Health Information Technology Tools to Support the Implementation of a Complex Care Management Program

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Disclosure

We have no financial or commercial conflicts of interest to report regarding this educational presentation

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Learner Objectives

1. The learner will be able to describe the use and implementation of structured data fields in electronic health records (EHRs) as a tool to measure the impact of nursing in the primary care setting.

2. The learner will be able to discuss the challenges of structuring electronic health records to measure the nursing role in complex care management in primary care.

3. The learner will be able to explain the global implications of defining structured data collection using electronic health records for complex care management in the primary care setting.

Federally Qualified Health Centers (FQHCs)

- Nation's largest safety net setting
- Located in designated high need communities
- Caring for 24 million patients annually
- 93% served are below 200% poverty and 35% uninsured

CHC Profile

- Founding year: 1972
- Primary care hubs: 14; 204 sites
- Annual budget: $100m
- Staff: 1,000
- Patients/year: 100,000 (est. 2017)
- Specialties: onsite psychiatry, podiatry, chiropractic
- Specialty access by e-Consult to 15 specialists

CHC Locations in Connecticut

Elements of the Model

- Fully integrated teams and data
- Integration of key populations into primary care
- Data-driven performance
- "Wherever You Are" approach

Weitzman Institute

- QI experts; national coaches
- Project ECHO®— special populations
- Formal research and R&D
- Clinical workforce development

Elements of the Model

Structured Data in Electronic Health Records to Capture Nursing Work in Complex Care Management

Health Information Technology and Complex Care Management

Our Goal:

- Improve the quality of complex care management through health information technology

Key Priorities:

- Learn how to achieve better complex care management with EHRs
- Use EHRs to measure complex care processes in primary care
- Build population health outcomes of complex care into EHRs
- Promote adoption of the develop HIT tools

Complex Care Measures

Complex care measures help us:

- Quantify complex care
- Evaluate complex care services
- Answer specific population outcomes questions
- Provide better complex care management

Complex care processes and outcomes in primary care are difficult to measure

Data Models in Complex Care Management

- Value of a data model
  - A set of rules to define the structure of data
  - Defines the relationships among different kinds of data
  - Helps with the data planning and identifying the data elements within the EHR that are available to use for complex care measures
  - The definition of EHR fields and what kind of information they record should be predetermined based on a data model
- Structured data collection
  - Easy to retrieve data when you need it
  - Easy to generate reports

Current State of Using EHR Data for Complex Care Management

- Underutilization of structured data fields to record complex care processes
- Clinical workflow barriers, which lead to limited attention to and documentation of complex care coordination processes
- Lack of data standardization
- Limited or lack of health EHR systems interoperability

Challenges of Using Existing EHR fields

- EHRs initially were designed to document care of individual patients and for billing insurers for reimbursement of services, and not for measuring population data or clinical processes.
- Existing EHR fields may not suit a data model for measuring complex care.
- Some fields are redundant or use different wording to measure the same thing.
- Limitations in linking data
- Altering fields has consequences for how related fields are populated and accessed, and may interrupt data collection already under way.
- Building new fields requires re-training nurses.

HIT and Complex Care Management in Primary Care: Stakeholders

- Nurses / Clinical Teams
- Business Intelligence
- Quality Improvement
- Research and Evaluation
- Leadership
- Patients

Challenge: Meet the needs of clinical staff

Solution: Work with nurses to create a solution – a dashboard, care templates, and a scorecard

Development of a Dashboard to Provide Decision Support for Complex Care Management in Primary Care

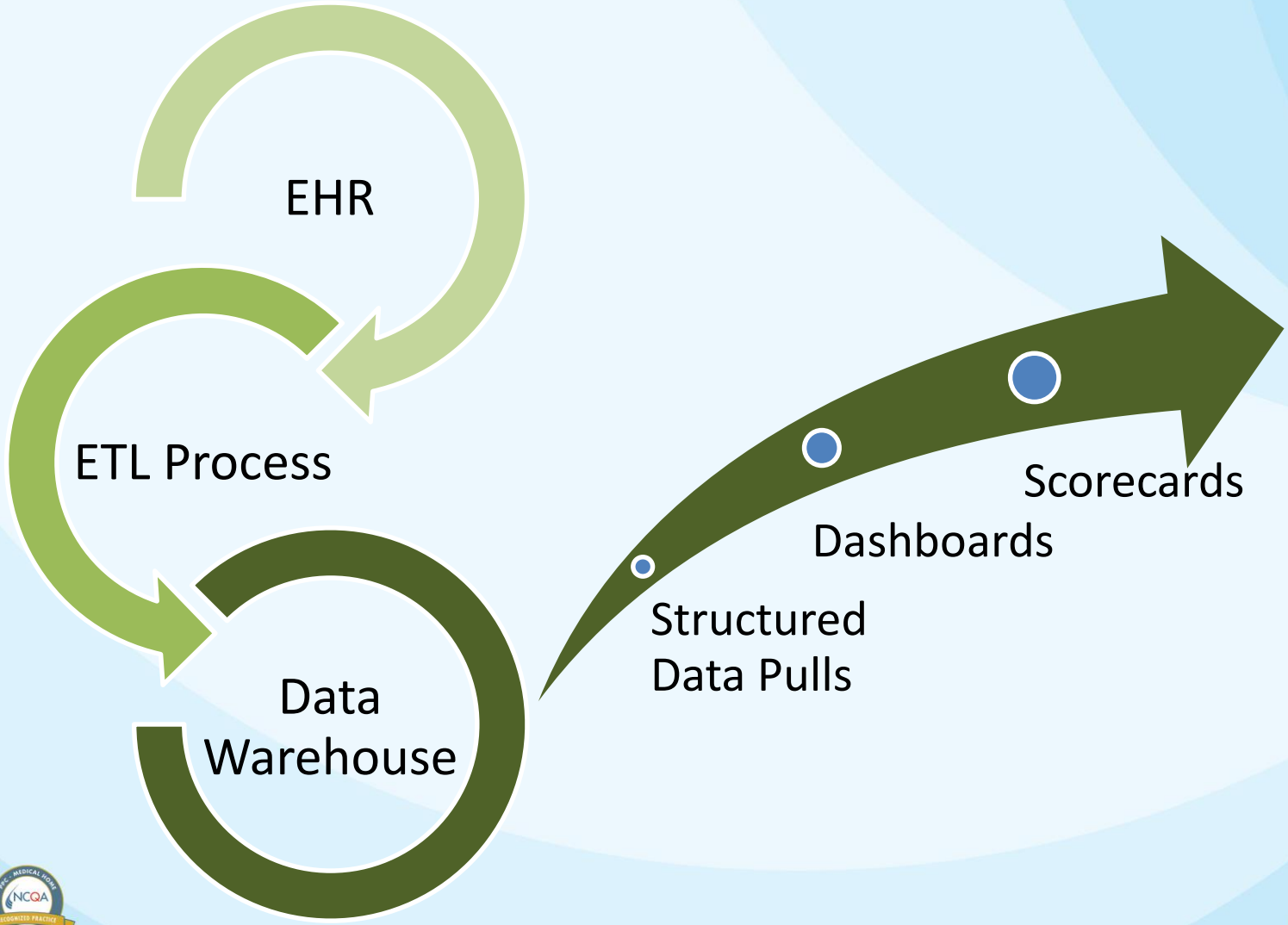
Learner Objectives

1. The learner will be able to describe how an operable population-based electronic dashboard was developed.

2. The learner will understand how an electronic dashboard provides decision support for nurse care managers in primary care.

3. The learner will understand the importance of a nurse-driven dashboard as a tool for Complex Care Management in a global setting.

Data Driven: the *Right* Data at the *Right* Time



An Operable Nursing Dashboard

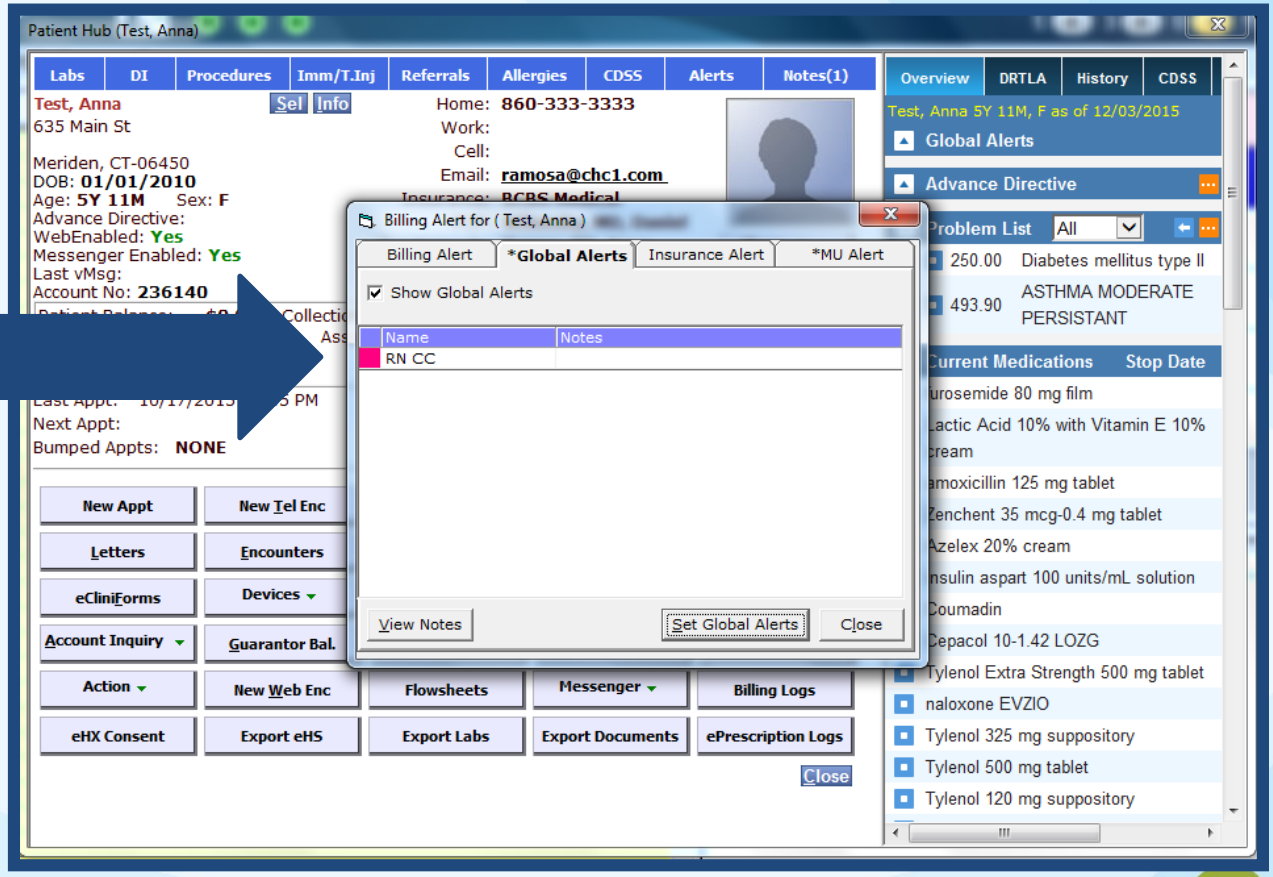
- Based on an algorithm of standardized definitions that identifies high risk patients who would benefit from complex care management
- Serves as an actionable complex care opportunity
- Patients receive the care that they need (population level)

Global Alert for Enrollment in Complex Care Management

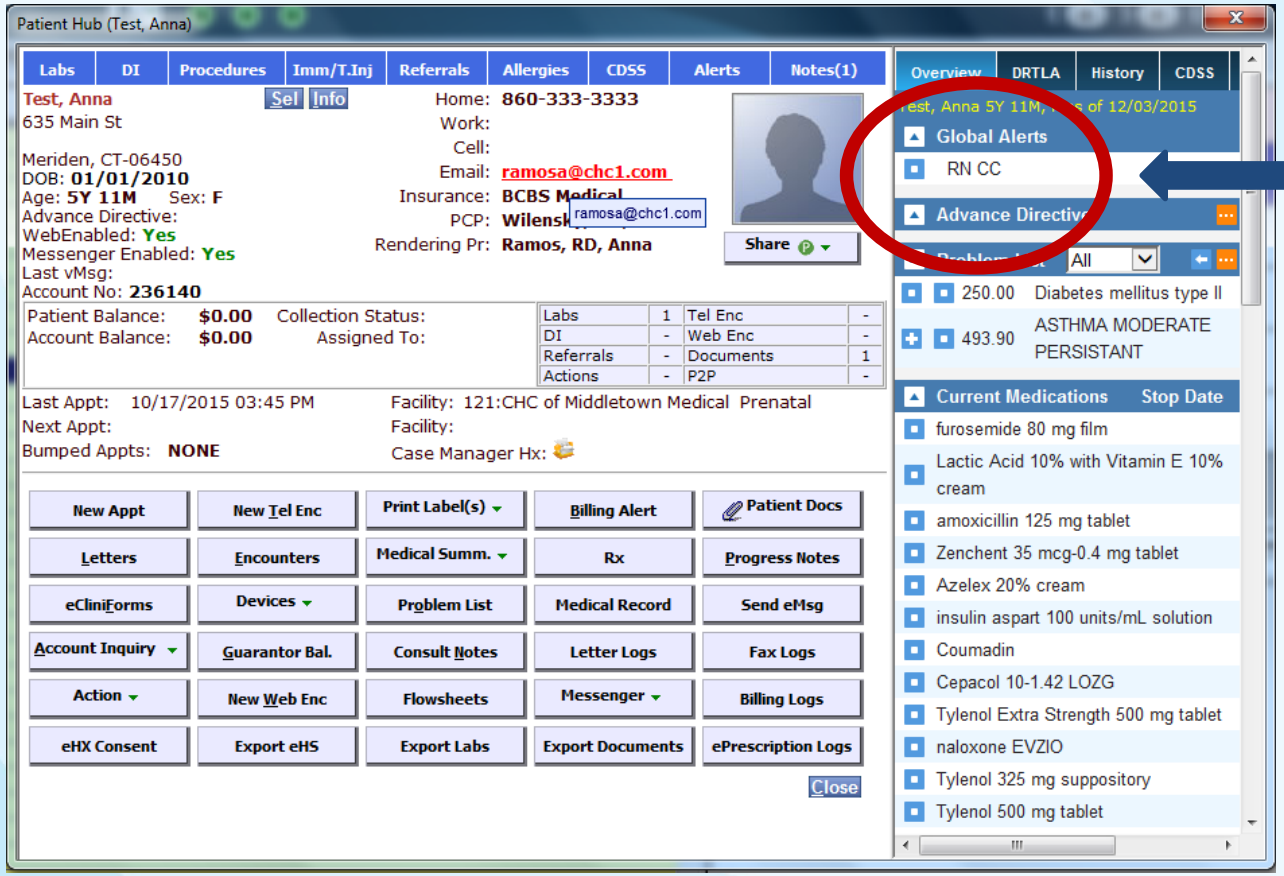
- Allows for more population-based views of complex care processes and outcomes.
- Provides more complete and more timely access to population health trends and analytics based on the rich data set.
- Helps reduce variations in complex care management
- Minimizes the data collection burden – structured data may be automatically extracted for complex care measurement

Global Alert for Enrollment in Complex Care Management

RN CCM Global Alert

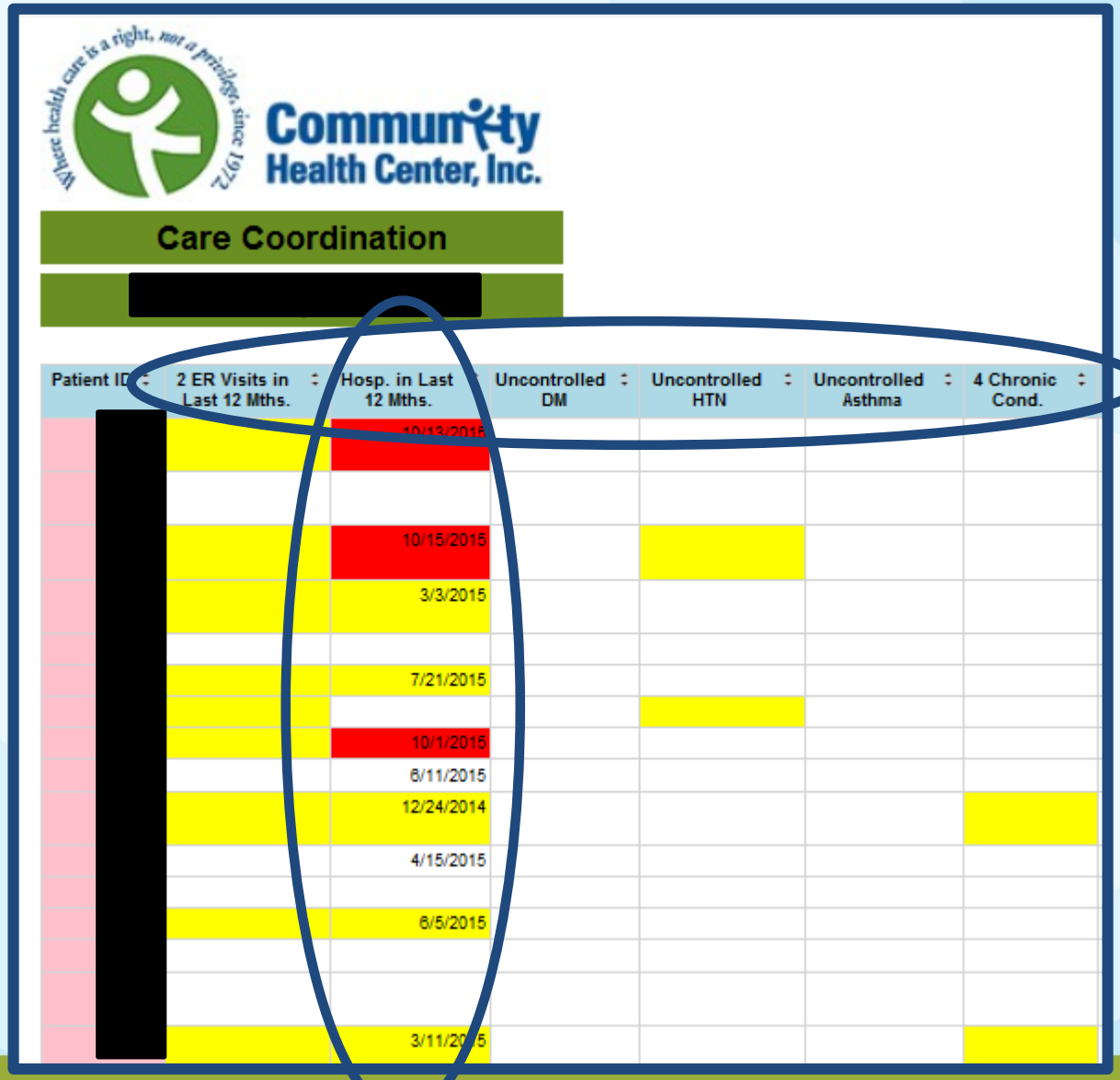


Global Alert for Enrollment in Complex Care Management

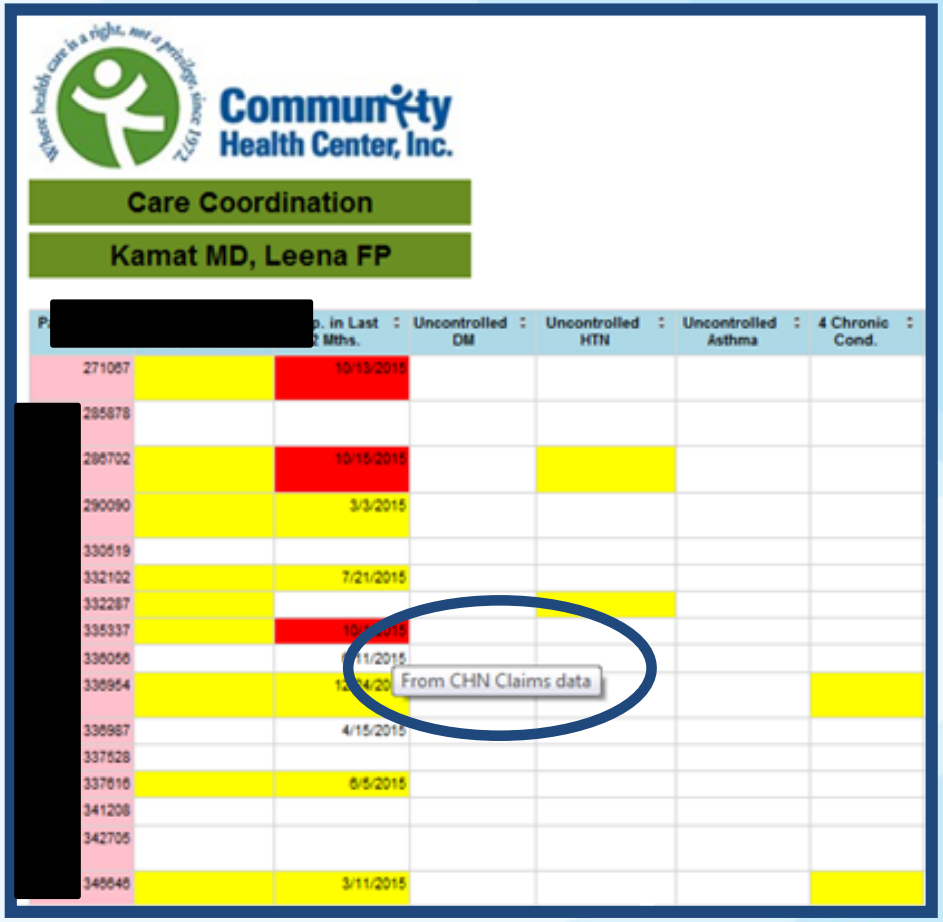


Global Alert on Patient's Home Page

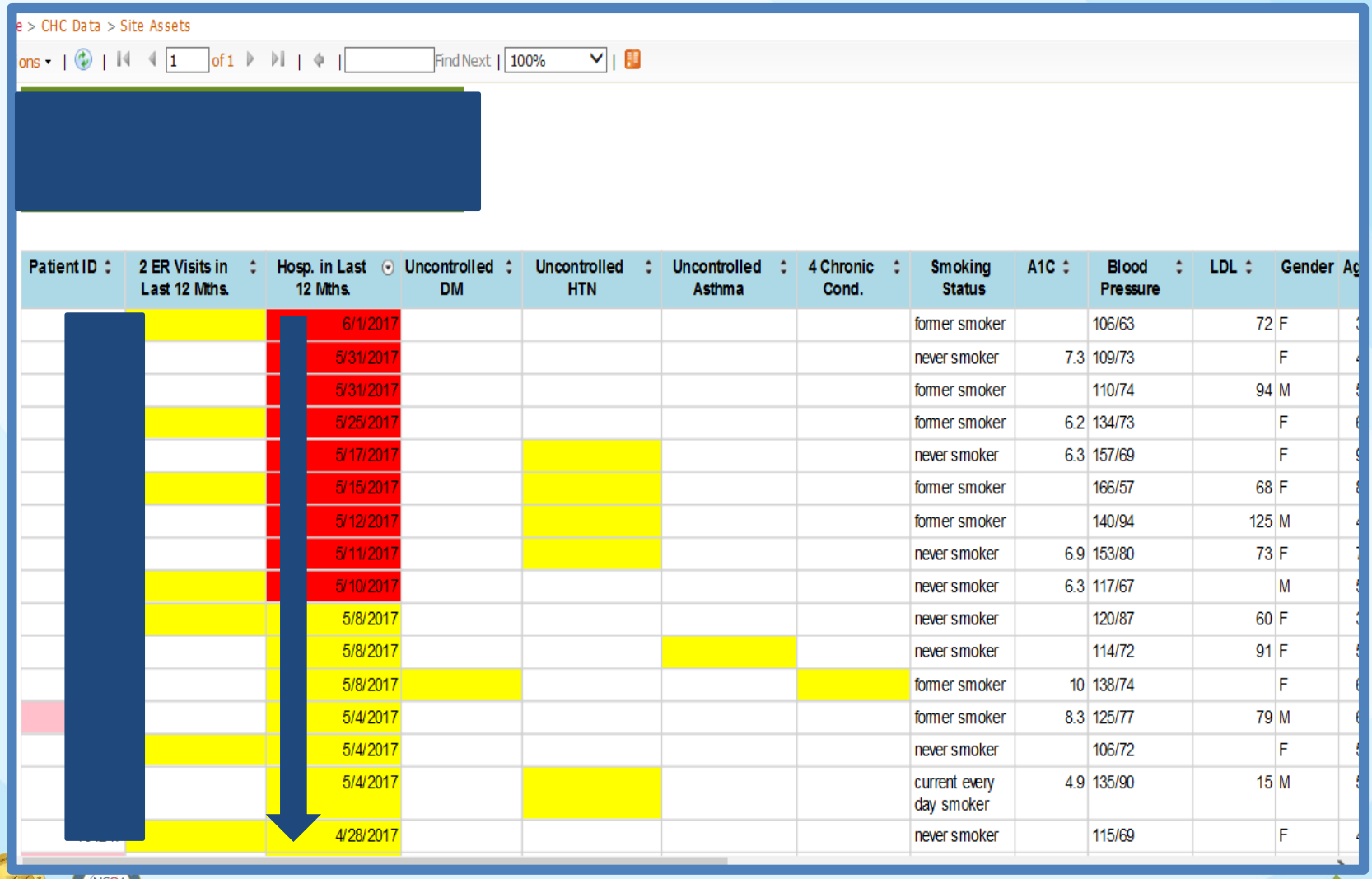
Reason for Complex Care Management



Consider Possible Data Sources



Customizing the Sort



Patient ID	2 ER Visits in Last 12 Mths.	Hosp. in Last 12 Mths.	Uncontrolled DM	Uncontrolled HTN	Uncontrolled Asthma	4 Chronic Cond.	Smoking Status	A1C	Blood Pressure	LDL	Gender	Ag
		6/1/2017					former smoker		106/63	72	F	
		5/31/2017					never smoker	7.3	109/73		F	
		5/31/2017					former smoker		110/74	94	M	
		5/25/2017					former smoker	6.2	134/73		F	
		5/17/2017					never smoker	6.3	157/69		F	
		5/15/2017					former smoker		166/57	68	F	
		5/12/2017					former smoker		140/94	125	M	
		5/11/2017					never smoker	6.9	153/80	73	F	
		5/10/2017					never smoker	6.3	117/67		M	
		5/8/2017					never smoker		120/87	60	F	
		5/8/2017					never smoker		114/72	91	F	
		5/8/2017					former smoker	10	138/74		F	
		5/4/2017					former smoker	8.3	125/77	79	M	
		5/4/2017					never smoker		106/72		F	
		5/4/2017					current every day smoker	4.9	135/90	15	M	
		4/28/2017					never smoker		115/69		F	

Additional Actionable Data

Smoking Status	A1C	Blood Pressure	LDL	Gender	Age	CC Start Date	CC End Date	Last SMG Date	Action Item	Action Item Due Date	Last PCP Visit	Last Dental Visit	Last BH Visit	Portal Enabled
current every day smoker		137/95	79	M	52	3/23/2017					5/11/2017	11/1/2012	10/10/2013	Yes
current every day smoker		112/72		M	61	2/4/2016					7/26/2016			No
current every day smoker		113/70		M	54	5/10/2017					5/9/2017	5/26/2015	1/26/2017	No
never smoker	8.6	131/75		F	65	3/11/2015		3/8/2016			3/23/2017		4/20/2012	No
never smoker	8.7	165/68		M	62	3/26/2015		6/25/2013			5/11/2017	11/9/2015		Yes
never smoker	8.6	114/70		F	46	4/13/2015		4/11/2017			2/23/2017	7/29/2015	8/26/2010	Yes
current every day smoker		142/78		F	56	8/16/2016					6/29/2016		7/21/2016	Yes
never smoker	5.7	161/78		F	62	1/9/2016					2/16/2016		9/17/2015	Yes
current every day smoker	6.5	131/66		M	68	3/20/2015					4/13/2017	1/21/2017		Yes
never smoker	17.4	117/73	14	M	80	2/27/2017		5/8/2017			5/24/2017			No
current every day smoker		138/77		M	59	3/6/2017					5/9/2017	1/24/2007	1/7/2014	No
current every day smoker	9.7	144/84		F	45	8/2/2016					5/16/2017	4/15/2015	6/1/2017	No
current every day smoker	11.5	135/82		M	50	1/14/2016		4/25/2017			5/17/2017	5/2/2016		Yes
never smoker		142/78		F	46	1/26/2017					5/25/2017			Yes
never smoker		108/69		F	49	1/19/2016					6/1/2015			Yes
current every day smoker	5.9	129/64	76	M	70	1/5/2016		5/12/2015			3/31/2017			Yes

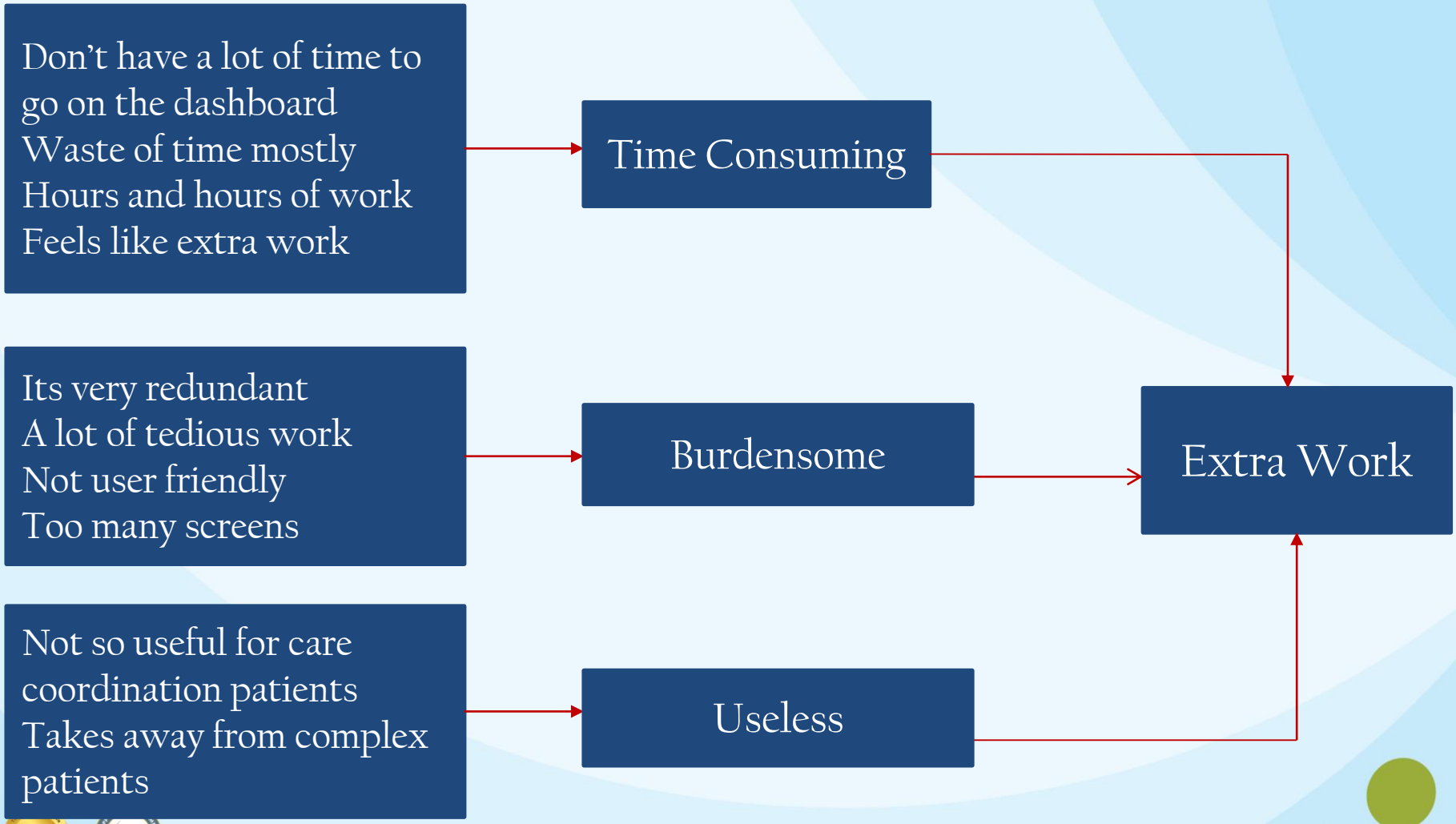
Evaluation of the CCM Dashboard

- Krippendorf's Content Analysis
- Close examination of text, categorizing of similar meanings, clustering of categories, themes.
- Transcripts were read 4 times over 3months.
- Each transcript was read a 5th time and thoughts on categories were written on the margins.
- The data was then grouped under each of these categories
- Categories read and collapsed

Themes

- Provide better care
- Extra work
- Variability in instruction
- Streamlining information

Dendograms


Don't have a lot of time to go on the dashboard
Waste of time mostly
Hours and hours of work
Feels like extra work
Time Consuming
Its very redundant
A lot of tedious work
Not user friendly
Too many screens
Burdensome
Not so useful for care coordination patients
Takes away from complex patients
Useless
Extra Work

Themes Explored: Provide Better Care

- Enhanced their jobs
- 'have all my people in one spot'
- 'identify patients who may need more support'
- Could find patients quickly and follow their vitals and lab values easily
- Able to follow patients who had been recently discharged from hospital
- The dashboard allowed them to spend more time on care coordination

Themes Explored: Extra Work

- Use of dashboard was perceived as 'burdensome'
- It 'takes away from the patients who actually need care coordination'
- Felt obliged to open the dashboard otherwise they would 'get into trouble'
- Felt 'too redundant'
- Took too long to check in on the patients and daily checking in was unrealistic
- Competing tasks took away from time allocated to care coordination
- 'we are feeding the dashboard with information'

Themes Explored: Variability in Instruction

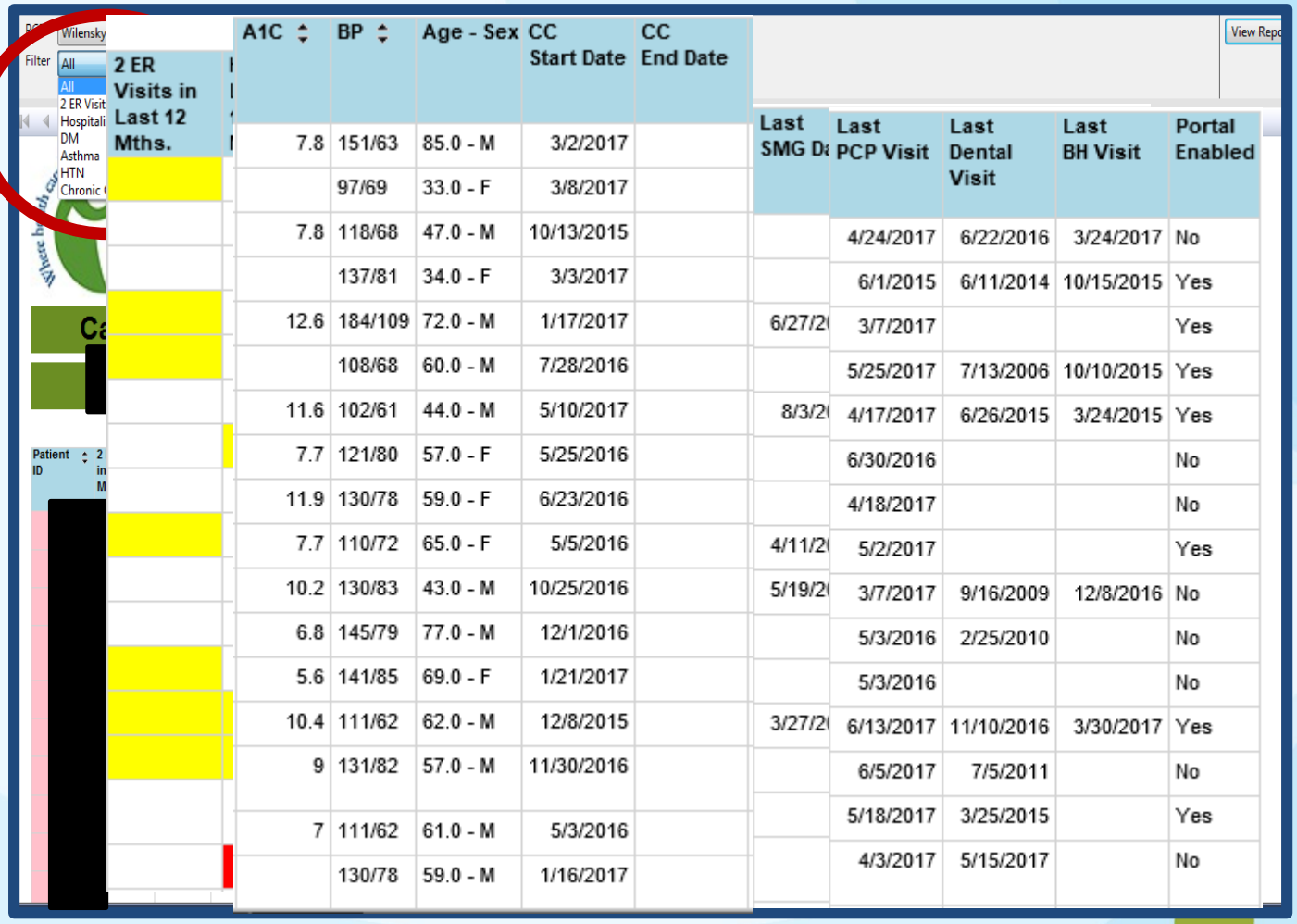
- Training for dashboard use was inconsistent
- None of the nurses had hands on training
- 'it would have been helpful to have hands on training with somebody looking at it with us'
- Suggested that a refresher course would be helpful

Themes Explored: Streamlining Information

- Complex Care Management panels to be linked to their profiles and be 'nurse driven' instead of PCP driven
- A column that would give 'the reason why we started to do care coordination' on a particular patient
- Seamless navigation through patient templates to obtain pertinent information
- Clarity when a patient should be removed from care coordination
- Accurate and updated information

Revised CCM Dashboard

New filter option



2 ER Visits in Last 12 Mths.	A1C	BP	Age - Sex	CC Start Date	CC End Date	Last SMG Da	Last PCP Visit	Last Dental Visit	Last BH Visit	Portal Enabled
	7.8	151/63	85.0 - M	3/2/2017			4/24/2017	6/22/2016	3/24/2017	No
		97/69	33.0 - F	3/8/2017			6/1/2015	6/11/2014	10/15/2015	Yes
	7.8	118/68	47.0 - M	10/13/2015			3/7/2017			Yes
		137/81	34.0 - F	3/3/2017		6/27/2(	5/25/2017	7/13/2006	10/10/2015	Yes
	12.6	184/109	72.0 - M	1/17/2017			4/17/2017	6/26/2015	3/24/2015	Yes
		108/68	60.0 - M	7/28/2016		8/3/2(	6/30/2016			No
	11.6	102/61	44.0 - M	5/10/2017			4/18/2017			No
	7.7	121/80	57.0 - F	5/25/2016			5/2/2017			Yes
	11.9	130/78	59.0 - F	6/23/2016		4/11/2(	3/7/2017	9/16/2009	12/8/2016	No
	7.7	110/72	65.0 - F	5/5/2016		5/19/2(	5/3/2016	2/25/2010		No
	10.2	130/83	43.0 - M	10/25/2016			5/3/2016			No
	6.8	145/79	77.0 - M	12/1/2016			6/13/2017	11/10/2016	3/30/2017	Yes
	5.6	141/85	69.0 - F	1/21/2017		3/27/2(	6/5/2017	7/5/2011		No
	10.4	111/62	62.0 - M	12/8/2015			5/18/2017	3/25/2015		Yes
	9	131/82	57.0 - M	11/30/2016			4/3/2017	5/15/2017		No
	7	111/62	61.0 - M	5/3/2016						
		130/78	59.0 - M	1/16/2017						

History of Present Illness

Diabetes:

Home glucose testing ------Checks QID. Glucose control ------Fair per last A1c of 7.6. Topics discussed Using your glucometer, When to test, What should my FSBS be, Recording your results, Testing Action Plan , Pt verbalized understanding. Hypoglycemia Patient explains that he has not had an episodes in tha last few months, but when he does he gets dizzy and his BG reading would be lower than 105 but it has never been below 70. He treats hypoglycemia with half a cup of orange juice and a piece of sweet bread. Symptoms ------ Polyphagia after dinner, denies any other symptoms of hyperglycemia. Foot Problems ------Denies. Diet ------ Patient reports that he consumes too many snacks after dinner and many of these are sweets that he shares with his five year old son. Exercise ------Patient reports that although he does not have a set exercise routine, he does feel that he is very active working as a barber long hours and engaging in active play with his five year old son.

Medications:

Medication review Name of each med, How pt keeps track of meds, Purpose of each med, Why it is important to take meds , Refills needed, Tips for better adherence, pt verbalized understanding, Adherence rate ------Patient reports excellent adherence

Self Management:

Ready to set a new goal? Ready to set a new goal? Yes. SM Goal: Healthy Eating Will substitute evening sweet snacks with sugar free products. SM Goal:Being Active/Exercise N/A at this time. SM Goal: Medication Use N/A at this time. SM goal: Glucose Monitoring N/A at this time. SM Goal:Self Care/Risk Reduction N/A at this time. Confidence Score: ------7.

Care process review:

Foot exam in past year? Foot exam? [redacted]------. Eye exam past year? Eye exam past year? ------Patient reports that [redacted] to his eye doctor within the past year, but unsure if retinopathy screening wa[redacted] Patient agrees to bring us the contact information for his eye doctor and to s[redacted]lease for us to get those records at his next visit. Hemoglobin A1C in past 6 m[redacted] A1C Yes Within the last three months.

A1c education provided. Patient ve[redacted]d understanding.

Community Health Center, Inc.

Care Coordination Drill

[redacted]

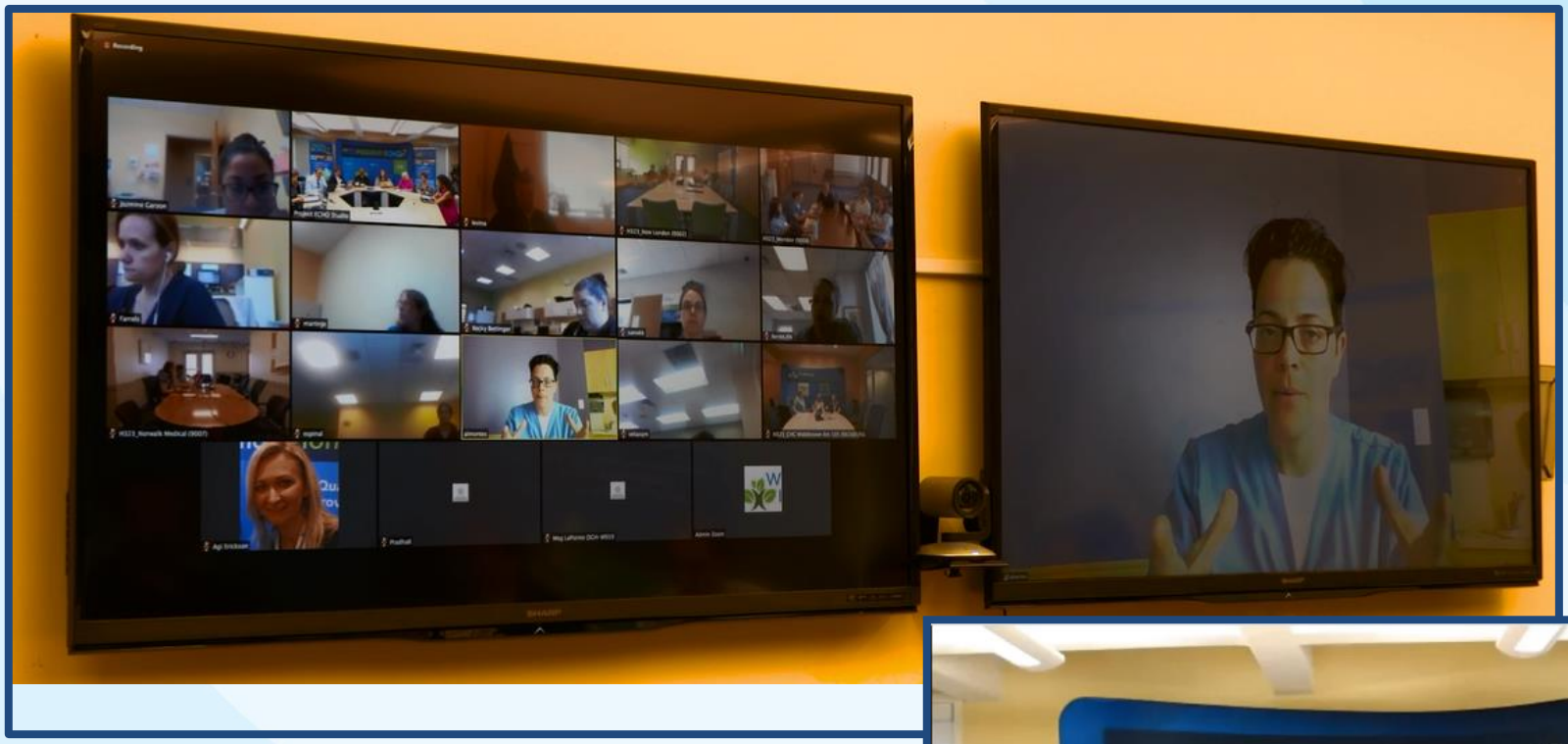
Patient ID	2 ER Visits in Last 12 Mths.	Hosp. Last 12 Mths.	DM	HTN	Asthma	4 Chronic Cond.	Smoking Status	A1C	BP	Age - Sex	CC Start Date	CC End Date
[redacted]		6/2/2016						7.8	151/63	85.0 - M	3/2/2017	
									97/69	33.0 - F	3/8/2017	
								7.8	118/68	47.0 - M	10/13/2015	
									137/81	34.0 - F	3/3/2017	
								12.6	184/109	72.0 - M	1/17/2017	
									108/68	60.0 - M	7/28/2016	
								11.6	102/61	44.0 - M	5/10/2017	
								7.7	121/80	57.0 - F	5/25/2016	
								11.9	130/78	59.0 - F	6/23/2016	
		8/17/2016						7.7	110/72	65.0 - F	5/5/2016	
								10.2	130/83	43.0 - M	10/25/2016	
								6.8	145/79	77.0 - M	12/1/2016	
		[redacted]										

SM goal: Glucose Monitoring, SM Goal: Healthy Eating, SM Goal: Being Active/Exercise, SM Goal:Self Care/Risk Reduction, SM Goal: Medication Use, Confidence Score:-------7

Self-Management Goal in EHR

Self-Management Goal Details

Training Primary Care RNs to a New Model



Project ECHO: RN complex care Management: 24 RNs participate bi-weekly for two hours of didactic, Plus case presentation and feedback

Project ECHO Complex Care Management: Training Primary Care RNs to a New Model

- First session on 9/24/15
- Duration: 2 hours; 1 didactic and ~2 cases
- All 12 sites involved – Approx. 35 nurses
- Faculty consists of:
  - Chief Nursing Officer
  - Medical Provider
  - Pharmacist
  - Behavioral Health Provider
  - Homecare Nurse
  - Complex Care Management Specialist and Certified Diabetes Educator
  - Registered Dietician and Certified Diabetes Educator
  - Access to Care Coordinators

Complex Care Management

Equipping RNs for Complex Care Management

Didactic Topics Covered:

1. **Complex Care Management**
2. **Care Transitions**
3. **Homecare Nursing**
4. **Health IT for Complex Care Management**
5. **Complex Pain Care**
6. **Substance Abuse**
7. **Self-Management Goal Setting**
8. **Medical Nutrition Therapy**
9. **Diabetes Management**
10. **Diabetes Medication Management**
11. **Personality Disorders**
12. **CT Medicaid: Intensive Case Management Program**
13. **Medication Reconciliation**
14. **HIV PrEP and PEP**
15. **LGBT Cultural Competency**
16. **Asthma (Tx, Meds, Spirometry)**
17. **Wound Care**
18. **COPD**
19. **Congestive Heart Failure**
20. **Obesity and Weight Management**

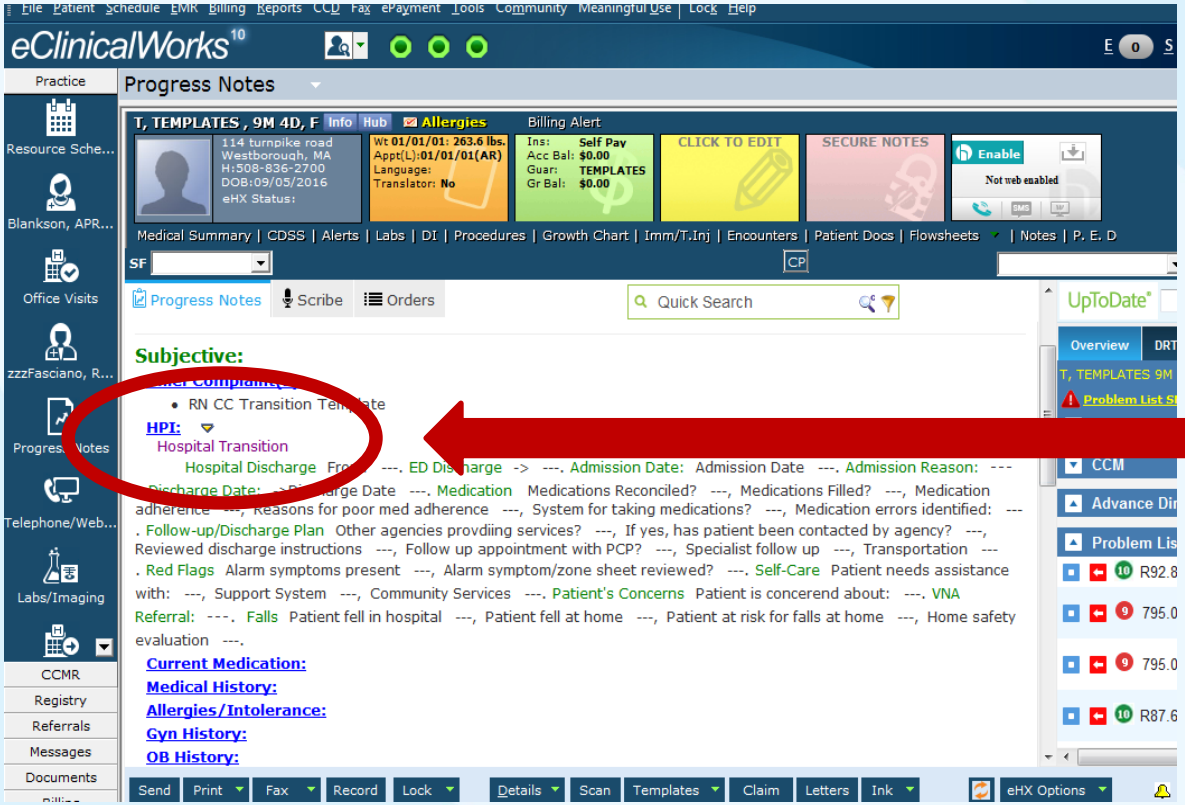
Future Topics:

1. **HIV**
2. **Hepatitis C**
3. **Role of the Complex Care Management Nurse**
4. **Anxiety Disorders**
5. **Triage for Behavioral Health Concerns and the Suicidal Patient**
6. **Psychiatry Medications**
7. **Buprenorphine Treatment**

Transition Care Template

- A template based on Coleman's (2004) pillars to document the care of patients transitioning from hospital to home
- The template aims to aggregate information from multiple providers and settings into a single location
- EHR - populated with data from the transition template (e.g., hospital discharge data, self-care, VNA referrals, ED discharges, falls, patient concerns and red flags) offers a view of processes of transition care and clinical outcomes not possible otherwise.

Transition Care Template



Hospital Transition

Transition Care Template

HPI:

Hospital Transition

Hospital Discharge

From: ---

ED Discharge

-> ---

Admission Date:

Admission Date ---

Admission Reason: ---.

Discharge Date:

->Discharge Date ---

Medication

Medications Reconciled? ---
Medications Filled? ---
Medication adherence ---
Reasons for poor med adherence ---
System for taking medications? ---
Medication errors identified: ---

Follow-up/Discharge Plan

Other agencies providing services? ---
If yes, has patient been contacted by agency? ---
Reviewed discharge instructions ---
Follow up appointment with PCP? ---
Specialist follow up ---
Transportation ---

Red Flags

Alarm symptoms present ---
Alarm symptom/zone sheet reviewed? ---

Self-Care

Patient needs assistance with: ---
Support System ---
Community Services ---

Patient's Concerns

Patient is concerned about: ---

VNA Referral: ---.

Falls

Patient fell in hospital ---
Patient fell at home ---
Patient at risk for falls at home ---
Home safety evaluation ---

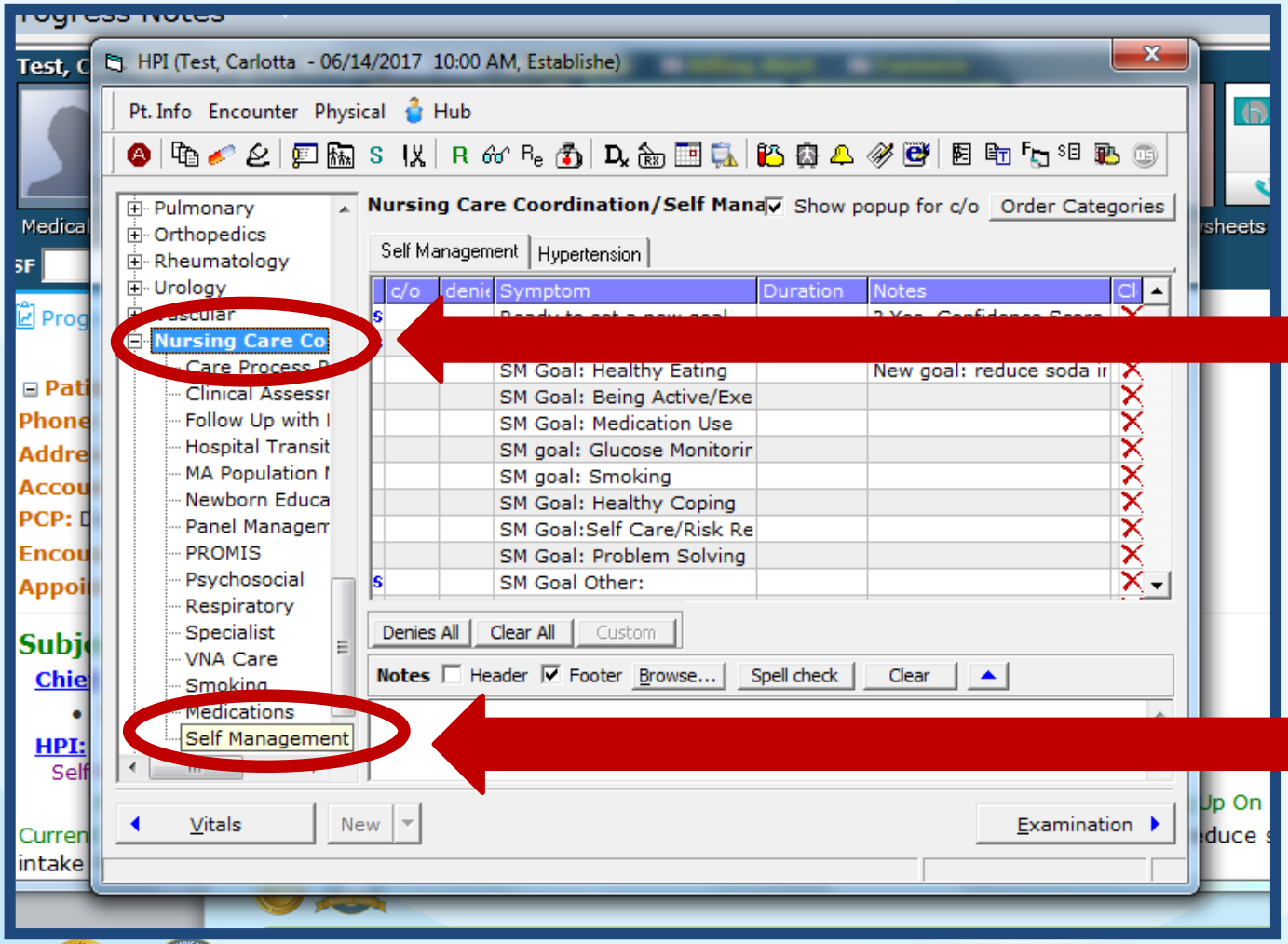
Percent of Fields Completed

Question	% completed
Hospital Discharge	90%
Admission Date:	81%
Admission Reason:	77%
Follow-up/Discharge Plan	75%
Medication	67%
Discharge Date:	65%
Self-Care	48%
VNA Referral:	46%
ED Discharge	46%
Falls	29%
Patient's Concerns	25%
Red Flags	13%

Lessons Learned and Next Steps

- Nurses who use it like it
- Templates often not fully completed
- Clinical care documentation vs. population management
- Need to address barriers to outreach:
  - No discharge plan from hospital to PCP
  - Patients difficult to reach
  - Patients don't know their discharge plan
- Need to train new staff, review right workflow, right team member, remind/address overall template use
- F/U chart reviews

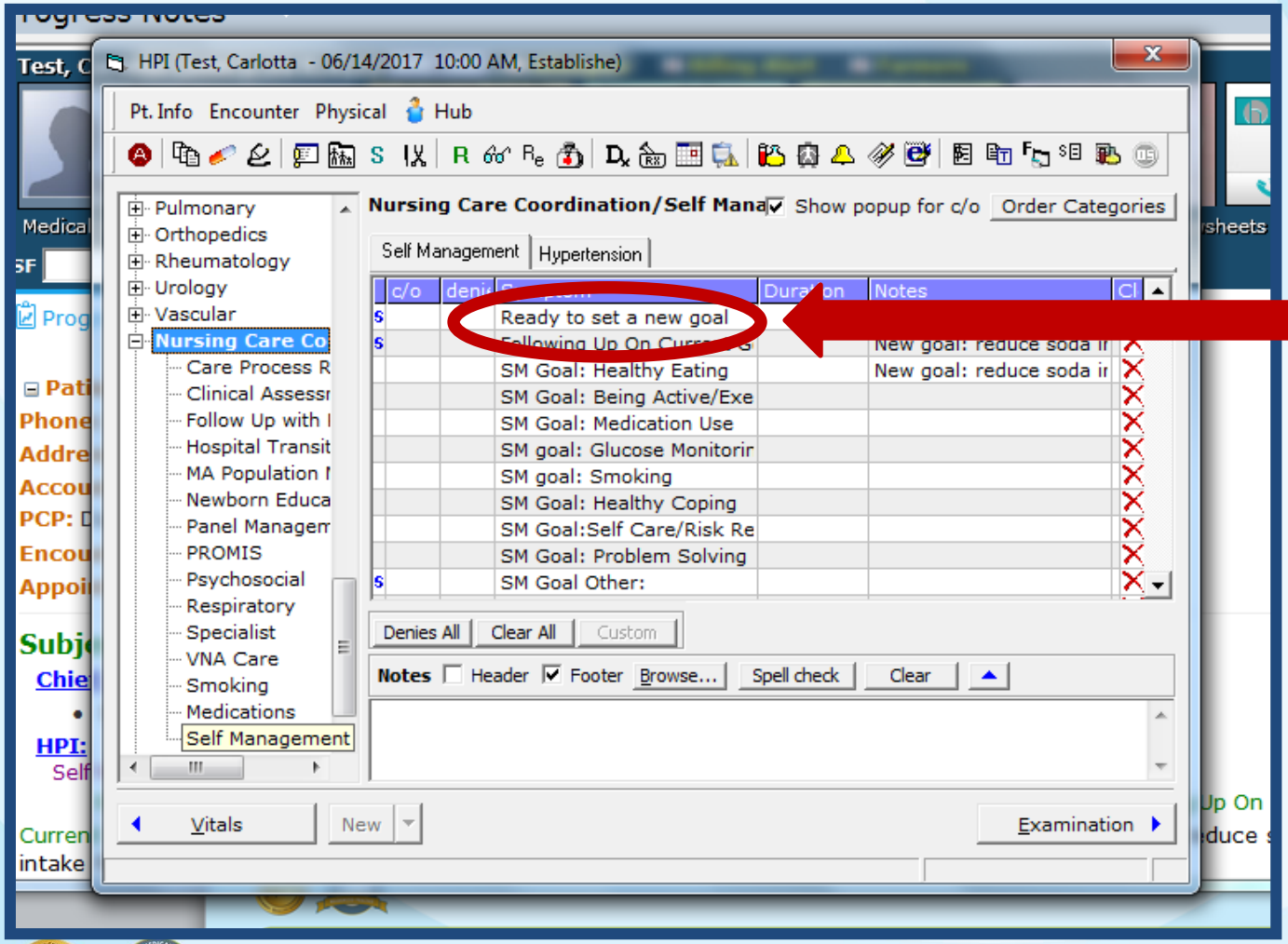
Self Management Goal Template



Nursing Care Coordination

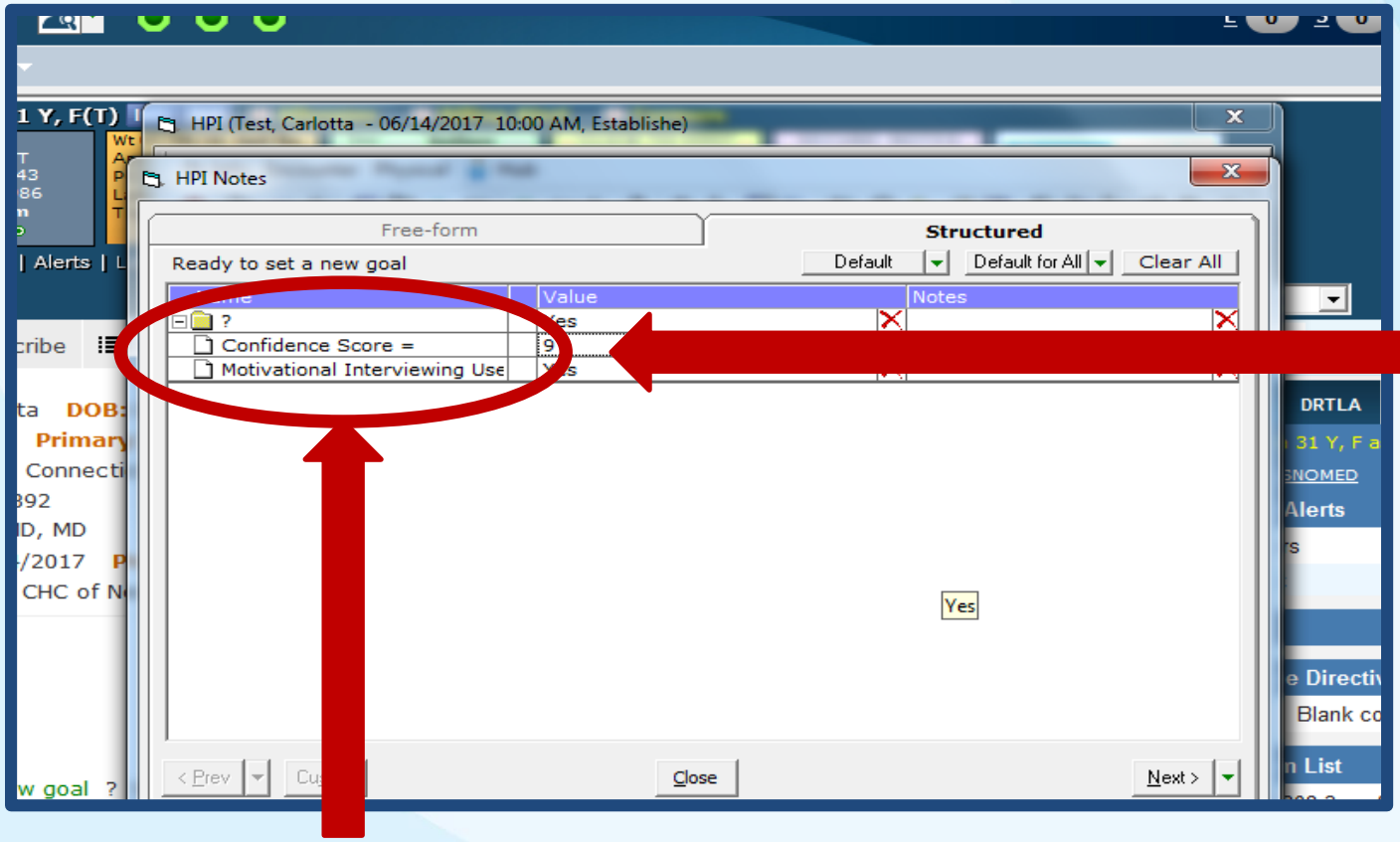
Self Management

Self Management Goal Template



Ready to Set New Goal

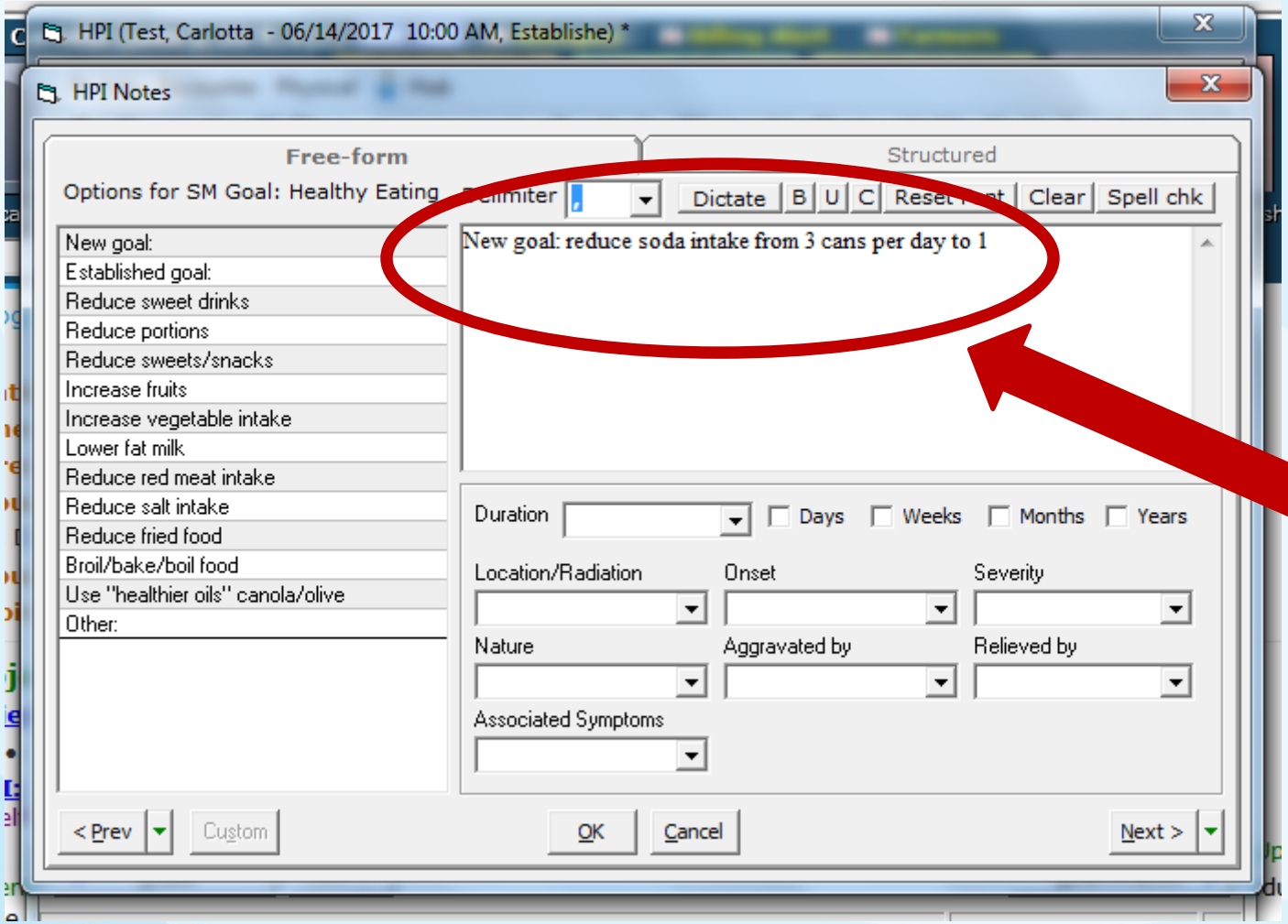
Self Management Goal Template



Confidence Interval

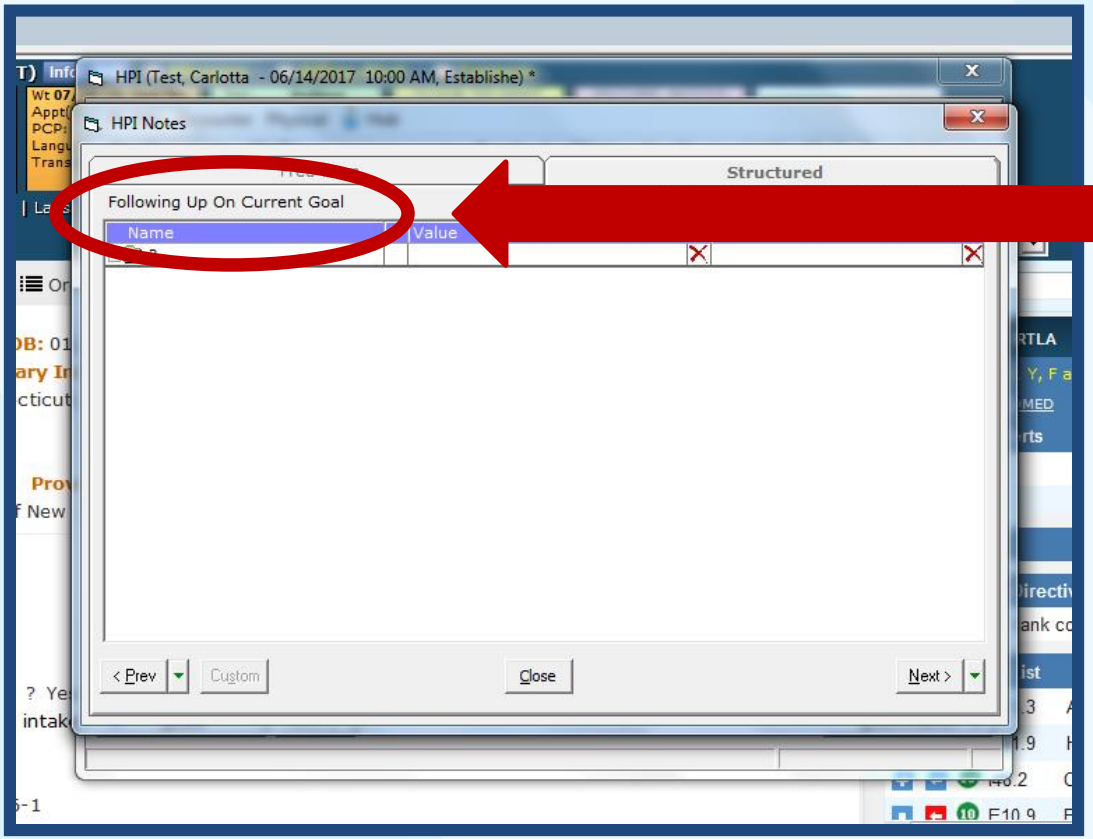
Motivational Interviewing

Self Management Goal Template



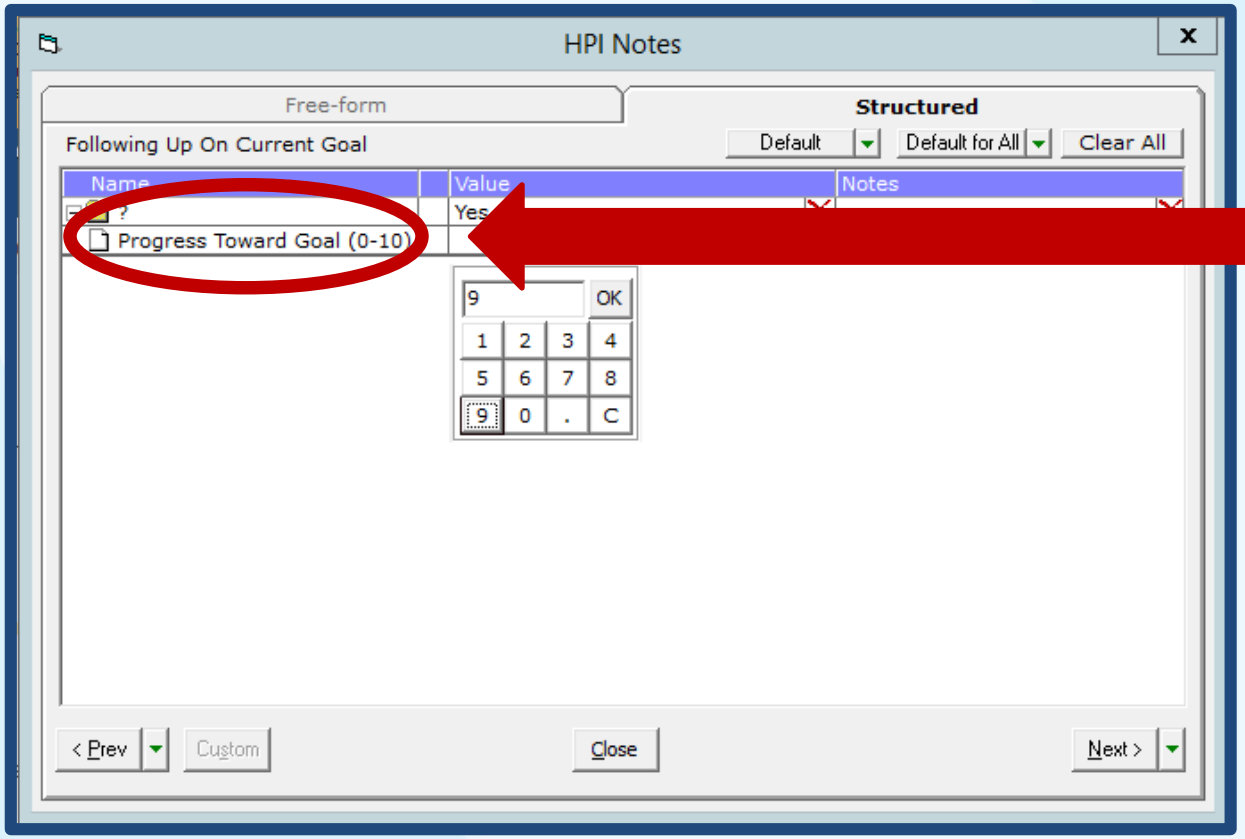
Select or type the self-management goal

Self Management Goal Template



Follow-up on a current self-management goal

Self Management Goal Template



Progress Toward Goal

Development of a Nursing Scorecard to Track Metrics to Support Complex Care Management

Objectives

1. Describe the purpose and implementation of a nursing scorecard.
2. Understand the importance of tracking population metrics for nurses providing complex care management.
3. Explain the global implications of nursing scorecards in the primary care field

Goal: Quantify care coordination numbers and outcomes as part of overall nursing performance

Solution: Nursing Scorecard

- Why a scorecard?
- Development of scorecard
- Scorecard review
- Related data
- Revisions/lessons learned

Nursing Scorecard

A scorecard that indicates performance on selected complex care measures for primary care nurses and providers.

Performance feedback:

- Credible and timely
- Responsible party is clearly identified
- Based on current clinical data
- Flexible query function for drilling down into a measure
- Data available for benchmarking

Why a Scorecard?

- "Live" data
- Reinforces a "measurement culture"
- A framework for decision-making
- Linkage of strategy and resource allocation
- Learning and continuous improvement
- Greater management accountability
- Support staff in understanding the value of their work

Development of Care Coordination Scorecard

- Designed in coordination with CC Dashboard
- Define potential CC patients
- Discipline-specific measures
- Include both Clinical and Operational measures
- Track core program objectives over time
- Link data with desired responses
- Ensure usability
- Dedicated time for use

Design & Implementation

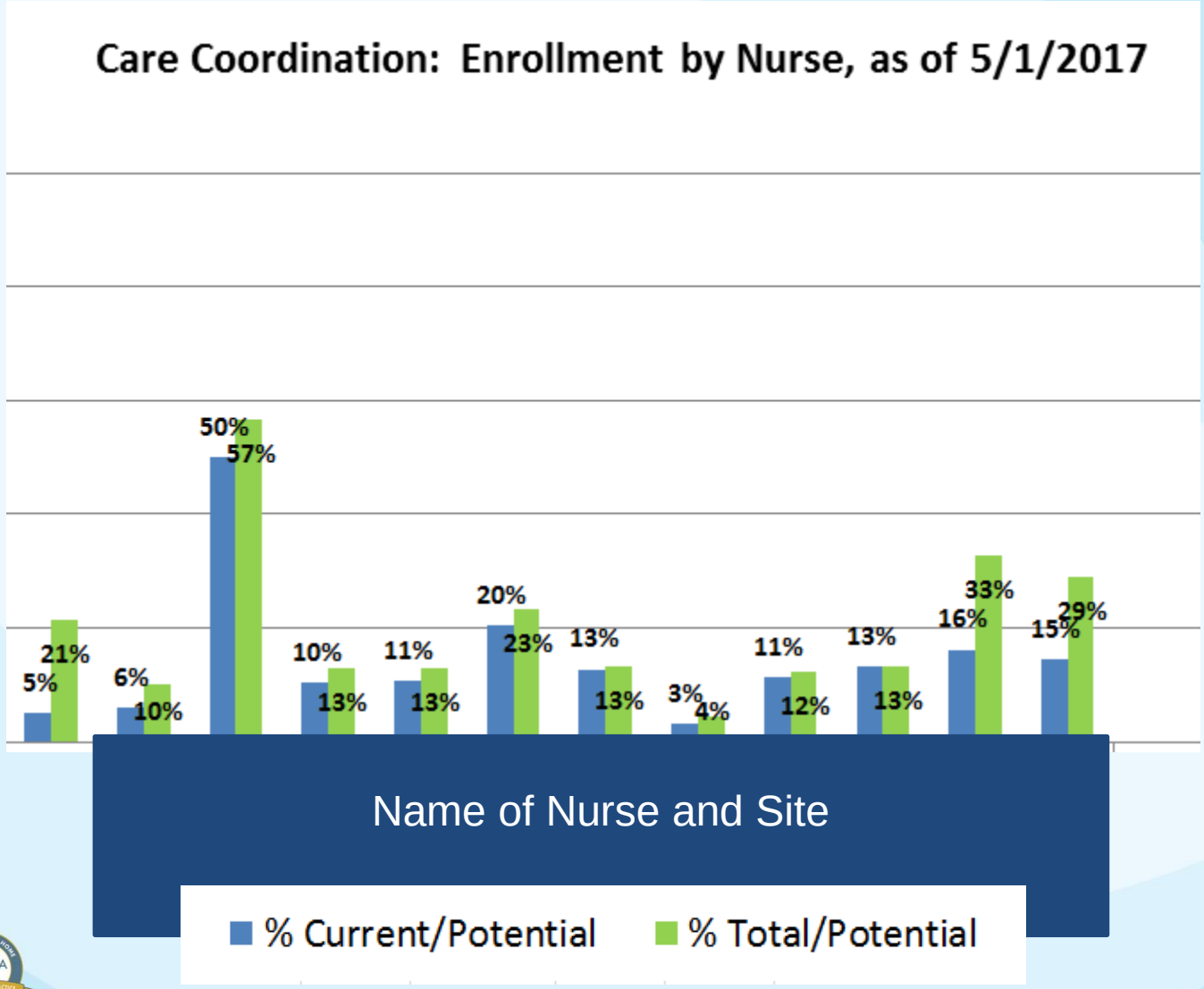
Potential Complex Care Patients

- Transition patients
- High Emergency Department Utilizers
- Uncontrolled Diabetes
- Uncontrolled Hypertension
- 4+ Chronic conditions

Care Coordination Scorecard: Raw Data

Nurse	PCP	Current CCM Patients	Total CCM Pts. Ever	Eligible CCM Patients	CCM Telephone Encounters	Patients with HTN	HTN Controlled		Patients with Diabetes	DM Controlled	
		n	n	n	n	n	n	%		n	%
Nurse A	Provider	10	10	103		226	143	63.3%	96	68	70.8%
	Pedi	1	1	1		1	1	100.0%		0	
	Total	**11**	**11**	**104**		**227**		**63.4%**	**96**	**68**	**70.8%**
Nurse B	Provider	22	56	188	37	451	297	65.9%	211	164	77.7%
	Provider	13	17	167	7	245	163	66.5%	120	95	79.2%
	Total	**35**	**73**	**355**	**44**	**696**	**460**	**66.1%**	**331**	**259**	**78.2%**
Nurse C	Provider	24	54	149	93	280	191	68.2%	119	97	81.5%
	Provider	35	63	217	151	465	263	56.6%	185	144	77.8%
	Total	**59**	**117**	**366**	**244**	**745**	**454**	**60.9%**	**304**	**241**	**79.3%**
Nurse D	Provider	18	134	136	220	271	169	62.4%	104	81	77.9%
	Provider	13	99	130	250	288	226	78.5%	142	112	78.9%
	Total	**31**	**233**	**266**	**470**	**559**	**395**	**70.7%**	**246**	**193**	**78.5%**

Care Coordination Scorecard: Summary

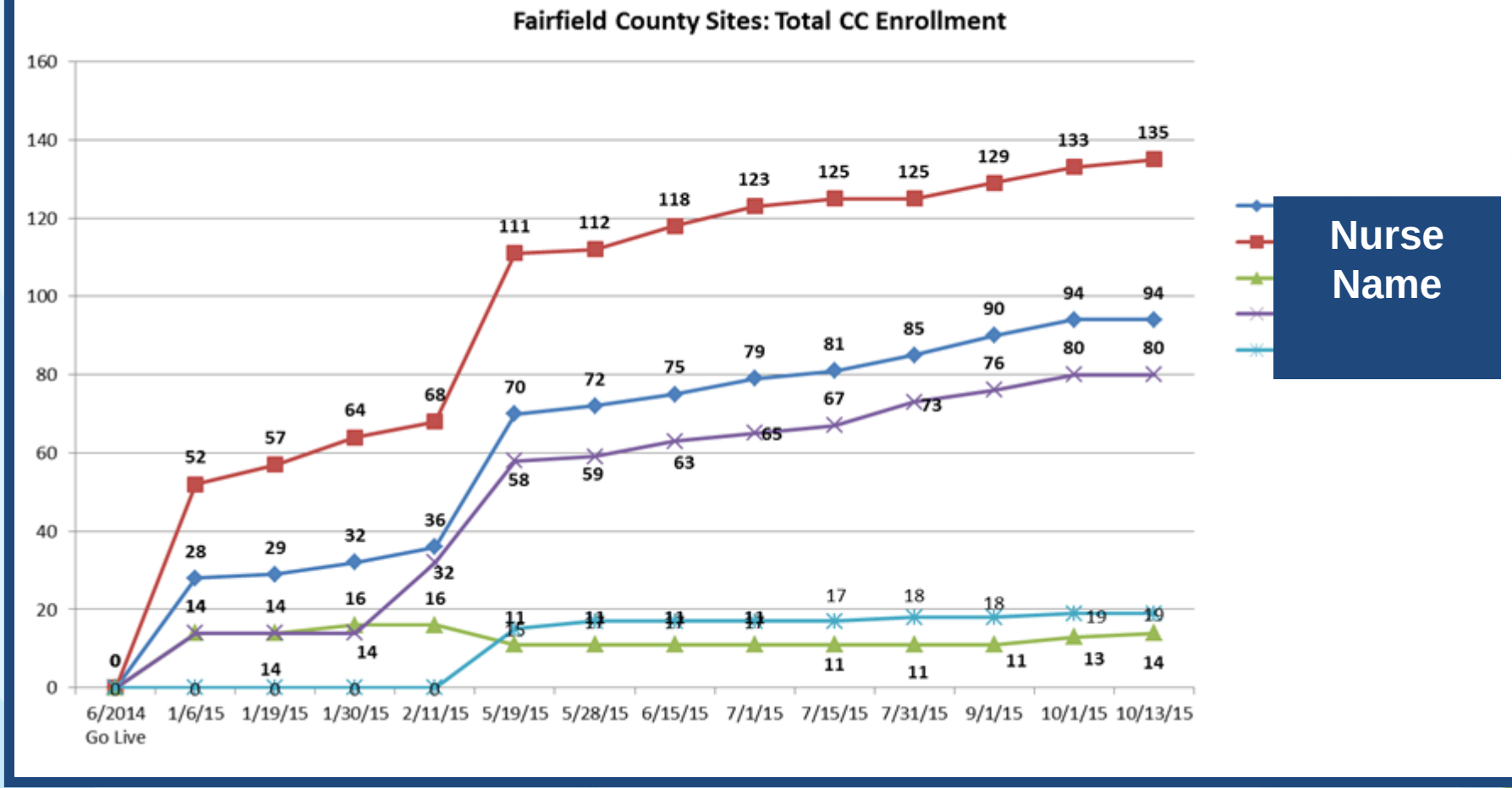


Complex Care Management Scorecard

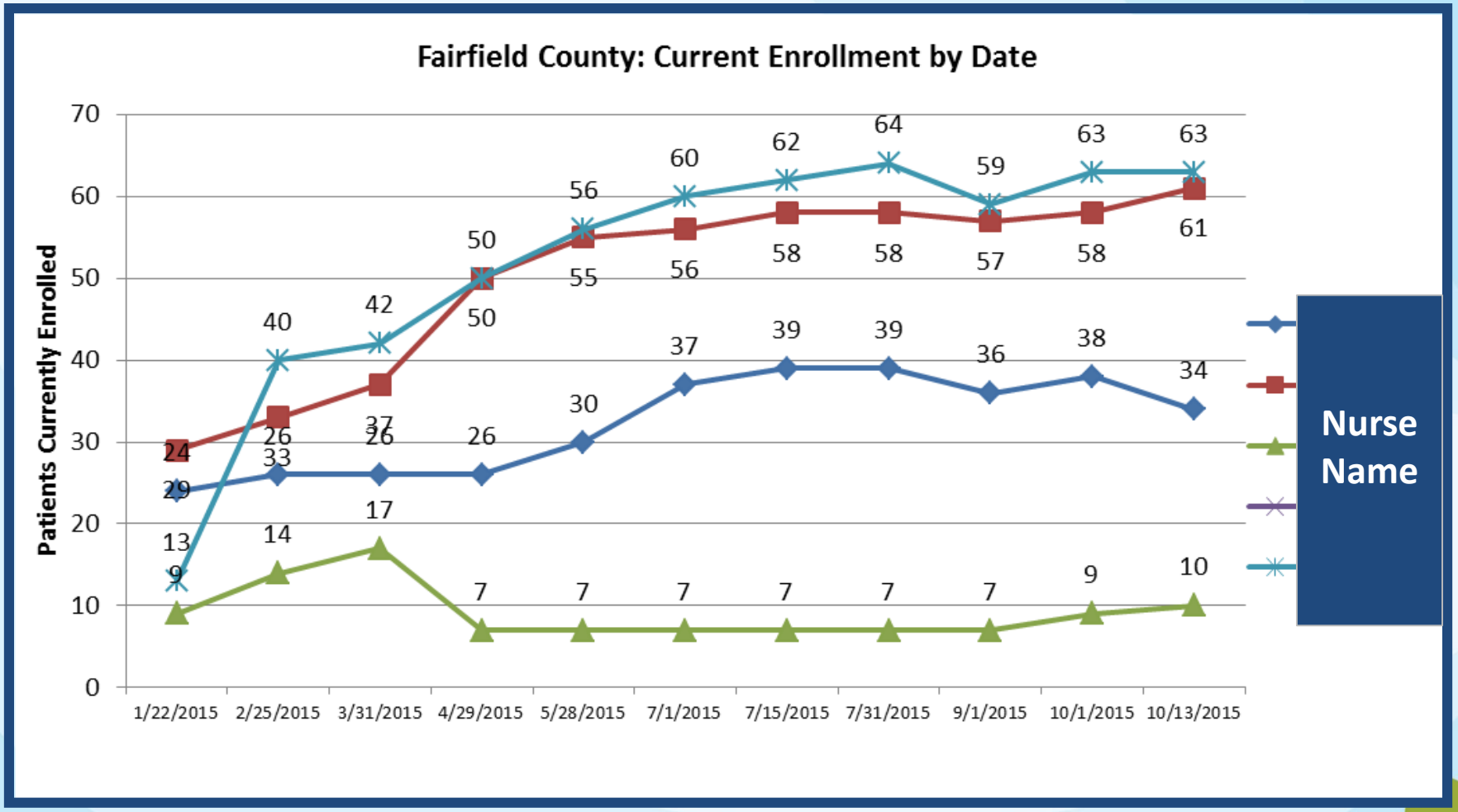
Nurse	PCP	Panel Size	Total CC Patients	Potential CC Patients	CC TE's	HTN Controlled	HTN Patients	Controlled HTN
		61	135	275	151	362	516	70.2%
		26	46	95	29	216	277	78.0%
		35	89	180	122	146	239	61.1%
		10	**14**	**122**	**14**	**124**	**190**	**65.3%**
		3	3	16	4	12	22	54.5%
		7	11	106	10	112	168	66.7%
		12	**19**	**131**	**20**	**139**	**227**	**61.2%**
		12	19	131	20	139	227	61.2%

DM Uncontrolled	DM Patients	Controlled DM
46	220	79.1%
22	120	81.7%
24	100	76.0%
17	**81**	**79.0%**
3	10	70.0%
14	71	80.3%
20	**102**	**80.4%**
20	102	80.4%

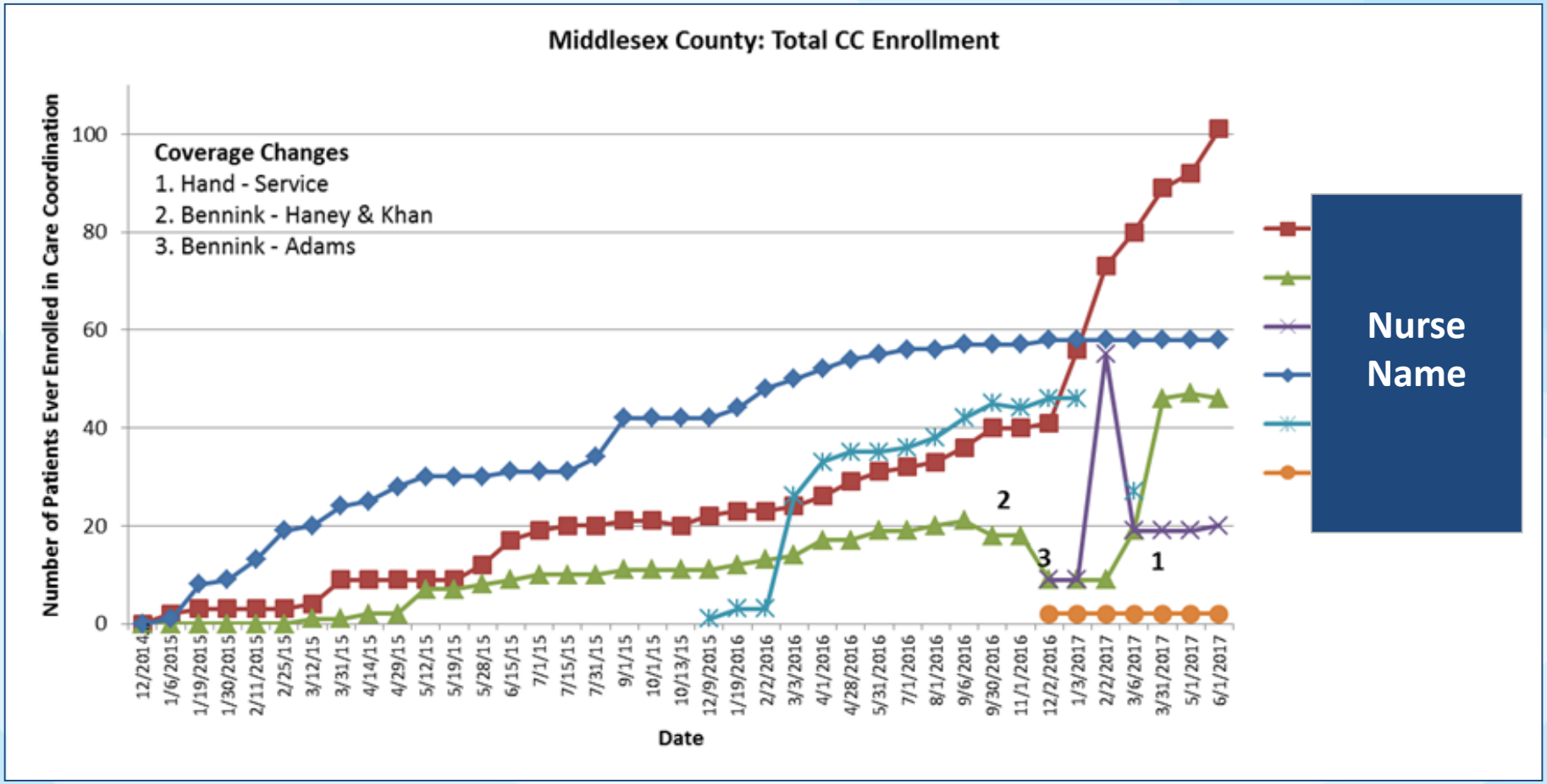
Care Coordination Scorecard: County Summary



Care Coordination Scorecard



Care Coordination Scorecard



Lessons Learned

- Focus on Design & Implementation
- Include the Frontline team members in every step
- Ongoing improvement
    - Design
    - Measures
    - Data
- Ongoing training/Support
- Evaluate usability
- Celebrate success


Thank you

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