

Data Driven Dashboards Supporting Team Based Care

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Objectives:

1. Review of Business Intelligence and Data Environment
2. Identify how different members of the team can utilize data driven dashboards.
3. Review measures of dashboard driven improvement

Community Health Center, Inc. (CHCI) Locations and Service Sites in Connecticut



CHCI Profile:

- ⊙ Founding year: 1972
- ⊙ Primary care hubs: 15; 204 sites
- ⊙ Staff: 1,000
- ⊙ Patients/year: 100,000 (est. 2017)
- ⊙ Visits/year: 550,000
- ⊙ Specialties: onsite psychiatry, podiatry, chiropractic
- ⊙ Specialty access by eConsult to 41 specialists

Elements of Model:

- ⊙ Fully integrated teams and data
- ⊙ Integration of key populations
- ⊙ 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

CHCI Enrollment Sites (NIH)

- ⊙ Middletown
- ⊙ Meriden
- ⊙ New Britain

CHCI APM Sites (HRSA)

- ⊙ Bristol
- ⊙ Clinton
- ⊙ Danbury
- ⊙ Enfield
- ⊙ Groton
- ⊙ New London
- ⊙ Norwalk
- ⊙ Stamford
- ⊙ Waterbury

CHC's Timeline in Using Data-Driven Dashboards

- **1970s:** Participated in initiatives around data collection using computers
- **2006:** First fully integrated electronic health record system
 - eClinicalWorks
- **2010:** Built our own data warehouse, for reporting and data analysis
 - Covers clinical, financial, and Human Resources
- **Currently:** Integrating data and process involvement with the goal of better patient outcomes



CHCI's Business Intelligence Team

- **Director: Nicholas Ciaburri**
 - Seven team members
 - Sequel developers
- **Data domain specialists**
 - Clinical: Medical, Behavioral Health, Dental
 - Finance
 - Operations
 - Population Health
- **Collaborative work**
 - Clinical Leaders
 - Operational Leaders
 - Population Health team



Creating Effective Dashboards and Reports

- **Team Based approach and role specific**
 - Each team member uses different sets of data, and gets a different dashboard
 - Work with clinical leadership to identify the goal of the dashboard
 - Work with care teams and clinical microsystems to determine what data is useful to them and how it best fits in with their workflows
 - Work with EHR staff to determine the best way to input the data
- **Actionable Data**
 - Distributing the data to the team members that can take action on it
 - Only include the data that is actionable – Too much data can be a bad thing!



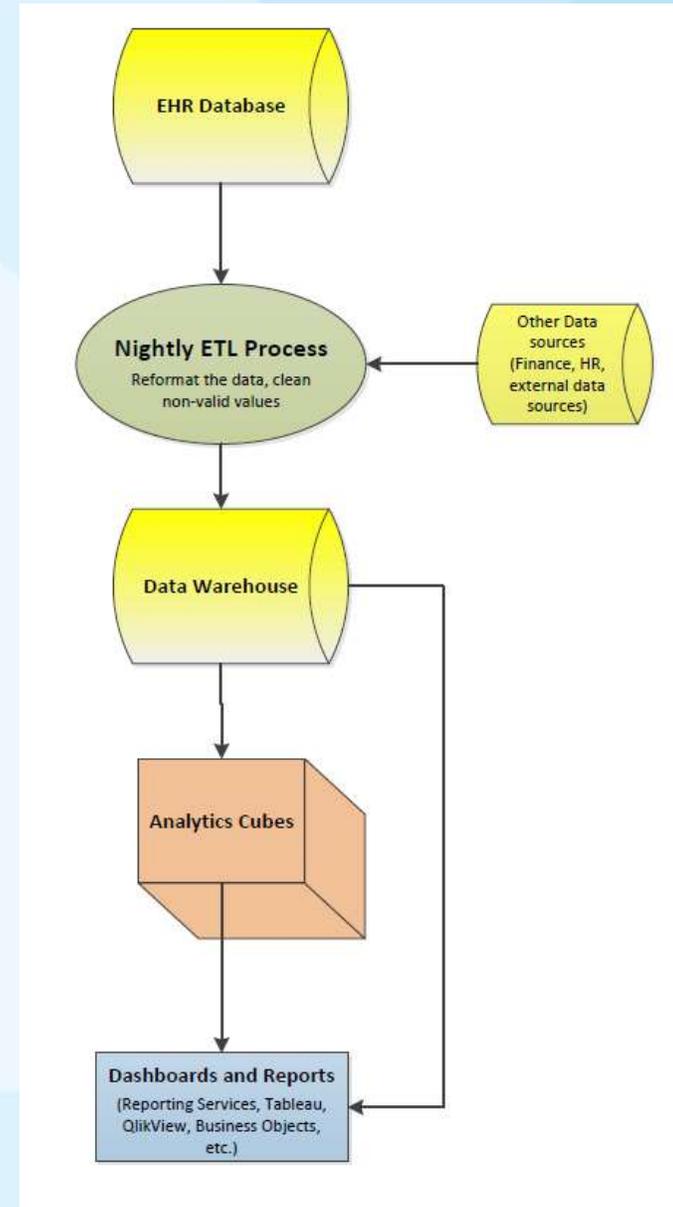
Why develop my own reporting environment?

- **Control**
 - Buying vs. Renting
 - More transparent access to your data
- **Flexibility**
 - Customize your dashboards and reports as you see fit
 - Combine your data with data from other sources (payers, EHX's, finance, HR, etc.)
- **Workflows**
 - Design your dashboards around your workflows rather than your workflows around your reporting tools



BI Data Environment

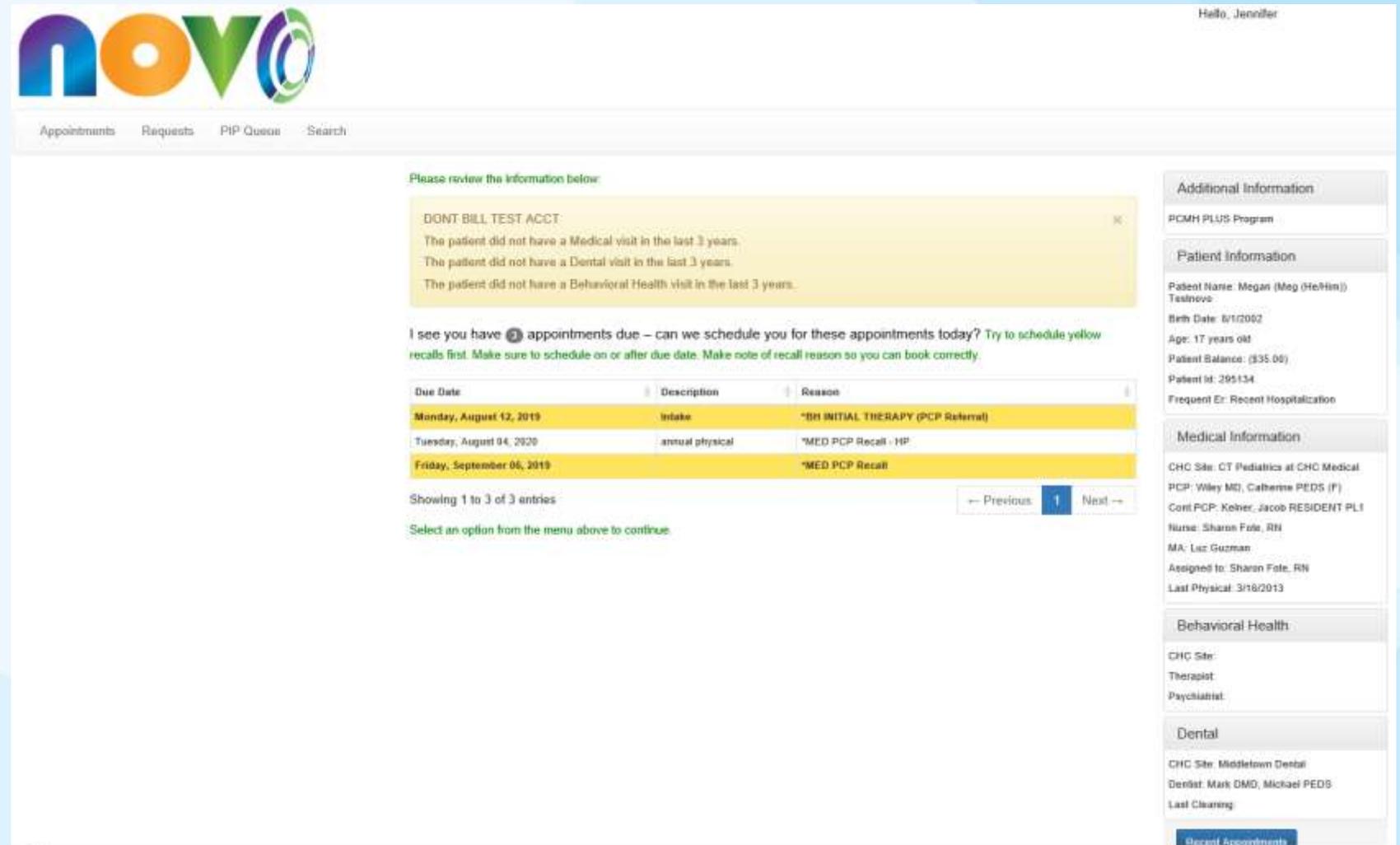
- Having Useful data starts with the EHR
 - **Structured Data**
- Reformat the data to make reporting easier
 - Include business rules
 - Connect to data from other sources
 - Format for easier reporting
 - EHR's are designed for inputting data, not reporting
- Clean the data
 - Exclude non-valid values
 - Map data to categories
- Analytics Cube allows for drag-and-drop high level data analytics



Team Based Approach to Data and Dashboards

Utilizing Dashboards on the Front Line

Our phone script includes Data on which appointments the patient is due for so that we can schedule all of their appointments at once.



The screenshot shows the NOVO patient dashboard for a user named Jennifer. The dashboard includes a navigation bar with 'Appointments', 'Requests', 'PIP Queue', and 'Search'. A central message states: 'Please review the information below: DONT BILL TEST ACCT. The patient did not have a Medical visit in the last 3 years. The patient did not have a Dental visit in the last 3 years. The patient did not have a Behavioral Health visit in the last 3 years.' Below this, a notification says: 'I see you have 3 appointments due - can we schedule you for these appointments today? Try to schedule yellow recalls first. Make sure to schedule on or after due date. Make note of recall reason so you can book correctly.' A table lists the due dates and reasons for the appointments:

Due Date	Description	Reason
Monday, August 12, 2019	Intake	*BR INITIAL THERAPY (PCP Referral)
Tuesday, August 04, 2020	annual physical	*MED PCP Recall - HP
Friday, September 06, 2019		*MED PCP Recall

The dashboard also features a sidebar with 'Additional Information' (PCMH PLUS Program), 'Patient Information' (Patient Name: Megan (Meg (He/Hin)) Testino, Birth Date: 6/1/2002, Age: 17 years old, Patient Balance: (\$35.00), Patient ID: 295134, Frequent Er: Recent Hospitalization), 'Medical Information' (CHC Site: CT Pediatrics at CHC Medical, PCP: Wiley MD, Catherine PEDS (F), Cont.PCP: Keiner, Jacob RESIDENT PLI, Nurse: Sharon Fote, RN, MA: Liz Guzman, Assigned to: Sharon Fote, RN, Last Physical: 3/18/2013), 'Behavioral Health' (CHC Site, Therapist, Psychiatrist), 'Dental' (CHC Site: Middletown Dental, Dentist: Mark DMO, Michael PEDS, Last Clearing), and a 'Recent Appointments' button at the bottom.



Novo Usage – Tableau
Goal for CCS => 96%,
PSA=>90%

Novo Script Usage

Novo Script Usage by Agency

Week	Dental			Medical			Mental Health			Grand Total		
	Created	Appoint.	% Creat.	Created	Appoint.	% Creat.	Created	Appoint.	% Creat.	Created	Appoint.	% Creat.
Week of 6/2/2019	1,447	1,722	84.03%	7,007	8,099	86.95%	1,032	1,589	74.30%	9,486	11,170	84.92%
Week of 6/9/2019	1,408	1,711	88.80%	6,879	7,982	86.13%	974	1,349	72.20%	9,317	11,042	84.38%
Week of 6/16/2019	1,580	1,783	87.49%	6,612	7,612	86.89%	978	1,295	75.62%	9,150	10,690	85.59%
Week of 6/23/2019	1,488	1,779	83.70%	6,838	7,980	85.74%	846	1,192	70.97%	9,151	10,921	83.79%
Week of 6/30/2019	1,240	1,439	86.17%	5,904	6,293	93.05%	677	960	70.52%	7,521	8,692	86.53%
Week of 7/7/2019	1,670	1,891	88.31%	7,382	8,245	89.17%	955	1,382	70.64%	9,977	11,488	86.89%
Week of 7/14/2019	1,588	1,788	87.79%	6,914	7,773	88.95%	1,049	1,441	72.80%	9,531	11,000	86.65%
Week of 7/21/2019	1,596	1,799	87.32%	6,905	7,368	88.41%	920	1,261	72.96%	9,461	10,778	86.39%
Week of 7/28/2019	1,544	1,786	86.48%	7,179	8,045	89.25%	1,014	1,367	74.18%	9,737	11,196	86.97%
Week of 8/4/2019	1,673	1,897	88.19%	6,891	7,771	87.90%	990	1,318	75.11%	9,404	10,986	86.42%
Week of 8/11/2019	1,762	1,956	89.13%	6,822	7,791	88.24%	953	1,305	73.03%	9,538	10,992	86.77%
Week of 8/18/2019	1,644	1,808	90.93%	7,156	8,153	87.99%	1,009	1,333	75.69%	9,809	11,274	87.01%
Week of 8/25/2019	1,636	1,797	91.04%	7,759	8,784	88.29%	895	1,216	73.41%	10,286	11,817	87.04%

Novo Script Usage by User

Category	Created By	2019-08-25 00:00:00.000			2019-08-18 00:00:00.000			2019-08-11 00:00:00.000			2019-08-04 00:00:00.000			2019-07-28 00:00:00.000			Created in Script
		Created in Script	Appointments	% Created in Script	Created in Script	Appointments	% Created in Script	Created in Script	Appointments	% Created in Script	Created in Script	Appointments	% Created in Script	Created in Script	Appointments	% Created in Script	
Grand Total		10,286	11,817	87.04%	9,869	11,274	87.01%	9,538	10,992	86.77%	9,494	10,998	86.42%	9,737	11,196	86.97%	8,961
PSA	Ortiz, Maria	74	78	97.37%	67	68	98.53%	82	93	88.11%	69	69	100.00%	88	61	95.08%	1
	Colon-Santana, Zebethal	67	67	100.00%	92	92	100.00%	73	73	100.00%	64	64	100.00%	74	74	100.00%	1
	Kosakowski, Eileen	130	138	98.30%	118	119	98.16%	115	119	96.64%	116	118	100.00%	124	125	99.20%	1
	Higuera, Sujasa	115	115	100.00%	74	74	100.00%	110	110	100.00%	120	122	98.36%	108	109	99.08%	1
	Alvarez, Carmen	197	198	99.37%	102	102	100.00%	125	129	100.00%	126	127	99.21%	92	92	100.00%	1
	Brown, Laurel Hannah	108	112	96.43%	120	127	94.49%	118	122	96.72%	114	124	91.94%	106	114	92.98%	1
	Duran, Christopher	135	135	100.00%	145	146	99.32%	146	147	99.32%	116	121	95.87%	134	136	98.53%	1
	Satterfield, Sara	170	170	100.00%	158	158	100.00%	159	159	100.00%	167	168	99.40%	157	157	100.00%	1
	Castillo, Barmya	75	75	100.00%	61	61	100.00%	49	49	100.00%	18	18	100.00%	26	26	100.00%	1
	Rodriguez, Jeanette	200	230	86.96%	193	229	84.28%	175	209	83.73%	193	229	85.78%	187	203	92.12%	1
	Beltre, Joshua	149	158	94.30%	132	141	93.62%	152	158	96.20%	106	111	95.50%	129	136	94.85%	1

Increasing & Measuring Well Child Visits (PCMH+)

Meeting PCMH+ Measures

- ❖ Ensure that all patients are receiving their required well child physicals during the milestone month or year to improve patient care
 - 0-15 months Require 6 Visits
 - 3-21 year olds Require 1 annually

- ❖ Create a sustainable process to track and measure progress
 - Build a **Dashboard** to measure Month/Month and Year/Year Progress

- ❖ Enhance Novo Scheduling System to drive through Alerts for WCCs automatically

Novo Recall Enhancement

- ❖ Add a Green Alert to Novo
 - Uses the last WCC Date & Next Milestone Due Date
- ❖ Set the recall for each Milestone month for 0-15 and annually for patients > 3 Years of age
- ❖ Train staff to use alerts to prompt patients to schedule their next physical

I see you have **1** appointments due – can we schedule you for these appointments today? **Try to schedule yellow recalls first. Make sure to schedule on or after due date. Make note of recall reason so you can book correctly.**

Due Date	Description	Reason
Monday, September 30, 2019	PCP Recall	WCC *Med

WCC Dashboard

- ❖ Measure Baseline Data and Trends on # of Physicals
- ❖ Review No Shows as well as Completed Physicals
- ❖ Create Multiple Views to look at month/month, year/year
- ❖ Provide a Visual Display to show # of actual physicals completed

Physical Appts – 10/2017 vs. 10/2018

Physicals: Oct 2017 vs Oct 2018

No Show Rate

Appt Start

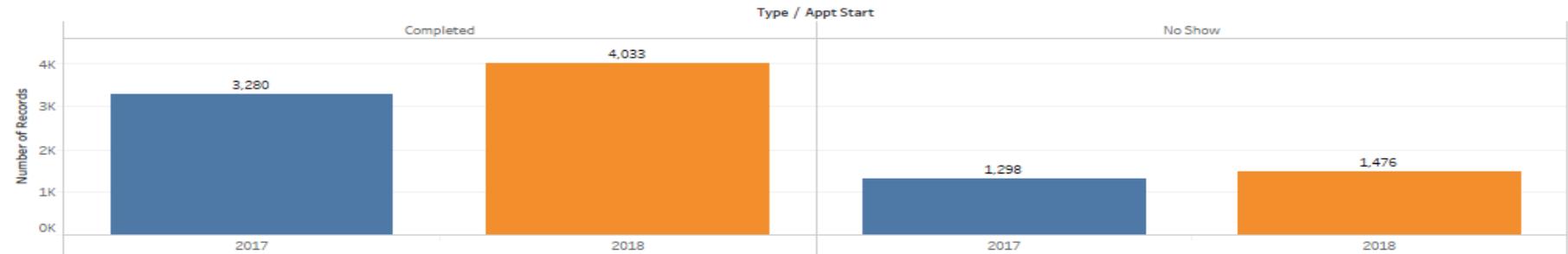
2017 2018

28.35% 26.79%

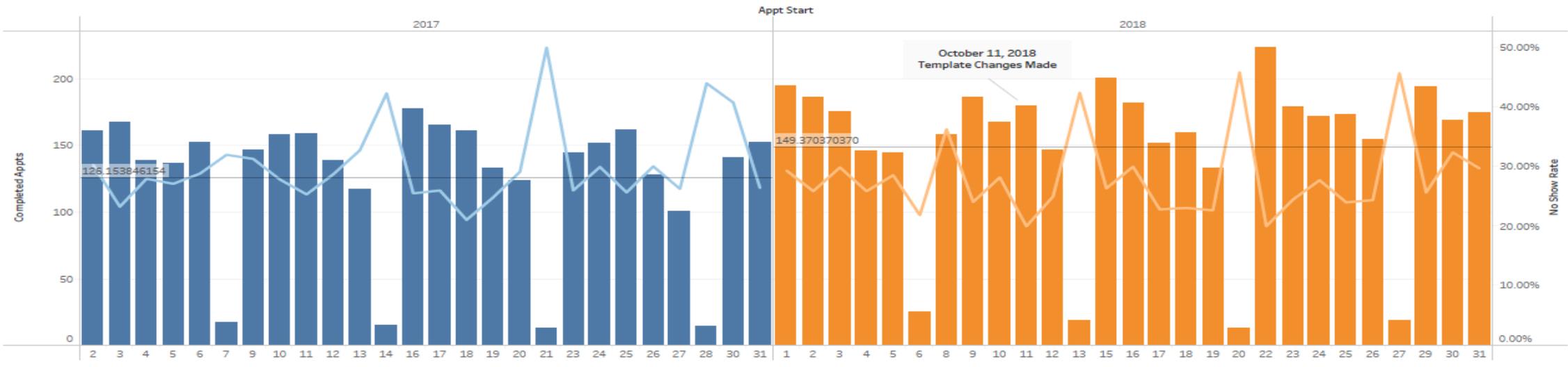
Year of Appt Start, Measure Names

- 2017, Completed Appts
- 2017, No Show Rate
- 2018, Completed Appts
- 2018, No Show Rate

Year to Year Comp



Physicals



Physicals increased by an Average of 23/day.

Sustained Success

Improvement:

Dashboard Data showed an increase of >15 physicals per Day

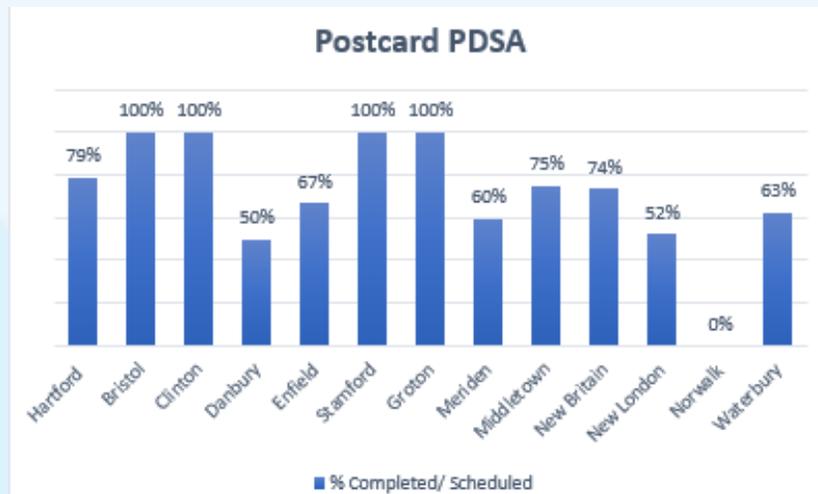
- ❖ Increased Visits by >300 / Month over an 8 month period

Winning Ideas:

- ❖ Increasing Well Child Slots in Templates
- ❖ Enhancing the Novo Scheduling System with Alerts
- ❖ Utilizing Data Analysis Tools and Dashboard Tracking

“Teddy Bear” Post Card Campaign

- Goal: Increase visits for 0-15 months - Prioritize newborns 0-6 months
- Population Targeted: 312
- Date – 30 Day Review shows a 77% ROI
 - ❖ Next Step PDSA #2 (Include all ages)



77% Scheduled or Completed a physical within 30 days



Planned Care Dashboard

Medical Assistants

Patient	PCP and Visit Info						
450613 Sex: F Age: 18.0	Ellis APRN, Keith PEDS Next Medical Appointment: 6/27/2019 9:40:00 AM CHC at CT Childrens Medical Last Dental Visit: Never Done Reason for Visit: F/u Nexplanon Insertion	ALERTS	Last Date	Due Date	Value	Notes	
		VARNISH CANDIDATE				Fluoride	
		Chlamydia Screen	Never Done	Never Done			
		HIV Screen Needed				Once, 13-64 yrs old	
		SBIRT	Never Done			Yearly, 18+ yrs old	
		SOGI	Never Done				
		HITS	Never Done			Once, Females, 14+ years old	
		Annual Chronic Pain Screening		Never Done		If pos (most days/every day), administer PEG	
		Bubbles	#				
		TE	10				
RX							
Doc							
Lab							



Complex Care Management Dashboard

Nursing

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	SMGDate	Action Item	Action Item Due Date	Last PCP Visit	Last Dental Visit	Last BH Visit	Portal Enabled
						never smoker	9.7	119/76	57.0 - F	6/29/2018					1/19/2018		2/25/2016	Yes
						never smoker	7.5	125/75	71.0 - M	2/18/2019		3/13/2018 10:00:00 AM			8/19/2019	11/17/2009		No
						former smoker	5.2	133/76	51.0 - M	4/11/2019					8/30/2019			Yes
						never smoker	5.5	123/75	11.0 - M	8/21/2019			appt	12/20/2019	8/14/2019			No
	6/22/2019					never smoker	12.8	146/73	71.0 - F	9/15/2018			DM	9/20/2019	5/3/2019	12/11/2009	5/3/2019	Yes
						smoker, current status unknown	10.7	125/80	56.0 - M	8/9/2018			DM	9/3/2019	1/28/2019	7/22/2013	6/14/2017	No
						never smoker	6.5	122/76	55.0 - M	2/1/2019			RN Care Coordination	10/8/2019	6/5/2019			No
						never smoker	10.7	134/85	43.0 - F	12/9/2017		1/16/2018 2:20:00 PM	RN Care Coordination	9/19/2019	5/2/2019			Yes
						never smoker	10.1	135/79	69.0 - F	4/25/2019					4/10/2019			Yes
						smoker, current status unknown		117/67	55.0 - M	8/15/2019			followup	9/12/2019	6/14/2019		12/7/2011	Yes



Population Health Dashboards

Clinical Teams

HTN Dashboard

age	Gender	Race/Ethnicity	Systolic BP	Diastolic BP	BP Above Target	Smoking	DM Status	DM BP Above Target	Total Medical Encounters	Total Medical Encounters w/ viable BP	Avg Systolic	Avg Diastolic	Avg BP Above Target	Avg DM BP Above Target
						ever smoked								
87.0	Male	White	145	92	Y	unknown if ever smoked	N/A	N/A		1	145	92	92	Y
55.0	Female	Black or African American	155	96	Y	unknown if ever smoked	N/A	N/A	2	13	156	94	94	Y
72.0	Male	White	128	75	N	unknown if ever smoked	E11.9	N	1	5	134	81	81	N
57.0	Male	White	129	85	N	unknown if ever smoked	N/A	N/A	1	4	113	76	76	N
54.0	Male	White	99	60	N	unknown if ever	N/A	N/A	19	76	133	75	75	N

Opioid Dashboard

127660	M	White		8/27/2019	Not Scheduled	8/27/2019	1	8/27/2019	8/27/2019	8/22/2019	8/22/2019				MME > 90
131816	F	White		7/12/2019	Not Scheduled	7/12/2019	1	7/12/2019	7/12/2019	7/9/2012	7/9/2012	1			
132400	F	White		7/23/2019	9/13/2019	Never	0	6/4/2019	Never	Not Scheduled	Never				
133834	M	White		6/20/2019	Not Scheduled	3/15/2019	1	6/20/2019	3/15/2019	Not Scheduled	Never				
140848	F	White		5/14/2019	Not Scheduled	Never	0	3/26/2019	Never	1/29/2013	1/29/2013	1			
142656	F	White		4/9/2019	Not Scheduled	4/9/2019	0	4/9/2019	4/9/2019	Not Scheduled	Never	1	1		



Behavioral Health Dashboard

Appointment	Total Therapy Visits	Intake	Last Therapist	Last Psychiatry Provider	Initial CarePlan	Last Review	Last PHQ	Vitals	Controlled Substance	Alerts	WRAP	Recalls
4/4/2019 8:30:00 AM	178	2/3/2011	Carter, Vicki		10/8/2018	10/8/2018	4/20/2018	Weight: 227 BP: 135/80	N/A		7/27/2017	Hover
4/4/2019 9:00:00 AM	22	N/A	Carter, Vicki	Hunt, Sarah	10/15/2018	10/15/2018	9/22/2016	Weight: 179 BP: 126/85	7/13/2018			Hover
4/4/2019 9:30:00 AM		N/A			N/A	N/A	1/11/2019	Weight: 176.4 BP: 141/87	N/A			Hover
4/4/2019 10:30:00 AM	50	N/A	Carter, Vicki		10/15/2018	3/7/2019	9/24/2018	Weight: 255 BP: 161/82	11/14/2017			Hover
4/4/2019 1:00:00 PM	51	8/23/2012	Carter, Vicki	Tirado-Montanez, Victor	12/5/2013	10/19/2018	3/21/2018	Weight: 121.4 BP: 134/84	N/A			Hover
4/4/2019 2:30:00 PM	17	3/25/2019	Carter, Vicki	Hunt, Sarah	10/4/2018	10/8/2018	5/1/2018	Weight: 171.2 BP: 118/69	N/A			Hover
4/4/2019 3:00:00 PM	13	2/16/2017	Carter, Vicki	Tirado-Montanez, Victor	10/11/2018	10/11/2018	9/25/2018	Weight: 226 BP: 111/73	N/A			Hover
4/5/2019 8:30:00 AM	3	2/5/2019	Carter, Vicki	Hunt, Sarah	3/8/2019	3/8/2019	4/23/2018	Weight: 207 BP: 121/76	2/13/2013			

WHO Candidates for New London Medical

Controlno	Appt Start	Appt Stop	Resource Name	Appt status	Room No	Reason
112963	2:00 PM	2:20 PM	Flood APRN, Tiffany	Arrived	a6	Opioid Patient, PCMH+,
146254	2:00 PM	2:20 PM	Monroe, Jr. MD, John-FP	Arrived	a2	BH Diagnosis
165150	2:40 PM	3:00 PM	Monroe, Jr. MD, John-FP	Arrived	a2	WCC
205430	3:00 PM	3:20 PM	Marden APRN, Nicole	Arrived		PCMH+
157381	3:00 PM	3:20 PM	Monroe, Jr. MD, John-FP	Arrived		Opioid Patient,



Dental Dashboard

 CHC Dental Prevention Program Meriden 9/9/2019												
Appointment Total: 50		Back	Patient Search									
Next Appt	Facility	Resource	controlno	age	grade	Insurance	sex	Last Prophyl	Last FMX	Last CHC Dental Visit	Caries Risk Assessment	Last Varnish
7:40:00 AM	Meriden Medical	Smith APRN, Tonya FP	311393	9.0	1	Medicaid Managed Care Fee for Service	M	1/10/2019	5/23/2018	5/7/2018		1/10/2019
8:40:00 AM	Meriden Medical	Kumar MD, Kishore PEDS	234811	13.0	8	Medicaid Managed Care Fee for Service	M	2/15/2019		1/5/2016		2/15/2019
8:40:00 AM	Meriden Medical	Ghabag MD, Faraj FP	292404	15.0	7	Medicaid Managed Care Fee for Service	F	5/3/2017		6/8/2017		4/5/2017
8:40:00 AM	Meriden Medical	Darko APRN, Amma PEDS	475967	2.0		Medicaid Managed Care Fee for Service	M	5/25/2018	12/11/2018	11/19/2018		11/19/2018
9:00:00 AM	Meriden Mental Health	Nagot LCSW, Sara	436608	20.0	11	Medicaid	F			1/31/2019		1/24/2019
9:20:00 AM	Meriden Medical	Darko APRN, Amma PEDS	226317	13.0	7	Medicaid Managed Care Fee for Service	F	11/29/2018		4/5/2018		11/29/2018
9:20:00 AM	Meriden Medical	Kumar MD, Kishore PEDS	231754	13.0		Medicaid Managed Care Fee for Service	F	6/7/2018	10/2/2017	6/7/2018		6/7/2018
9:20:00 AM	Meriden Medical	Keast RN, Jennifer	435802	4.0		Medicaid Managed Care Fee for Service	M	10/23/2018		2/28/2019		2/28/2019
9:20:00 AM	Meriden Medical	Darko APRN, Amma PEDS	449988	3.0		Medicaid Managed Care Fee for Service	F	3/15/2019		12/10/2018		12/10/2018
9:40:00 AM	Meriden Medical	Keast RN, Jennifer	203366	17.0	10	Medicaid Managed Care Fee for Service	F	8/23/2018		2/7/2019		2/7/2019

Dashboard driven Improvements

Clinical Metric	Pre-Dashboard	Post-Dashboard
BH Screening for 1-17 years olds (Templates also updated) 2016 → 2017	41.6%	63.8%
Developmental Screening in first 3 years of life 2017 → 2018	74.1%	86.3%
SOGI collection 2016	0%	73%

Questions?

