



**CHCANYS** DEFINING NEW DIRECTIONS  
Community Health Care Association of New York State

Quality and Technology Initiatives Program  
**Data Quality 101**

CHCANYS Webinar  
April 9, 2014

[www.chcanys.org](http://www.chcanys.org)





# Live Meeting Guide

- Do not use your HOLD button
- Press \*6 please mute your phone
- Press #6 to un-mute your phone
- Participants will be muted throughout the presentation. To ask a question at any time:
  1. Click the **Q&A** menu. This displays the **Q&A** pane
  2. Type the question in the text area, and then click 'Ask'
- Please note that the webinar is being recorded



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## Presenters

- Lisa Perry, Senior VP Quality & Technology Initiatives
- Amy Grandov, Managing Director NYS Health Center Controlled Network, CHCANYS
- Dr. Warriia Esmond, Medical Director, Settlement Health
- Also participating from CHCANYS:
  - Kathy Alexis, Director of Quality Improvement
  - Natalya Malamud, Health IT Project Manager



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# Presentation Overview

- Overview of Center for Primary Care Informatics (CPCI)
- Drivers of Data Quality
- Process for Data Validation
- Data Quality Collaborative
- Questions



## Why are we talking about data quality?

- Trust in the data is foundational to using the CPCI for clinical quality improvement
- Need to understand the factors that influence data quality to improve your data
- Webinar provides guidance for validating data and identifying opportunities to improve data quality



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## Center for Primary Care Informatics

- The New York State Center for Primary Care Informatics (CPCI) is a statewide reporting and analytics solution for NY's FQHCs
- CPCI was a priority goal in the CHCANYS Strategic Plan. In 2011, CHCANYS developed the CPCI to
  - Support improvements in quality, patient and population health outcomes
  - Help control costs
  - Support growth & success in a changing environment
- Partner closely with Azara Healthcare using the DRVS ("Drives") platform



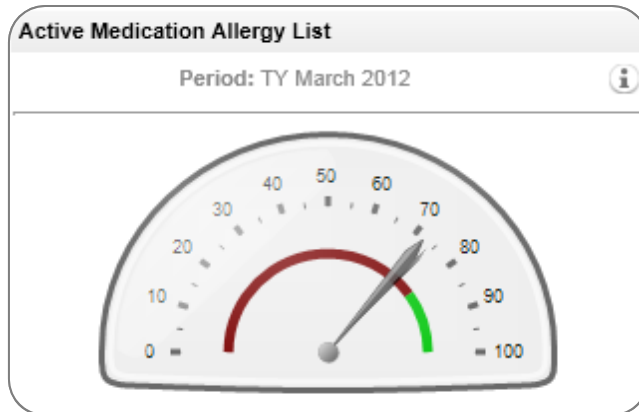
# CPCI Pilot & Roll Out



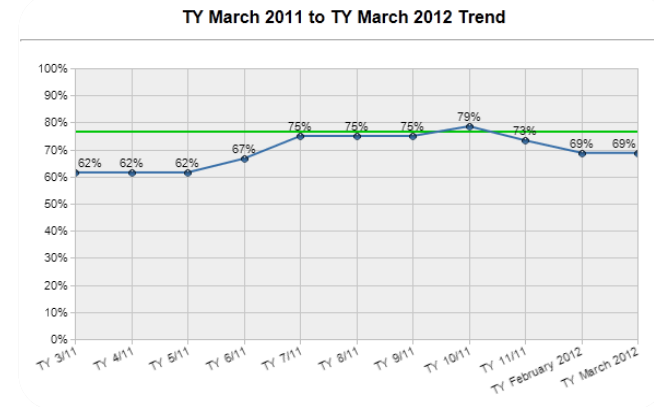


# Types of Reporting

DASHBOARDS



MEASURE ANALYZER



REGISTRY REPORTS

Name	MRN	Age	Last Encounter	Next Appt	A1c Test Date	A1c Result	LDL Test Date	LDL Result	UACR Test Date	UACR Result	BP Date	Blood Pressure	Monofilament Exam
Morgan Avenue Community Health Centers													
Abraham Hays													
FORBES, JERI	000001013567	79	2/13/2012		1/23/2012	6.9	1/24/2012	100			2/8/2012	136 / 66	10/8/2011
HALEY, SAUNDRA	000001022287	86	2/9/2012		8/30/2011	5.9	8/27/2011	74			2/2/2012	136 / 63	1/4/2012
MCDONALD, DUNCAN	000001025805	77	2/15/2012		1/27/2012	5.6	1/31/2012	106			1/30/2012	153 / 73	
MCDONALD, JOHNNY	000001011265	76	2/17/2012		8/8/2011	7.2	8/8/2011	71			11/9/2011	134 / 68	
OCONNOR, DOMINGO	000001008213	67	2/15/2012		12/1/2011	7.0	12/1/2011	0			1/22/2012	145 / 92	7/5/2010
PRESTON, TRINA	000001013289	97	2/9/2012		2/10/2012	6.8	7/22/2010	124			2/9/2012	140 / 67	
ROTH, EDUARDO	000001025254	80	2/15/2012		2/3/2012	6.7	1/25/2012	13			1/29/2012	109 / 53	
SULLIVAN, AILEEN	000001020088	83	2/17/2012		10/1/2011	8.4	3/5/2011	93			2/6/2012	170 / 76	8/12/2011

VISIT PLANNING

Visit Planning				
Provider: Wiley Acavedo				
Thursday, January 03, 2013				
10:30 AM	DARCY MULLEN	F	75	English
	MRN: 000000058707	Diagnoses: Hypertension		
	Alert Type: LDL	Message: Overdue	Most Recent Date: 8/2/2011	Most Recent Result: 110
		Message: Overdue		
	Mammogram			
2:45 PM	FOREST WEEKS	M	40	English
	MRN: 00000100426	Diagnoses: Hypertension		
	Alert Type: LDL	Message: Overdue	Most Recent Date: 5/5/2011	Most Recent Result: 62
		Message: Overdue		
Friday, January 04, 2013				
9:00 AM	BERNIE HARTMAN	M	59	English
	MRN: 00000015709	Diagnoses: Hypertension		
	Alert Type: LDL	Message: Overdue	Most Recent Date: 1/5/2012	Most Recent Result: 120
		Message: Overdue		
9:15 AM	TRENT CRAIG	M	48	English
	MRN: 00000904424	Diagnoses: Diabetes Hypertension		
	Alert Type: A1c	Message: Overdue	Most Recent Date: 12/6/2011	Most Recent Result: 5.8
	Eye Exam	Message: Overdue	10/15/2010	
	LDL	Message: Overdue	12/6/2011	81
	Monofilament	Message: Overdue	12/6/2011	
	Monofilament Exam	Message: Overdue	2/3/2011	





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# Drivers of Data Quality



# What is data quality?

- There is no single, standard definition of “data quality”. Generally speaking, good quality data is:
  - ✓ Consistent
  - ✓ Correct
  - ✓ Current/timely
  - ✓ Complete
- “Data validation” or “data quality assurance” is the process of identifying data quality issues, analyzing the root cause, and determining an appropriate response.
- Ensures that your reports are **credible** and **defendable**.



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# Who is responsible for data quality?

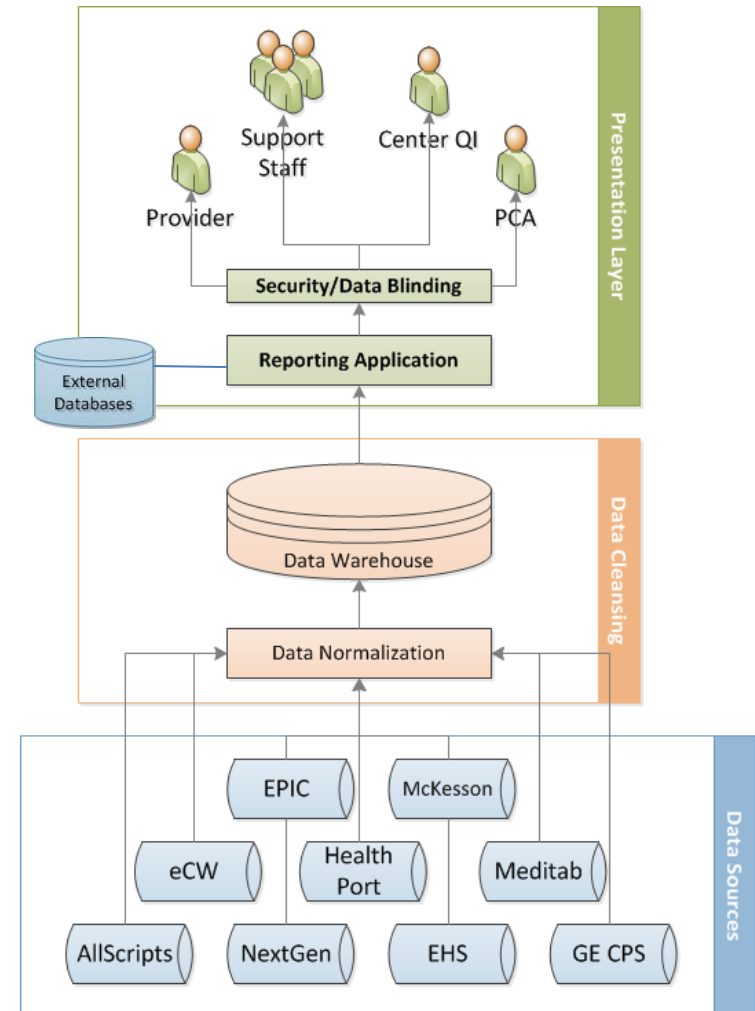
- Collaborative partnership between health center staff, CHCANYS staff, and the CPCI vendors Azara and Arcadia
- Health center is ultimately expert regarding data, and is in the best position to ensure data quality
- Data quality is an ongoing effort



# How the CPCI Works

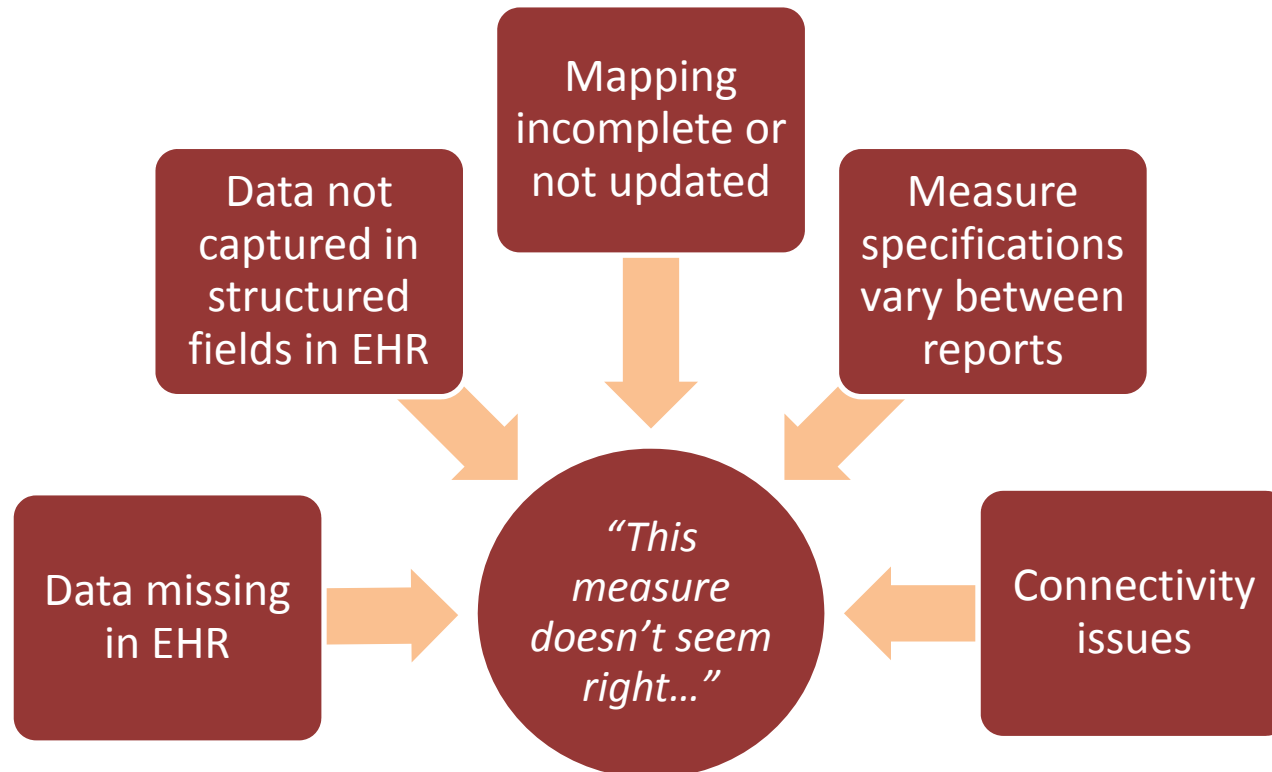
- 3 Data is available in CPCI front-end, a web-based reporting platform accessible from any major browser
- 2 Data is mapped according to health center-specific business rules, and unified in EHR-agnostic Data Warehouse. External data is referenced, if applicable
- 1 Data is pulled nightly from disparate EHR/EPM\* systems

- EHR: Electronic Health Record
- EPM: Electronic Practice Management





# Data quality can arise at various points in this process





# Potential Sources of Data Issues

- Measure specifications
- Workflow/documentation
- Data format (structured vs unstructured)
- Medical encounter definition
- Identification of labs
- Medications
- Patient Demographics
- Patient Populations
- Connectivity





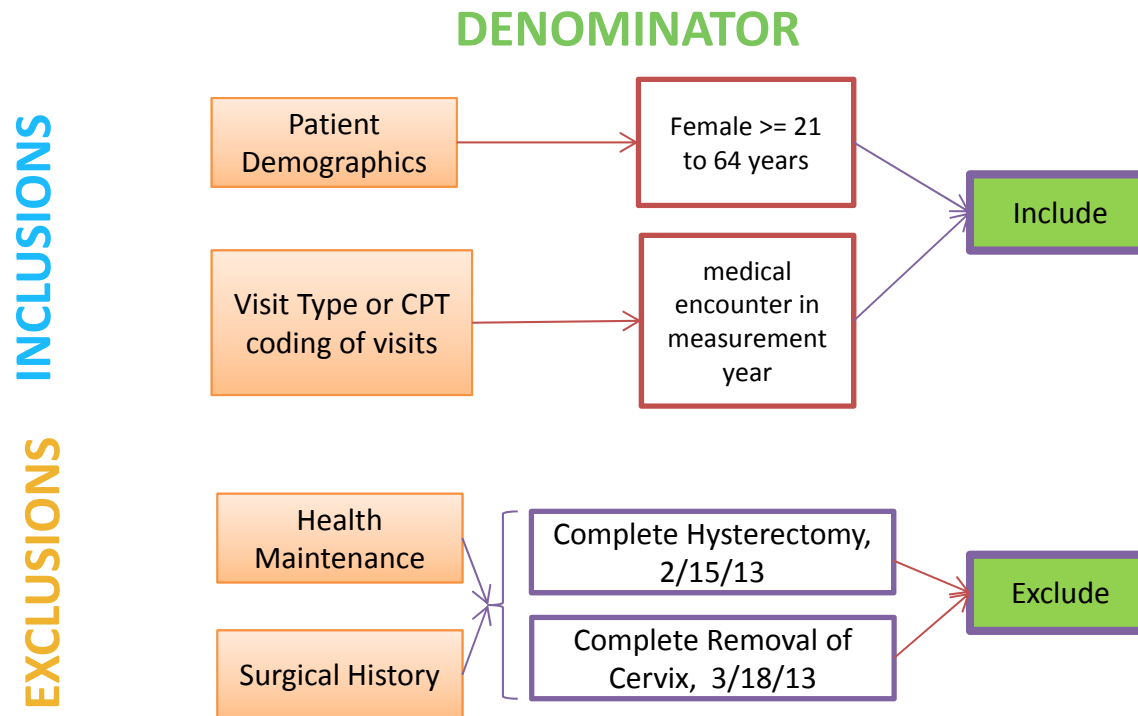
## Measure Specifications

- Instructions for how to calculate a measure, including the measure's numerator, denominator, exclusions
- Result is typically a ratio or percentage
- Important to understand the specifications of a measure to interpret its value
- A single measure may rely on data “building blocks” that span more than one workflow and involve disparate EHR screens and staff/providers



## Example: Denominator Data Sources

*Cervical Cancer Screening (NQF0032): "Percentage of women 21-64 years of age who received one or more Pap tests to screen for cervical cancer"*



**\*NOTE: For illustration purposes only.** Not indicating a recommendation or best practice. Workflow and terminology will vary by health center and EHR

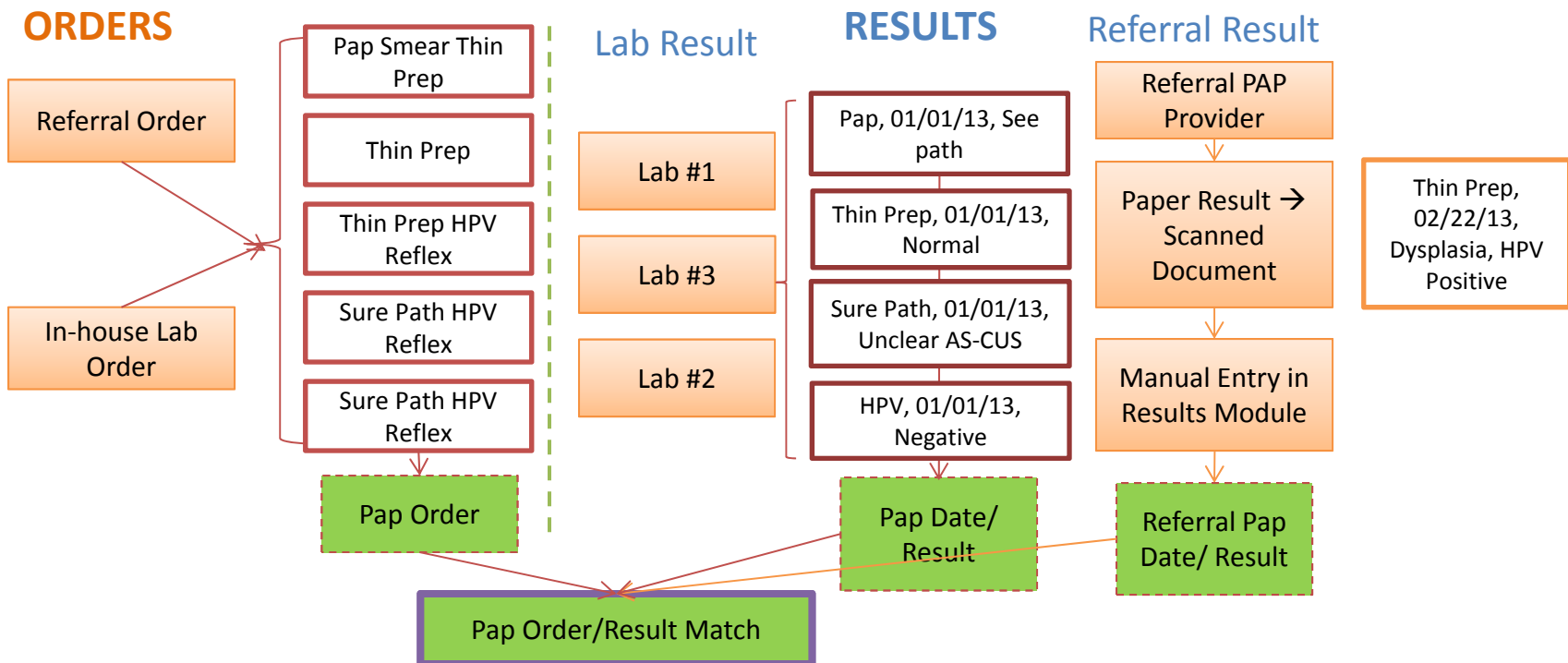




## Example: Numerator Data Sources

*Cervical Cancer Screening (NQF0032): "Percentage of women 21-64 years of age who received one or more Pap tests to screen for cervical cancer"*

### NUMERATOR



\*NOTE: **For illustration purposes only.** Not indicating a recommendation or best practice. Workflow and terminology will vary by health center and EHR



## Differences in Measure Specifications

- Similarly named measures may have distinctions in the specifications that lead to legitimate difference in value:
  - *Cervical Cancer Screening (NQF0032) published by National Quality Forum (<http://www.qualityforum.org>) - Percentage of women 21-64 years of age who received one or more Pap tests to screen for cervical cancer*
  - *UDS 2013 Table 6b - Pap Tests published by HRSA: Female patients age 24-64 who received one or more Pap tests during the measurement year **or during the two years prior to the measurement year OR, for women over 30, received a Pap test accompanied with an HPV test done during the measurement year or the four years prior***



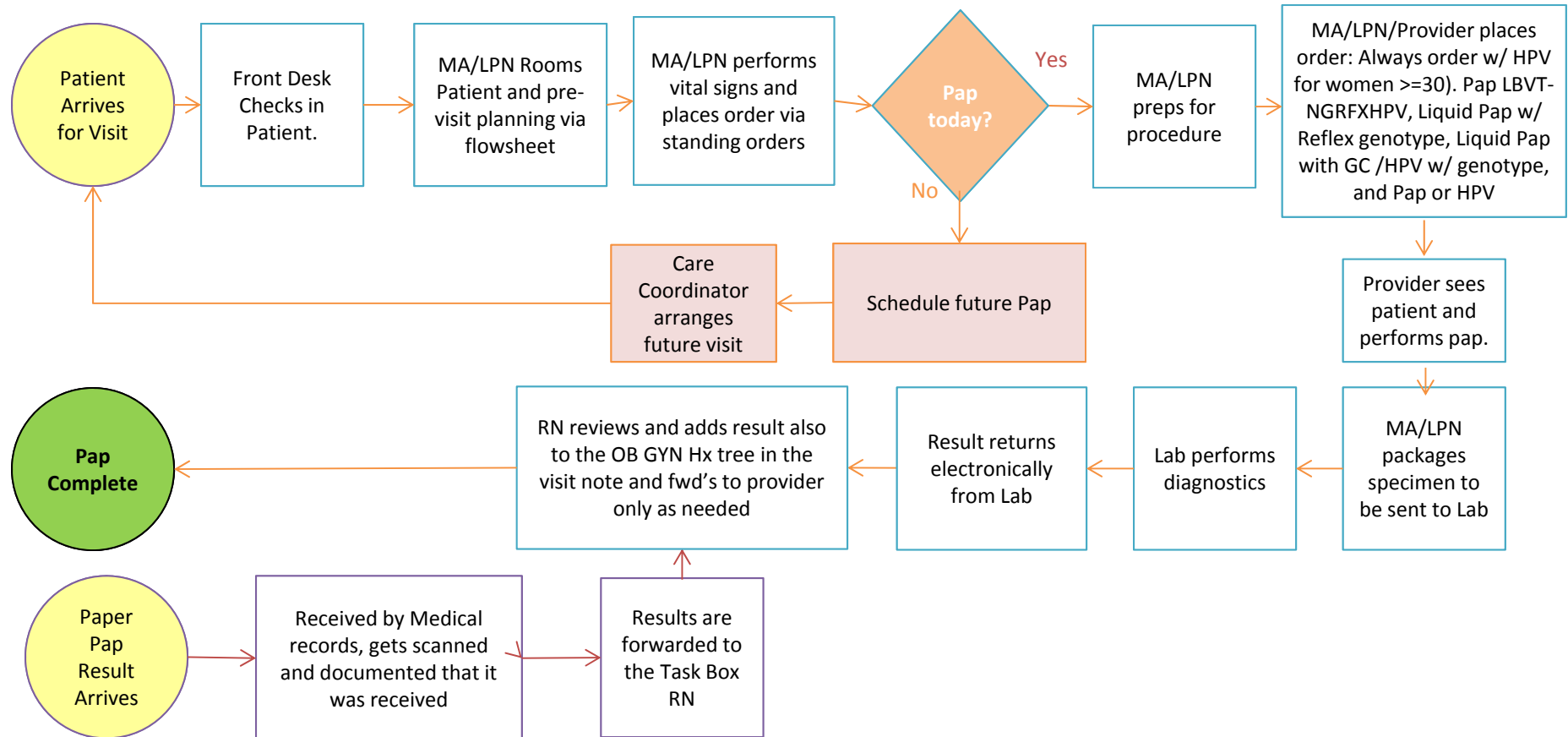
# Workflow

- Workflow impacts how and where providers and other staff are capturing data in the EHR
- Workflows are always evolving. Reporting should reflect your standard workflow.
- Don't change the standard until it's agreed upon within your center. Update Azara on changes.
- CHCANYS can assist with workflow mapping and analysis to identify gaps that are impacting your QI measures





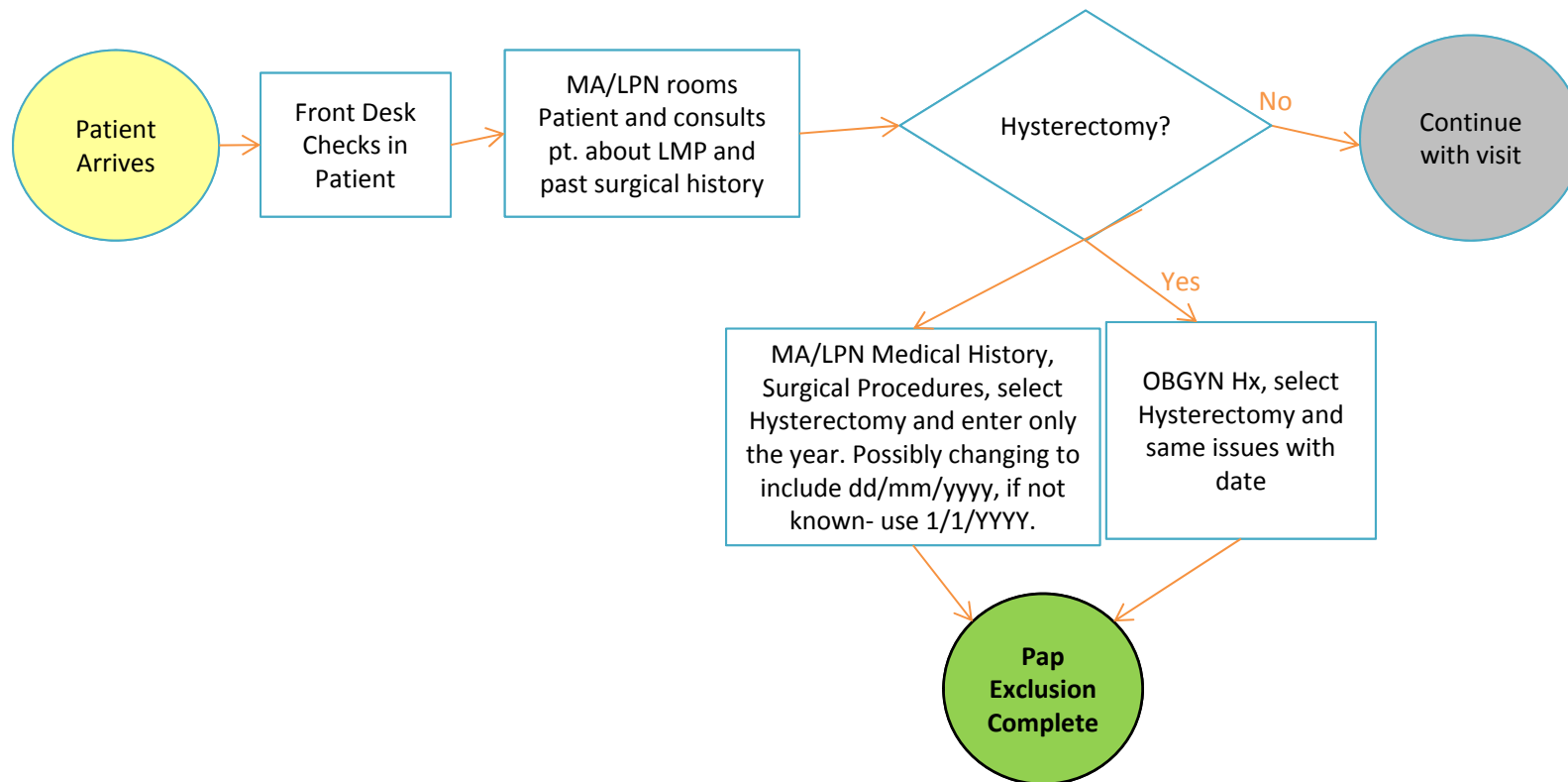
## Workflow Example: Pap Result



\*NOTE: For illustration purposes only. Not a recommendation or best practice. Workflow, roles, terminology, etc will vary by health center and EHR.



## Workflow Example: Pap Exclusion

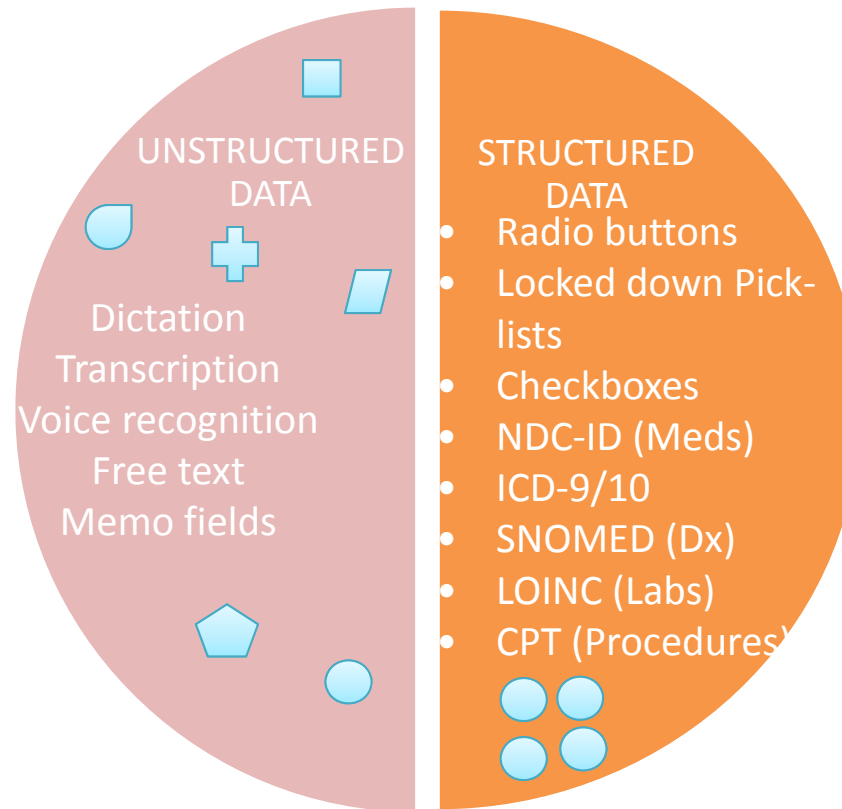


**\*NOTE: For illustration purposes only.** *Not a recommendation or best practice.* Workflow, roles, terminology, etc will vary by health center and EHR.



# Structured vs Unstructured Fields

- Using a common vocabulary and methodology creates data that can be recognized, ordered, analyzed, reported & shared. **Data not captured in structured fields are not reportable**





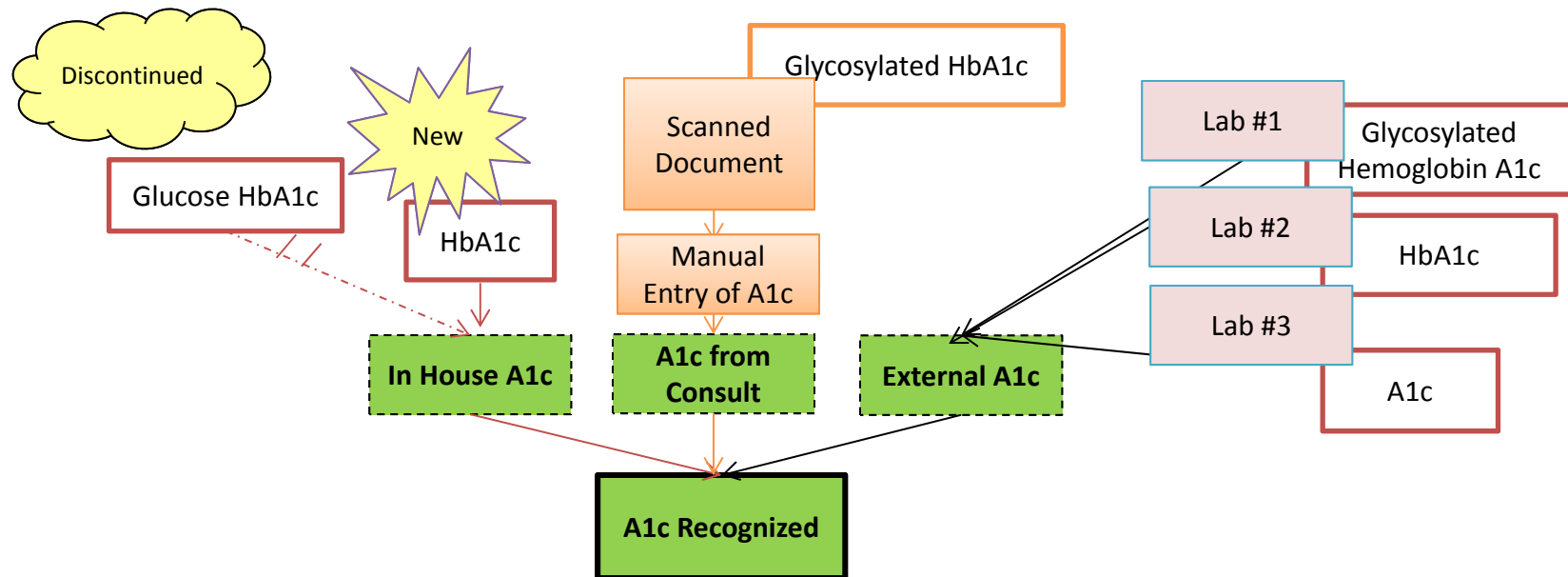
# Medical Encounter Definition

- CPCI typically identifies primary care medical encounters by either:
  - CPT code
  - Visit type
- Defining and validating medical encounters is done during initial CPCI integration
- It is possible and not uncommon - despite best efforts during integration - for Azara to be missing some CPT codes
- If the list of CPT codes or Visit Types changes, or Azara does not have a complete list, mapping may need to be updated



## Lab Names and Interface Changes

- Lab Result names can change, either at the whim of external labs, or if you update the name of in-house labs
- If Azara doesn't know about the name change, the DRVS code will continue looking for the old name, and fail to pick up the new results



\*NOTE: For illustration purposes only. Not a recommendation or best practice. Workflow, roles, terminology, etc will vary





# Medications

- Some measures have medication requirements for the numerator, and in some cases the denominator
- CPCI uses NDCs (National Drug Codes) to identify medications
- NDC is a unique 10-digit, 3-segment numeric identifier assigned to each medication, and identifies the labeler or vendor, product, and trade package
- Not all centers have medications coded with NDC



# Patient Demographics

- Data quality issues are typically found when new items are added to the EHR for Race, Ethnicity, or Language and not mapped
- When field in EHR is free text, staff may be entering demographics inconsistently
- ‘Needs Update’ in CPCI report indicates that data is missing for some patients



# Patient Populations

- Some centers have a need to exclude specialty-only patients. Patients that come only for behavioral health or dentistry generally shouldn't be included in primary care quality measures.
- In CPCI, you can filter for specific providers, e.g., exclude all dentists
- New functionality has been added to allow centers to define "Service Lines". Contact Azara to set this up for your center.



# Connectivity

- CPCI is updated nightly
- Ability to report timely data is dependent on consistent connectivity to your systems
- Common issues: Server migrations, firewall changes and expiring access credentials, failed replications from production cause data gaps
- Azara needs to know about changes to server configurations, IP addresses, security or back-up systems that run the EHR



## Validation is an ongoing process

- After go-live consider investing additional time in validating CPCI reports against trusted internal reports for critical measures
- Notify Azara when something changes in your EHR or clinical workflow that impacts how and where data is captured, including data elements or new locations
- Most EHR upgrades, if properly managed do not create a disruption for CPCI. Please let Azara know 6-8 weeks prior to an EHR upgrade
- If you notice an issue at any time, click Report Issue button on CPCI menu bar or homepage



# Ongoing Change Management

- Incorporate CPCI into IT change management processes
  - Who is responsible for assessing the impact on CPCI of EHR configuration changes/upgrades?
  - Is the CPCI considered when standard workflows change?
  - Who is responsible for contacting Azara support when there is a data quality question or concern?



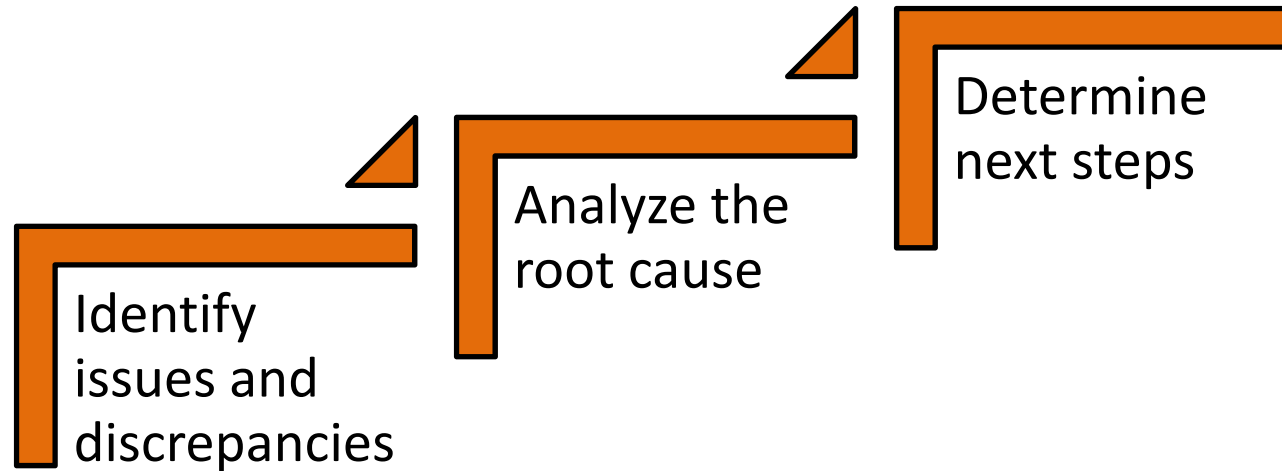
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# Data Validation Process



# Data Validation Process







## Identifying Issues

- Prioritize measures to validate (e.g., key grant measures, UDS)
- Watch trends for unexplained changes
- Identify unexpected outliers
- Flag measures that don't seem 'right'
- Compare to internal reports



## Considerations when Comparing Reports

- Make sure you're comparing 'apples to apples'
  - Compare measure specifications
  - Run CPCI and comparison reports with the same filters/parameters
- Some variation can be expected, particularly when comparing to reports based on manual chart reviews
- Comparison reports run from another data warehouse or other intermediate data source may introduce additional complexities



# Identifying a Measure to Validate

azara healthcare DRVS

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**CHCANYS Projects - NYS-HCCN Grant, TY January 2013**

Filters PDF EXCEL Report Issue Add to Favorites

Measure	Target	Result	Numerator	Denominator	Exclusions
A1c > 9	15%	15%	776	5,324	10
Cervical Cancer Screening	93%	42%	10,711	25,774	0
Hypertension BP < 140/90	61%	61%	2,806	4,576	0

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View  
specification

*Data represents a fictitious environment. No PHI is being revealed.*



# Checking the Measure Specification

Period: Trailing Year | All Providers | ADAME, LATASHA

**A1c > 9 (NQF 0059) Specification**

**A1c > 9**  
% of patients 18–75 years of age with diabetes (type 1 or type 2) with most recent A1c level greater than 9.0% during the measurement period.

**Denominator:**  
Patients 18-75 years of age as of the end of the measurement period who had:

- Medications indicative of diabetes within 2 years of the end of the measurement period
- OR**
- A diagnosis of diabetes within 2 years of the end of the measurement period
- AND**
- Two (2) encounters (non-acute inpatient, outpatient or ophthalmology) during the measurement period

**Numerator:**  
# of patients whose most recent HbA1c laboratory test result > 9.0% during the measurement period

**Exclusions:**

- Patients with a diagnosis of polycystic ovaries
- Patients with a diagnosis of gestational diabetes
- Patients with a diagnosis of steroid-induced diabetes

**Target:** None Set

**Related:** [NQF 0059 \(Modified\)](#)  
*Modification - Measurement period is any 12 month period vs. NQF specified calendar year*

REPORT

	Result	Numerator	Denomi
5%	15%	450	
3%	50%	6,702	1
1%	58%	1,917	

zara Healthcare  
8.1.16942

Link to more details



# Verifying Parameters

- Differences between reports and CPCI can sometimes be traced to differences in the filter settings, such as time period being reviewed
- Access filters from the menu bar
- Click Update Report to re-run the measure with selected parameters

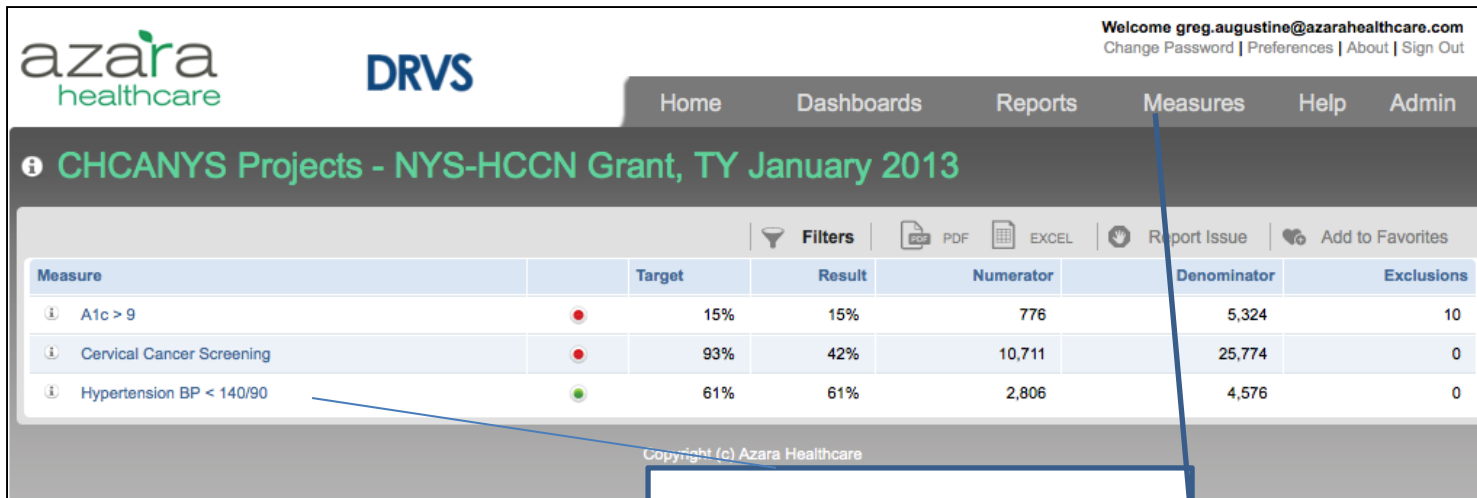
Display/ hide filters

The screenshot shows a web-based report configuration interface. At the top, there is a menu bar with icons for 'Filters', 'PDF', 'EXCEL', 'Report Issue', and 'Add to Favorites'. Below the menu bar, there are three filter panels. The first panel, 'Period', has a dropdown menu set to 'Trailing Year' with 'TY December 2013' selected. The second panel, 'All Providers', lists names: ADAME, LATASHA; ADCOCK, FRANKIE; ALBRECHT, KAYE; ALLISON, LEONOR; AMBROSE, LUZ; ARNETT, ELINOR; BACA, CLAUDETTE; BARCLAY, IVY; BARFIELD, KRISTAL. Below this list is a radio button for 'Provider Role' with 'Usual' unselected and 'Rendering' selected. The third panel, 'All Locations', lists addresses: 1017 RAVENS BLUFF; 1036 WEST KNOLL ROAD; 1079 RATTLESNAKE HILL ROAD; 1100 ALPINE DRIVE; 1178 PATRIOT DRIVE; 1180 KENDALL STREET; 154 OLD CAMPUS ROAD; 215 STRAWBERRY HILL ROAD. At the bottom center of the interface is a button labeled 'UPDATE REPORT'.

Update Results

# Drilling Down: Measure Analyzer

- View details of any measure including parameters, measure specification, provider-level detail, patient detail and more
- Launch the Measure Analyzer by selecting the measure name or selecting from the Measures menu



azara healthcare DRVS

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CHCANYS Projects - NYS-HCCN Grant, TY January 2013

Filters PDF EXCEL Report Issue Add to Favorites

Measure	Target	Result	Numerator	Denominator	Exclusions
A1c > 9	15%	15%	776	5,324	10
Cervical Cancer Screening	93%	42%	10,711	25,774	0
Hypertension BP < 140/90	61%	61%	2,806	4,576	0

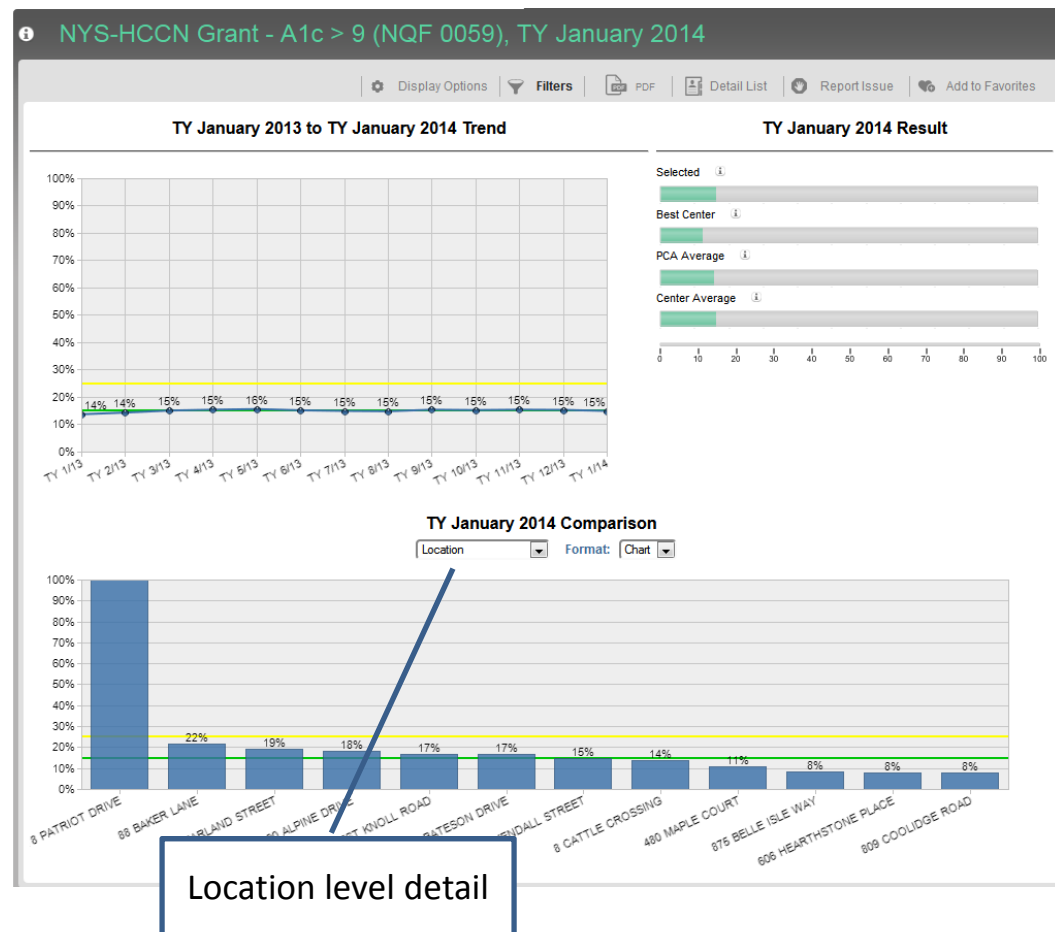
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Select Measure name to  
launch Measure Analyzer



# Examining Performance by Location

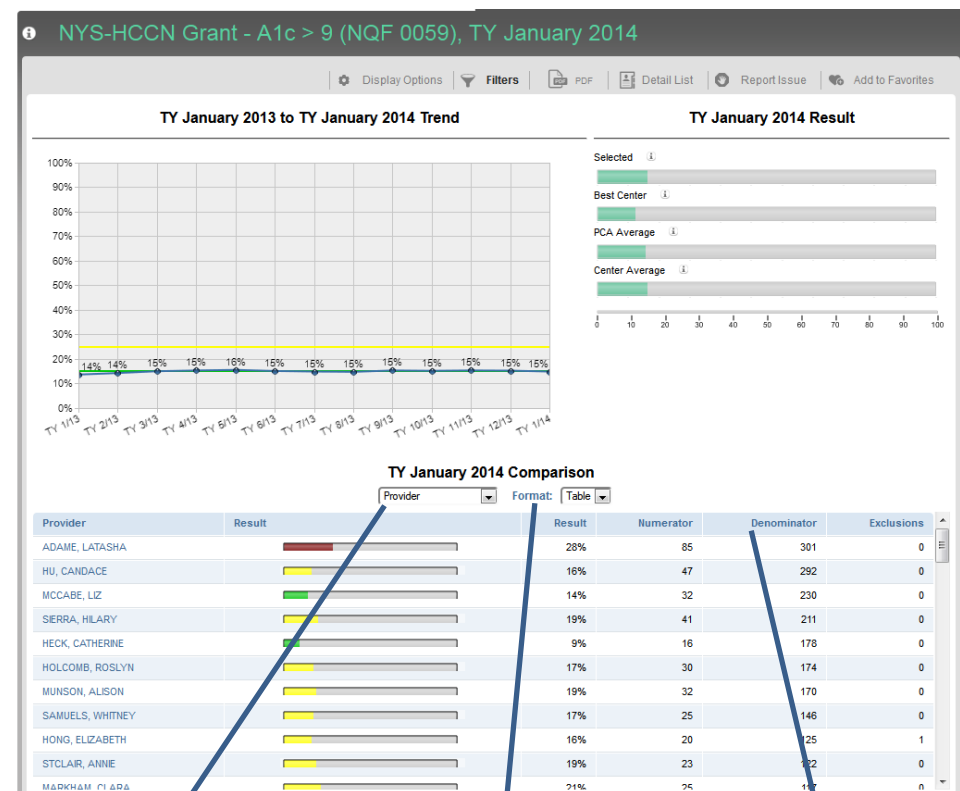
- If your health center has multiple locations, you may learn more by comparing performance across locations
- Use the drop down list to view this measure by location
- Do the differences make sense?





# Examining Performance by Provider

- To view the relative performance of providers on this measure:
  - View by Provider
  - Change format to “Table”
- To focus on providers with the most patients, sort by Denominator



Provider level detail option

Select Table format

Sort by clicking column headings


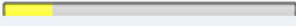

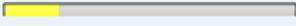

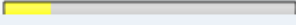



# Drilling Into Unexplained Differences

- How are different providers performing on the measure?
  - An unexpected high/low pattern may indicate a difference in workflow or coding inconsistencies across providers
  - Unexpectedly high or low numbers across *all* providers may indicate a mapping issue

TY December 2013 Comparison

Provider  Format:

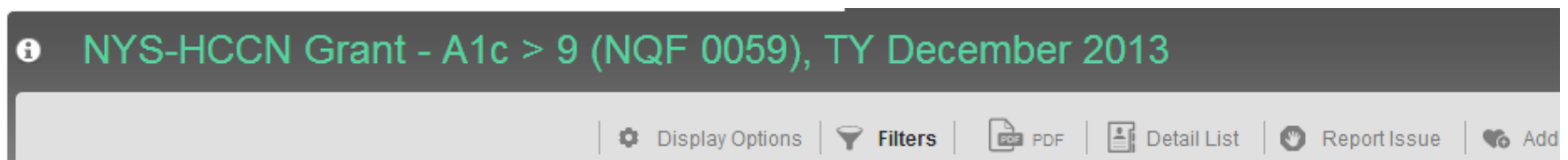
Provider	Result	Result	Numerator	Denominator	Exclusions
ADAME, LATASHA		27%	88	327	0
HU, CANDACE		16%	52	318	0
MCCABE, LIZ		14%	35	242	0
SIERRA, HILARY		18%	44	238	0
MUNSON, ALISON		19%	37	195	0
HOLCOMB, ROSLYN		16%	31	192	0
HECK, CATHERINE		9%	16	186	1

Drill in to further analyze the results  
for this provider only



## Accessing Patient-Level Detail

- To further understand a provider's performance on a particular measure, select the Detail List button from the Measure Analyzer menu to drill into the patient level details



Display patient-level detail for this provider



# Patient-Level Detail Spot-Check

- Spot check about 10 patients against data in EHR
  - 5 patients in the numerator ( '1' in the Numerator column)
  - 5 patients in the denominator only ('0' in the Numerator column)
  - Consider exclusions if applicable ('1' in the Exclusion column)
- Export to Excel for further analysis

Hover over a name to display patient details

Patient Information	
MRN	002138492718
Center	Florence Avenue CHC
Race	Unreported / Refused to Report
Ethnicity	Hispanic/Latino
Language	Spanish
Sex	F
Date of Birth	07/06/1955

Page through results

Export list to Excel

Page 1 of 13

Filters PDF EXCEL Report Issue

Name	Usual Provider	Numerator	Denominator	Exclusion	A1c Date	A1c Result	Inactive
BAILEY, SAMANTHA	HONG, ELIZABETH	0	1	0	10/15/2013	7.50	N
BARLOW, KIM	THORNTON, FLORENCE	0	1	0	12/5/2013	6.20	N
BARRAZA, MARQUITA	THORNTON, FLORENCE	0	1	0	7/15/2013	6.30	N
BEAL, DARLA	SUMNER, SHELIA	0	1	0	6/3/2013	9.00	N
BIRCH, NESTOR	HONG, ELIZABETH	0	1	0	3/16/2013	5.00	N
BOGGS, DREW	HONG, ELIZABETH	0	1	0	6/28/2013	8.90	N
BRADSHAW, BOBBIE	HONG, ELIZABETH	0	1	0	10/24/2013	7.70	N
BRAGG, HAZEL	HONG, ELIZABETH	0	1	0			N
BULL, LEOLA	THORNTON, FLORENCE	0	1	0			N
CARVER, LETICIA	HONG, ELIZABETH	0	1	0			N



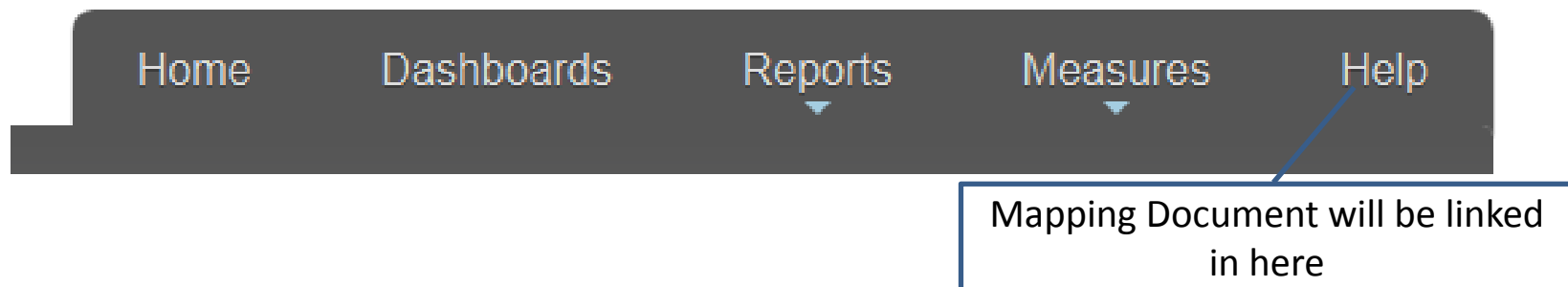
## Spot Check - Questions

- Is this patient's numerator & denominator reported correctly in the CPCI report, according to the measure specification?
  - Patient should be included in the numerator, but is not?
  - Patient should NOT be included in the denominator, but is?
- If the data is in the EHR but not reflected in CPCI:
  - Is the data in a structured field in EHR?
  - Where is the data located in your EHR?
- Contact CHCANYS for assistance. An Excel tool is available to help facilitate this analysis.



## Reviewing Your Mappings

- A Data Mapping Document for your health center is available in the Help section of the CPCI
- Explains how your EHR database is mapped to the CPCI including your Medical encounter codes, medications, labs, etc.
- Most appropriate for technical staff





## Next Steps: Addressing Issues

Perceived Issue	Possible Root Cause	Next Steps	Primary Support Resources
Data missing or inconsistent in EHR	Documentation/ Workflow issue  EHR bug/ limitation  Unstructured data	Workflow analysis  Provider training  EHR configuration	EHR vendor  CHCANYS
Data is correct in EHR but not in CPCI (e.g., Missing labs, medications, CPT codes)	Mapping issue	Contact Azara	Azara
Data not timely in CPCI	Connector issue	Contact Azara	Azara

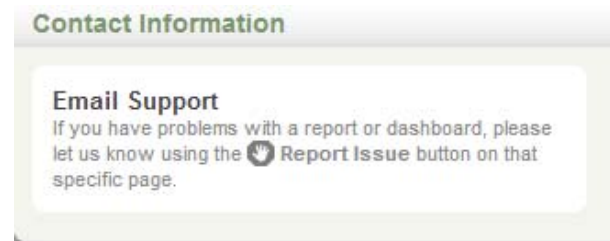
# Working with Azara and CHCANYS

- CHCANYS and Azara are available to help dig deeper to discover the root cause of discrepancies
- CHCANYS can assist with workflow mapping
- Tools are available to assist with data analysis
- Providing details of perceived issues to Azara will be helpful for further troubleshooting:
  - Medical Record Numbers
  - Screenshots
  - Comparison reports



## Resources

- Contact Azara:
  - email [support@azarahealthcare.com](mailto:support@azarahealthcare.com)
  - or post a ticket by clicking the **Report Issue** button in the CPCI



- Contact CHCANYS:
  - Natalya Malamud, IT Project Manager  
([NMalamud@chcanys.org](mailto:NMalamud@chcanys.org))





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# Data Quality Collaborative



## Data Quality Collaborative

- New group forming with the purpose of assisting health centers with data quality concerns
- Collaborative, peer-to-peer discussions facilitated by Dr. Warria Esmond of Settlement Health and CHCANYS
- Conference calls held quarterly for 90 minutes
- Kickoff agenda developed by chairs, with subsequent agendas driven by the needs and interests of the group
- Possibility in future meetings of break outs into EHR-specific discussion sections
- Please email Natalya Malamud at [NMalamud@chcanys.org](mailto:NMalamud@chcanys.org) to express interest



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Community Health Care Association of New York State



# Evaluation

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