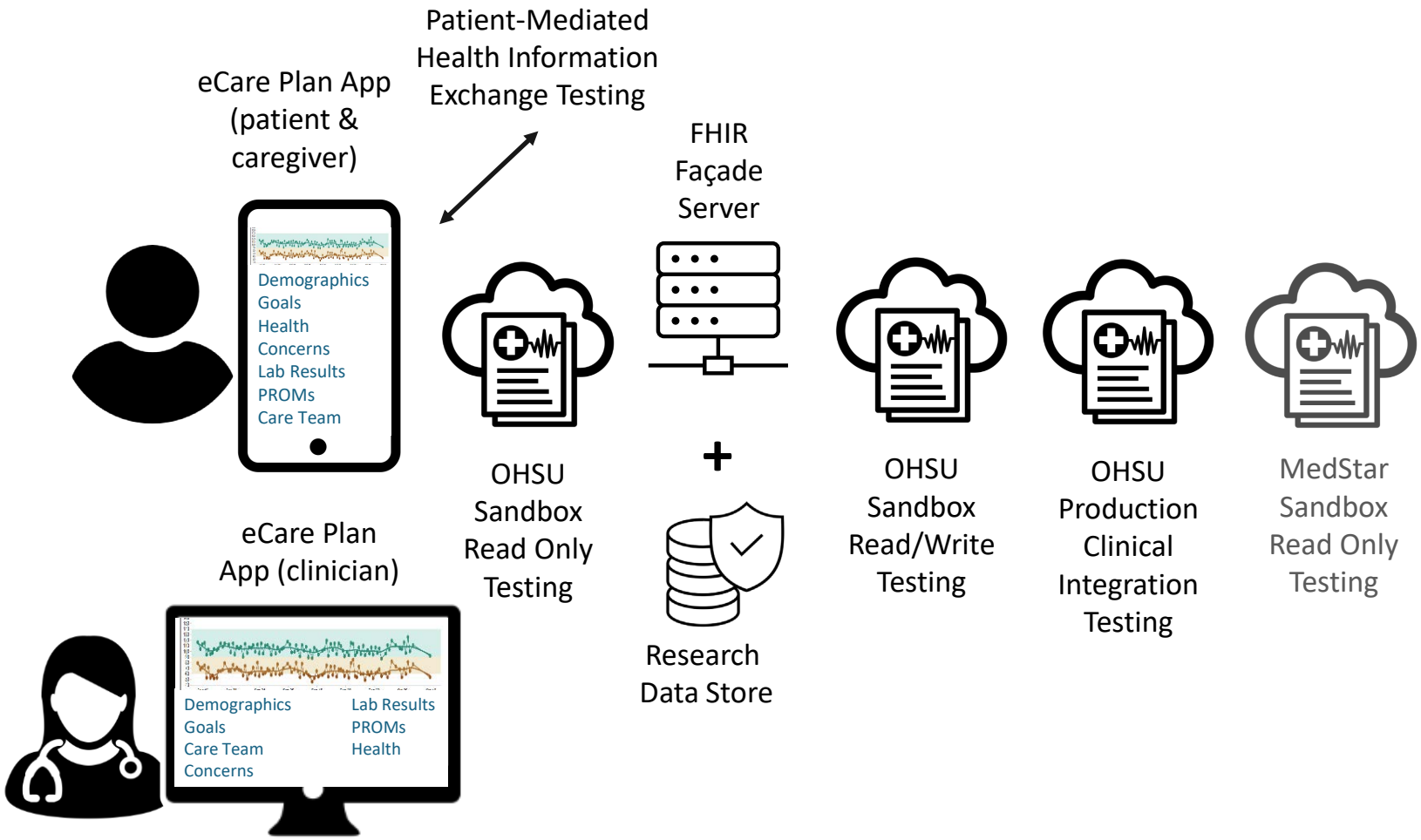
MCC eCare Project Deliverables*

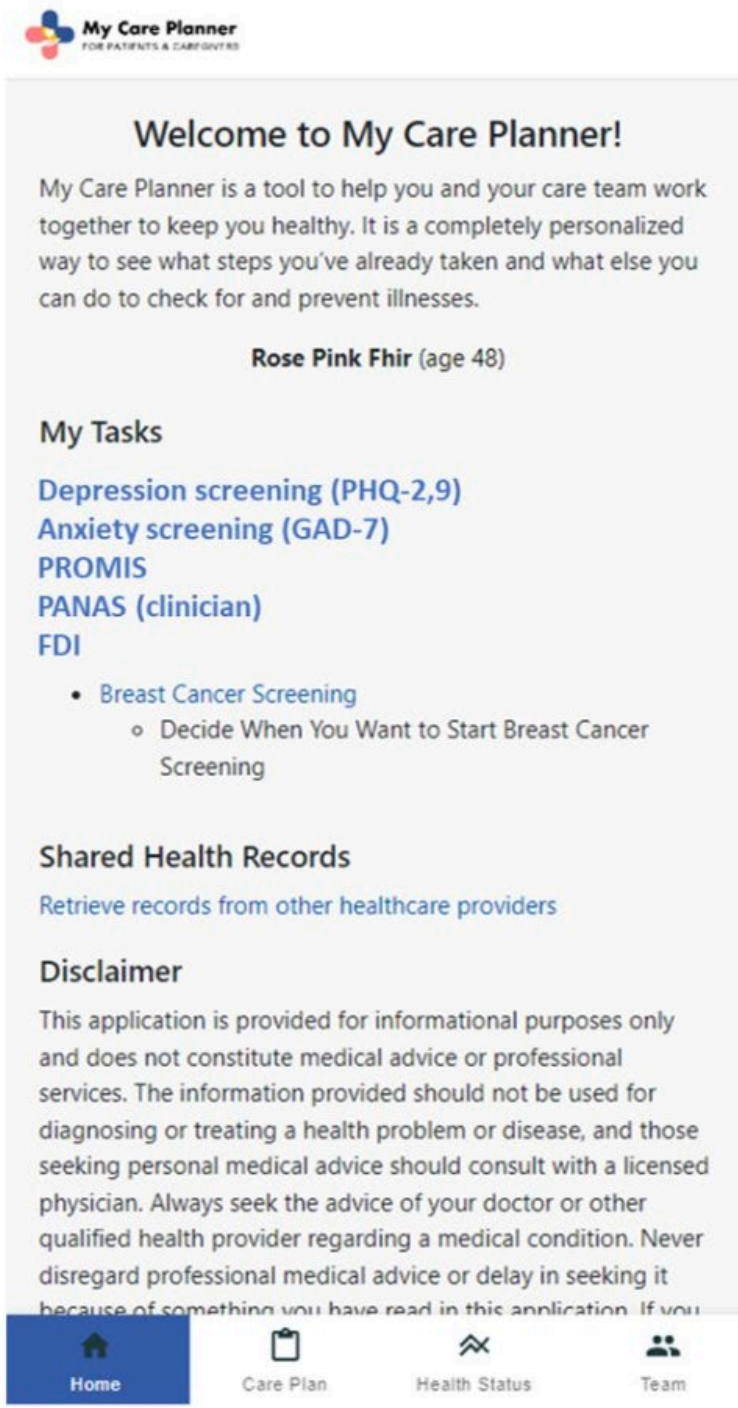
1. **Data elements and value sets** to enable standardized transfer of data across health and research settings for kidney disease, diabetes, cardiovascular disease, chronic pain, and long-term COVID.
2. **HL7® Fast Health Interoperability Resource (FHIR®) Implementation Guide** based on defined use cases and standardized MCC data elements, balloted for trial use.
3. **Pilot tested clinician-facing and patient/caregiver-facing e-care plan applications** that integrate with the EHR to pull, share, and display key patient data.

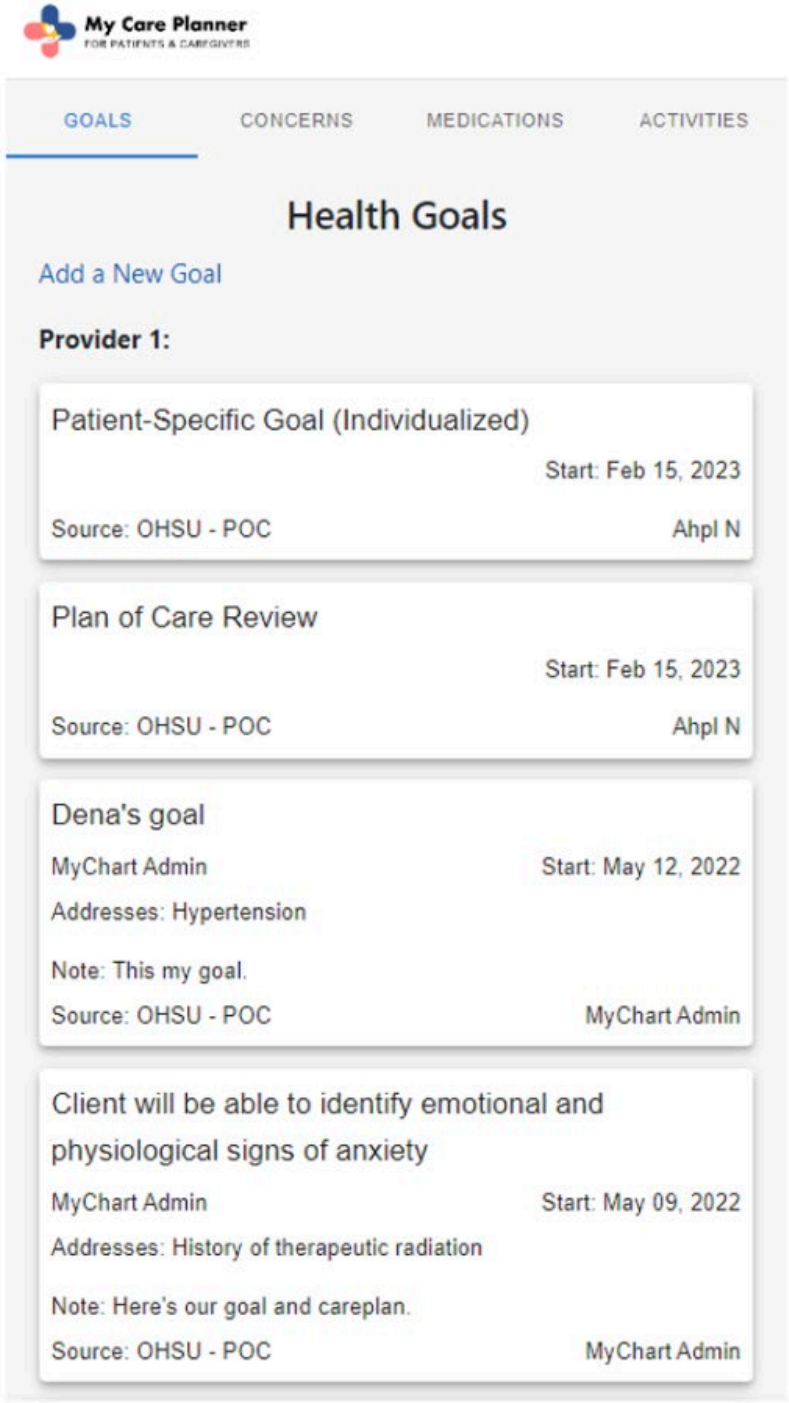


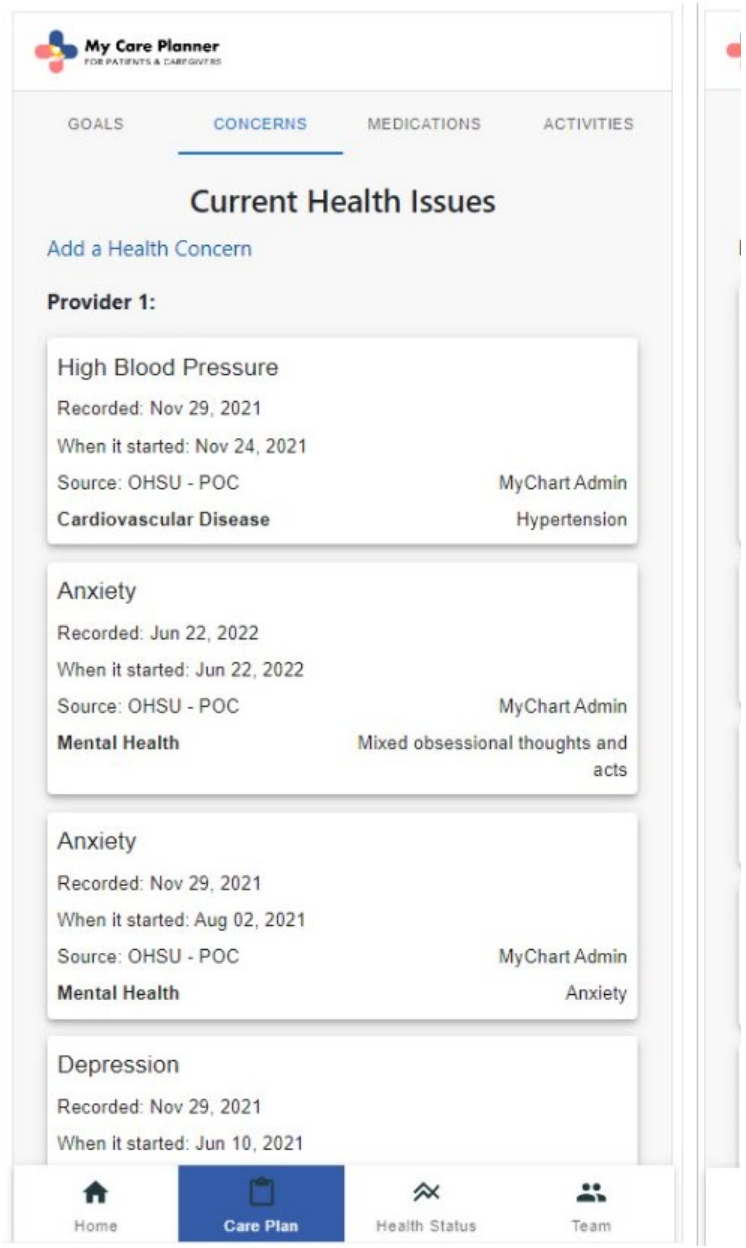
*All deliverables are open-source and freely available.

eCare Plan Second Generation Testing Overview




My Care Planner
FOR PATIENTS & CAREGIVERS
Welcome to My Care Planner!
My Care Planner is a tool to help you and your care team work together to keep you healthy. It is a completely personalized way to see what steps you've already taken and what else you can do to check for and prevent illnesses.
Rose Pink Fhir (age 48)
My Tasks
Depression screening (PHQ-2,9)
Anxiety screening (GAD-7)
PROMIS
PANAS (clinician)
FDI
Breast Cancer Screening
Decide When You Want to Start Breast Cancer Screening
Shared Health Records
Retrieve records from other healthcare providers
Disclaimer
This application is provided for informational purposes only and does not constitute medical advice or professional services. The information provided should not be used for diagnosing or treating a health problem or disease, and those seeking personal medical advice should consult with a licensed physician. Always seek the advice of your doctor or other qualified health provider regarding a medical condition. Never disregard professional medical advice or delay in seeking it
Home
Care Plan
Health Status
Team

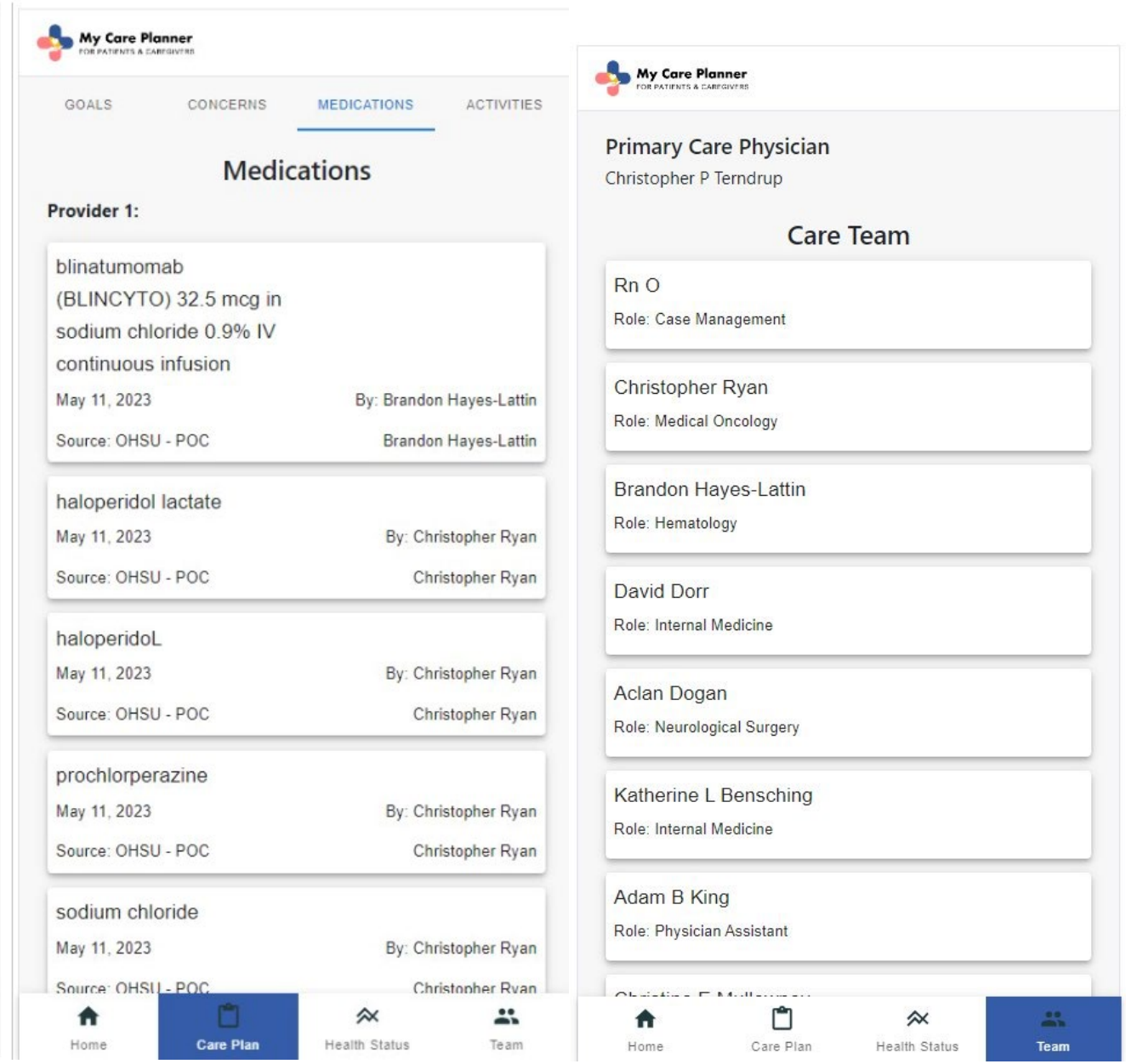

My Care Planner
FOR PATIENTS & CAREGIVERS
GOALS
CONCERNS
MEDICATIONS
ACTIVITIES
Health Goals
Add a New Goal
Provider 1:
Patient-Specific Goal (Individualized)
Start: Feb 15, 2023
Source: OHSU - POC
Ahpl N
Plan of Care Review
Start: Feb 15, 2023
Source: OHSU - POC
Ahpl N
Dena's goal
MyChart Admin
Start: May 12, 2022
Addresses: Hypertension
Note: This my goal.
Source: OHSU - POC
MyChart Admin
Client will be able to identify emotional and physiological signs of anxiety
MyChart Admin
Start: May 09, 2022
Addresses: History of therapeutic radiation
Note: Here's our goal and careplan.
Source: OHSU - POC
MyChart Admin



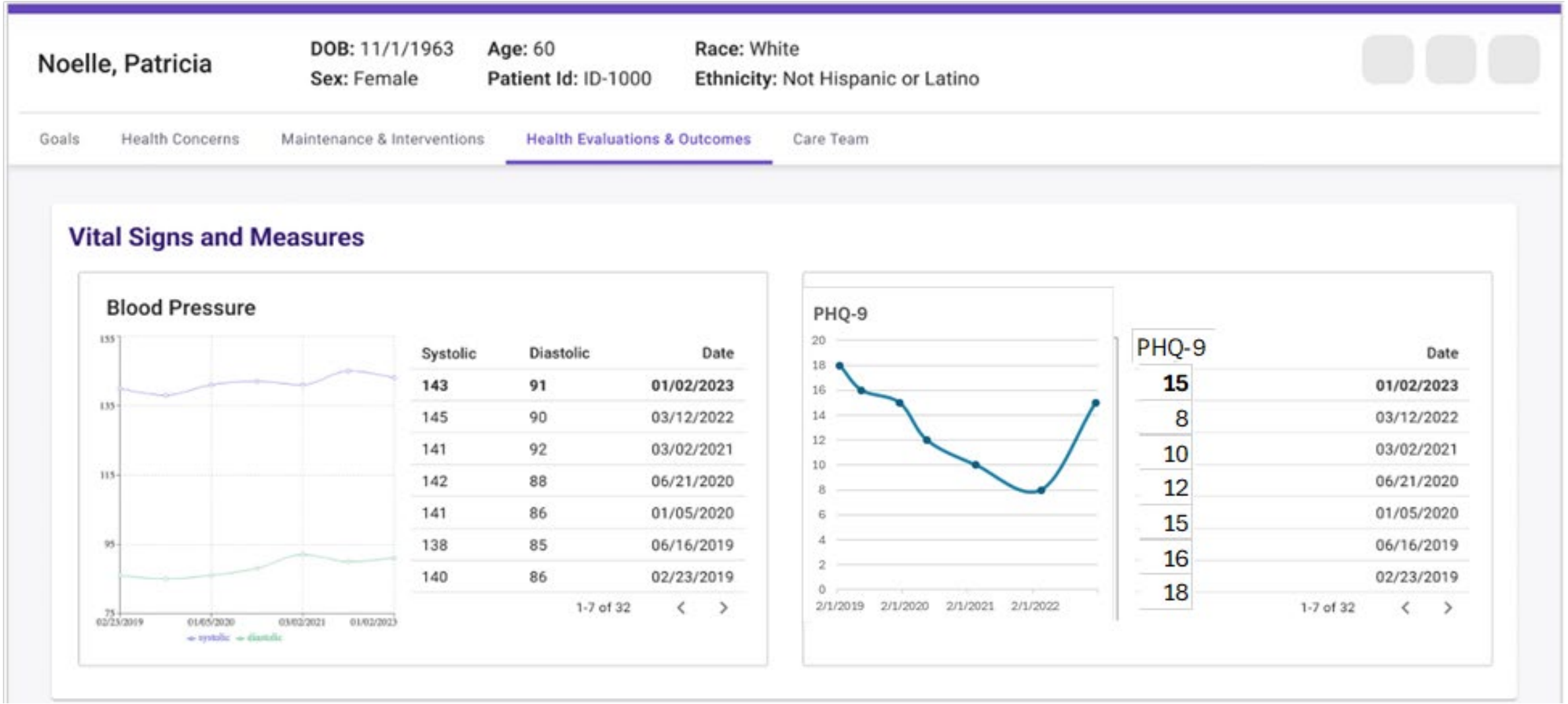
- Conditions (Health Concerns)
- All ordered but incomplete studies
- Key results (labs, patient reported outcome measures)
- **SNOMED and ICD10**

Medications
RxNorm
RxClass

Data challenging



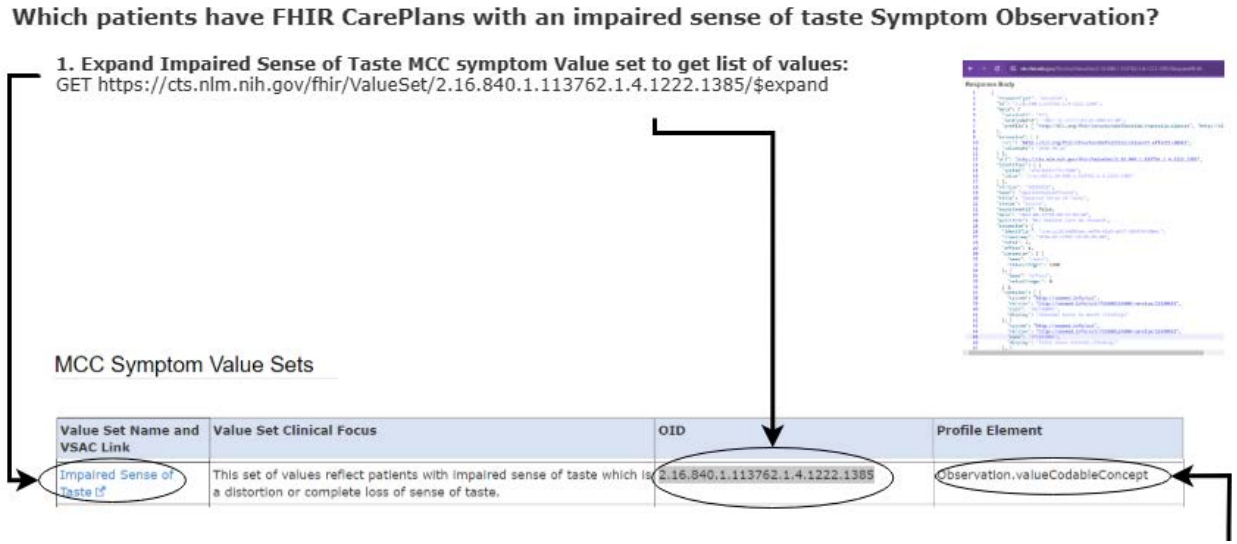
Practitioner:
Variable standards



eCarePlanner has a different view for care teams: more summarization / visualization

Metadata and Data Standards

- HL7 Implementation Guide components
  - o Home page: overview of why – 21 definitions versus 1000 possible
  - o Conformance – based on US Core Data Interoperability standard
  - o Terminology Usage



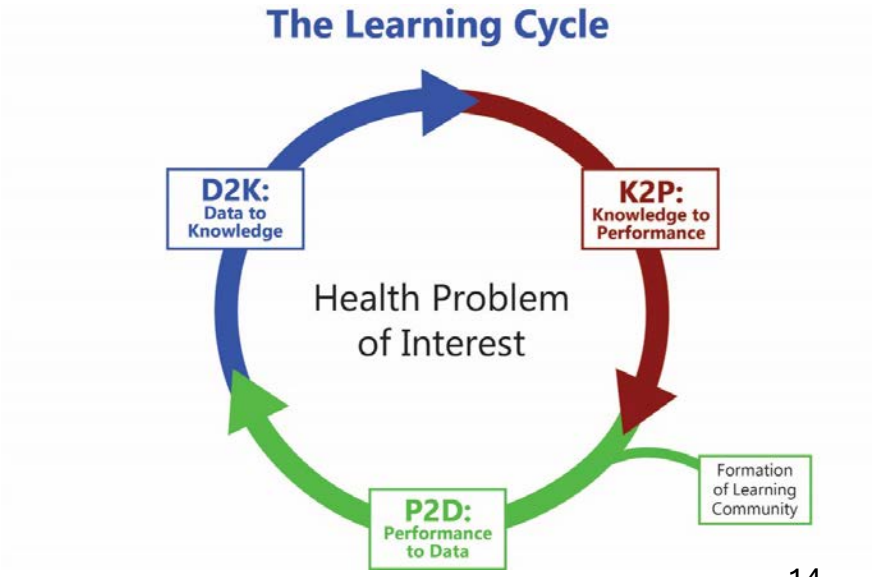
Value Set Libraries

- MCC Chronic Condition
- MCC Clinical Test
- MCC Goal
- MCC Laboratory Result
- MCC Medication Request
- MCC Diagnostic Report and Note Imaging Value Sets
- MCC Observation SDOH Assessment
- MCC Procedure and Service Request
- MCC Questionnaire Response
- MCC Simple Observation
- MCC Symptom

https://build.fhir.org/ig/HL7/fhir-us-mcc/

How can you use these standards?

- Use cases on Implementation Guide
- Two specific studies – MC COMPARE and Behavioral Health – help explain the opportunities and limitations
- A Learning Health System approach coupled with use-cases can drive real change …



https://build.fhir.org/ig/HL7/fhir-us-mcc/mcc_use_cases.html

Multiple Chronic COnditions: MultiPle dAta SouRcEs (MC COMPARE)

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5R01AG082931-02

OHSU

Brigham and Women's Hospital
Founding Member, Mass General Brigham

Study aims

1) Adapt and implement the eCarePlan applications to automatically extract data needed for our two partner studies.

2) Harmonize data and refine the integration process using Findability/Accessibility/Interoperability/Reusability (FAIR) and data readiness frameworks.

3) Replicate the outcome measurement methods of the two partner studies, exploring the impact of using eCarePlan on measurement of study metrics, adverse events, and related clinical outcomes.

COACH: home blood pressure and Care Transitions: Digital Tool to help avoid adverse events at transitions

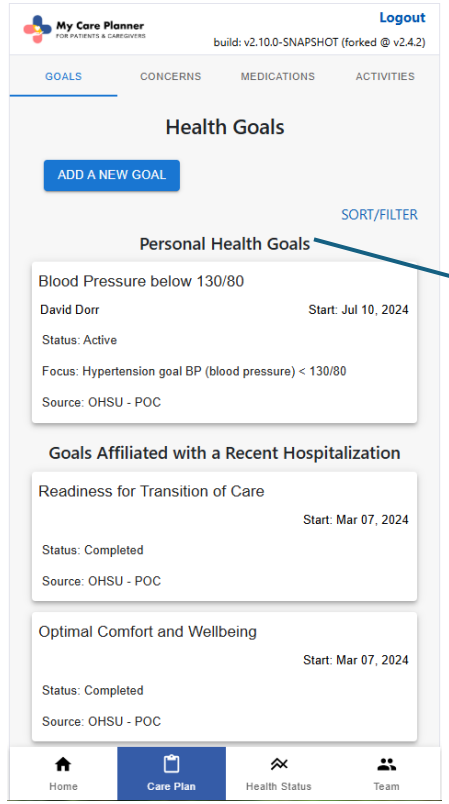
eCarePlan IG helps … but many additional needs

Value sets for labs and conditions

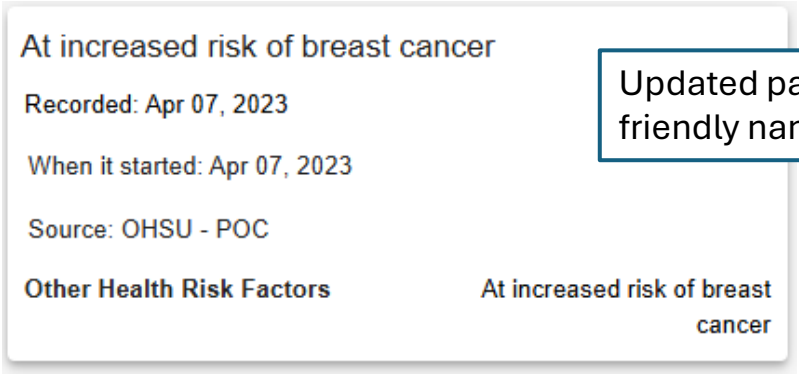
(see patient friendly name, below)

LOINC has many similar options

Goal source variation



Identification of patient directed vs. hospitalization goals



Updated patient friendly name

Aim 3 outcomes

Partner study outcomes and key subgroups that may be impacted by external data

Data element	Definition
Benefit Outcomes	**Systolic Blood Pressure (continuous)** % of patients meeting Blood Pressure Goal
Harm Outcomes	Adverse events
Process measures (for study evalution)	% of recommendations met Medication changes
Key subgroups	**Age** **High** Multiple Chronic Condition burden **Top quartile** Wei Multimorbidity Index **High** Polypharmacy (12 or more active medications)
Outcomes Specific to MC COMPARE	Major adverse cardio/cerebro-vascular events End-Stage Renal Disease Cognitive Status Functional status

Planned Use Cases : Gaps in stand-alone behavioral health

	Use-case	Evidence-based practice	Gap in standalone BH
1	Measurement-based Care	Diagnosis, Monitoring, and Outcomes in BH can be assisted by 'systematic evaluation of patient symptoms' (e.g., through patient-reported outcome measures)	Measurements are hard to collect and exchange, even when completed; measures taken many places; visualizations of longitudinal monitoring challenging.[1]
2	Longitudinal Care Plan	For people with both behavioral health and physical health conditions, care planning is fragmented and not patient-centered; integration of data across teams + other changes improves goal attainment and avoids adverse events.	Access to key data for standalone BH very limited; requires significant redundant work. BH EHRs not allow information exchange.
3	Care Plan Adaptation at Care Transitions	Care plans at discharge from hospital frequently are missing key information / conflict with other plans; this leads to gaps and harms	Even lower access to discharge summaries; getting timely data challenging.

1. Lewis https://pmc.ncbi.nlm.nih.gov/articles/PMC6584602/ ; ASTP/ONC NAP-AX-22-001

Conclusion

- **Leveraging Technology and Learning Health Systems to Improve Person-Centered Care Planning**
- Requires
  - Standards for interoperability and information exchange
  - Coupled with flexible systems and
  - Specific use-cases to reduce complexity / achieve outcomes