
Using Data to Improve Quality of Care

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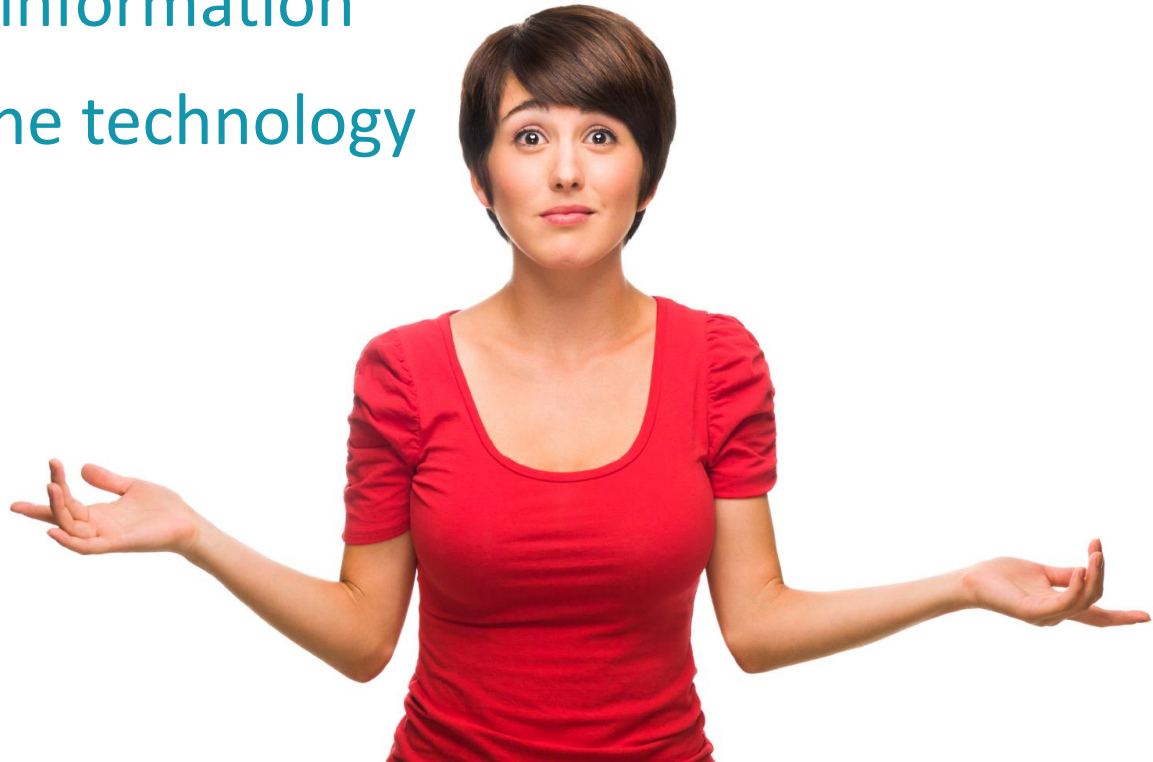
TBC FACULTY

LEIBIG-SHEPHERD LLC

2/15/17

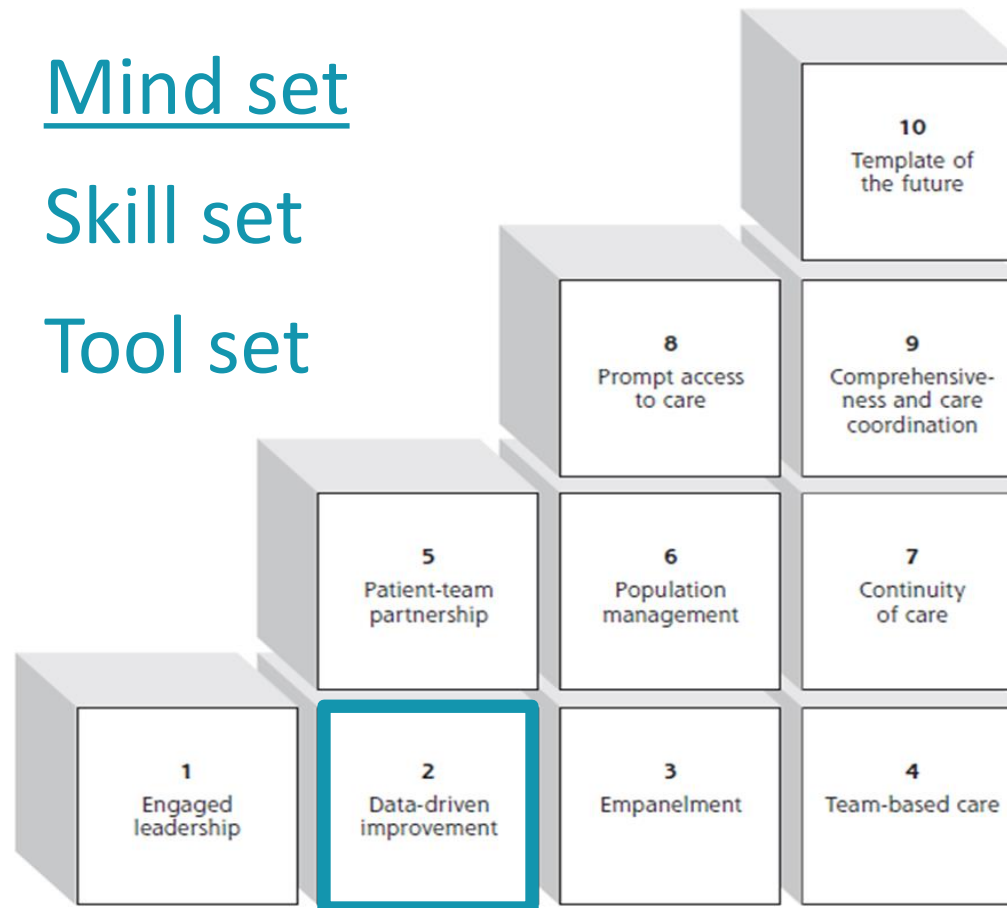
What's Going On with Data?

- We have lots of data right now
- Turn data to useful information
- It's not just about the technology



Start with a Data-Driven Culture

1. Mind set
2. Skill set
3. Tool set



Data Driven Culture-Mind set

- Data is an asset
- Quadruple Aim of Data Governance
 - Decrease Cost
 - Data Quality
 - Data Access
 - Data Utilization
- Accountability for data runs throughout the organization

Data Driven Culture-Skill Set

Roles

- CEO
 1. Set the vision and culture
 2. Set priorities
 3. Allocate resources
 4. Model data-driven behaviors

Data Driven Culture-Skill Set

Roles

- Data Stewards
 1. Take ownership of department data
 2. Ensure relevant and accurate data is accessible for all staff
 3. Foster a common data terminology among all staff
- Data Analysts and IT Specialists
 1. Analyze data and provide reports
 2. Ensure accessibility and utilization of the data
 3. Help with data quality analysis and improvement

Data Driven Culture-Skill Set

Roles

- End Users
 1. Learn and use data to manage/improve outcomes
 2. Push for access to relevant data
 3. Help with continuous data improvement by addressing defects

Data Driven Culture-Tool Set

- The Tool Set comes after Mind Set and Skill Set
- EHRs have dramatically changed expectations
- Analytics required to turn data into information

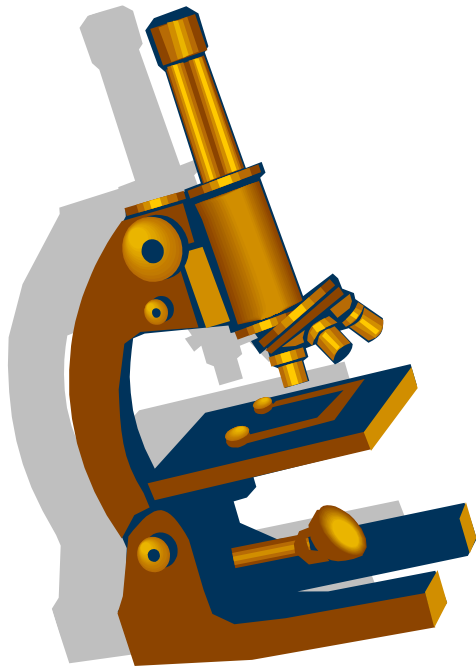
Team-Based Care HIT Consultation Opportunity from TCHF

Receive assistance from experienced HIT consultants to improve access to data from your electronic health system or supportive software in order to enhance how you use data to implement TBC components, such as empanelment through accurate continuity reports, or population management through accurate and detailed registries. An HIT consultant will be assigned to your practice and work closely with your team to assess your needs and help you extract, validate and interpret your data. **Application for this support is due March 3, 2017**

Link to application:

<https://www.surveymonkey.com/r/TBCsupportapplication>

Outcomes Data



Research outcomes

- Statistical structure for studies
- IRB, research institutions

Accountability outcomes

- Benchmark comparisons
- Defined numerators and denominators
- Summarized data, every 3, 6, 12 months

Quality improvement outcomes

- Decision support
- Appropriate fine focus adjustment
- More frequent

Accountability Data Benchmarks

- UDS

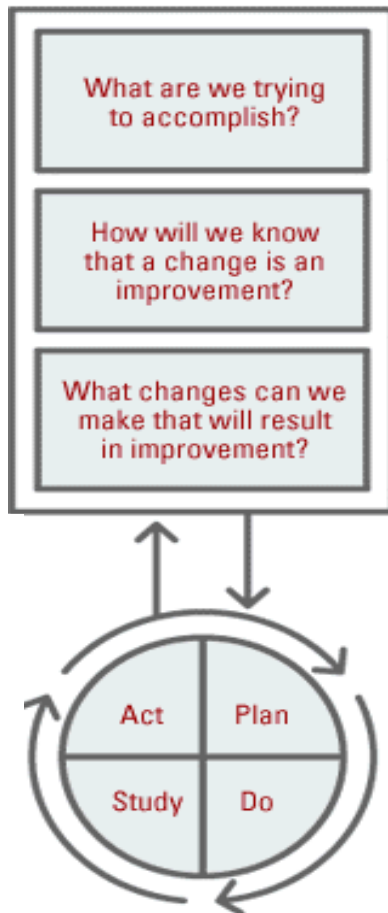
<https://bphc.hrsa.gov/uds/datacenter.aspx?q=d>

- NCQA

<http://www.ncqa.org/report-cards/health-plans/state-of-health-care-quality/2016-table-of-contents>

| CHILDHOOD IMMUNIZATION COMBINATION 3 (DTAP, IPV, MMR, HIB, HEPATITIS B, VZV AND PCV) | | | | | |
|--|------------|------|----------|----------|-----|
| | Commercial | | Medicaid | Medicare | |
| Year | HMO | PPO | HMO | HMO | PPO |
| 2015 | 76.3 | 68.4 | 69.0 | – | – |
| 2014 | 78.0 | 69.0 | 70.4 | – | – |
| 2013 | 76.6 | 66.5 | 70.8 | – | – |
| 2012 | 76.8 | 65.8 | 72.1 | – | – |
| 2011 | 75.7 | 63.1 | 70.6 | – | – |
| 2010 | 75.1 | 46.1 | 69.9 | – | – |
| 2009 | 73.4 | 40.4 | 69.4 | – | – |
| 2008 | 76.6 | 28.5 | 67.6 | – | – |
| 2007 | 75.5 | 27.6 | 65.4 | – | – |
| 2006 | 65.7 | 22.4 | 60.9 | – | – |

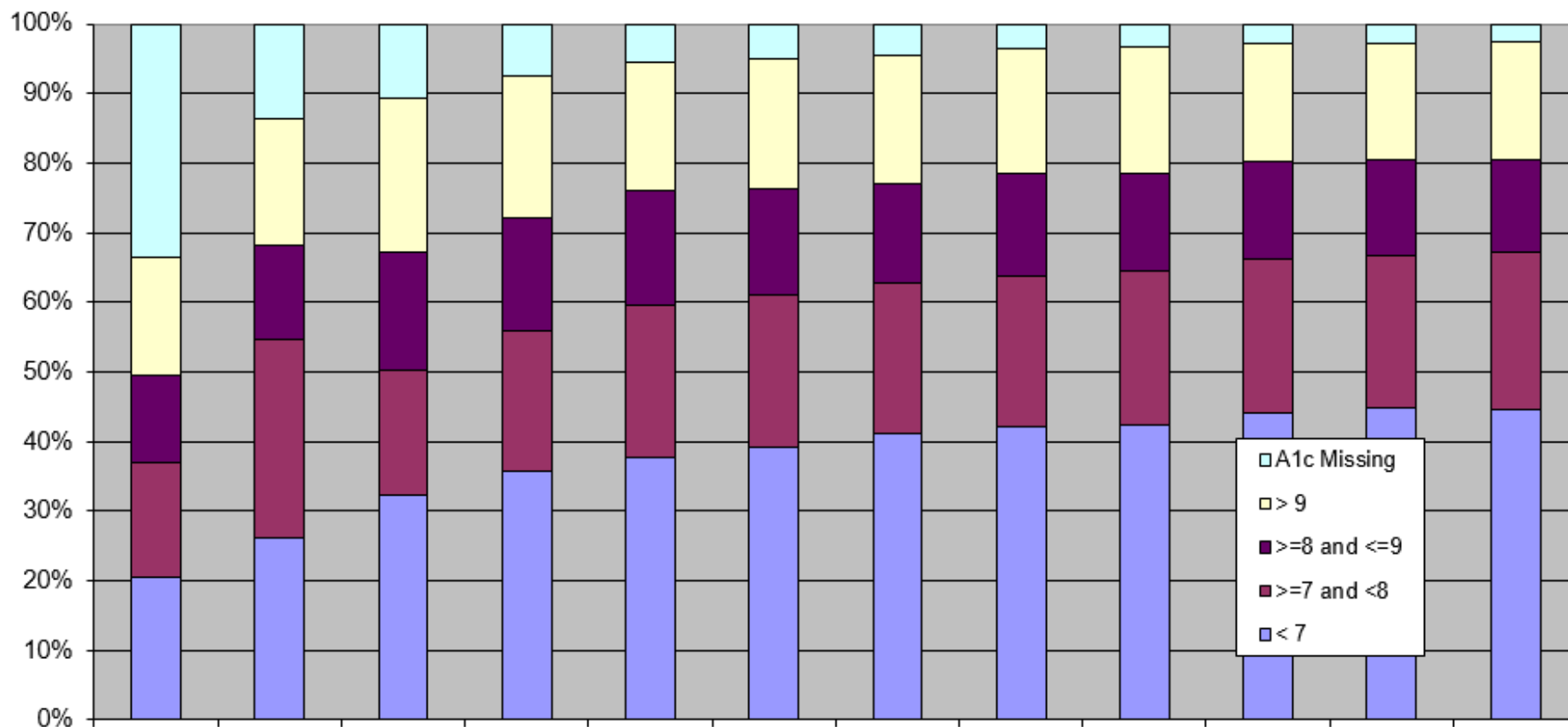
Quality Improvement Data



- Accountability data may drive Aims.
- Measurement to check progress towards Aims. Your numerator/denominator. More readily available.
- Define changes, predict results
- PDSA Study Data
 - At times very granular around process change
 - Not often reported to outside agencies

Data for Aims and Measures

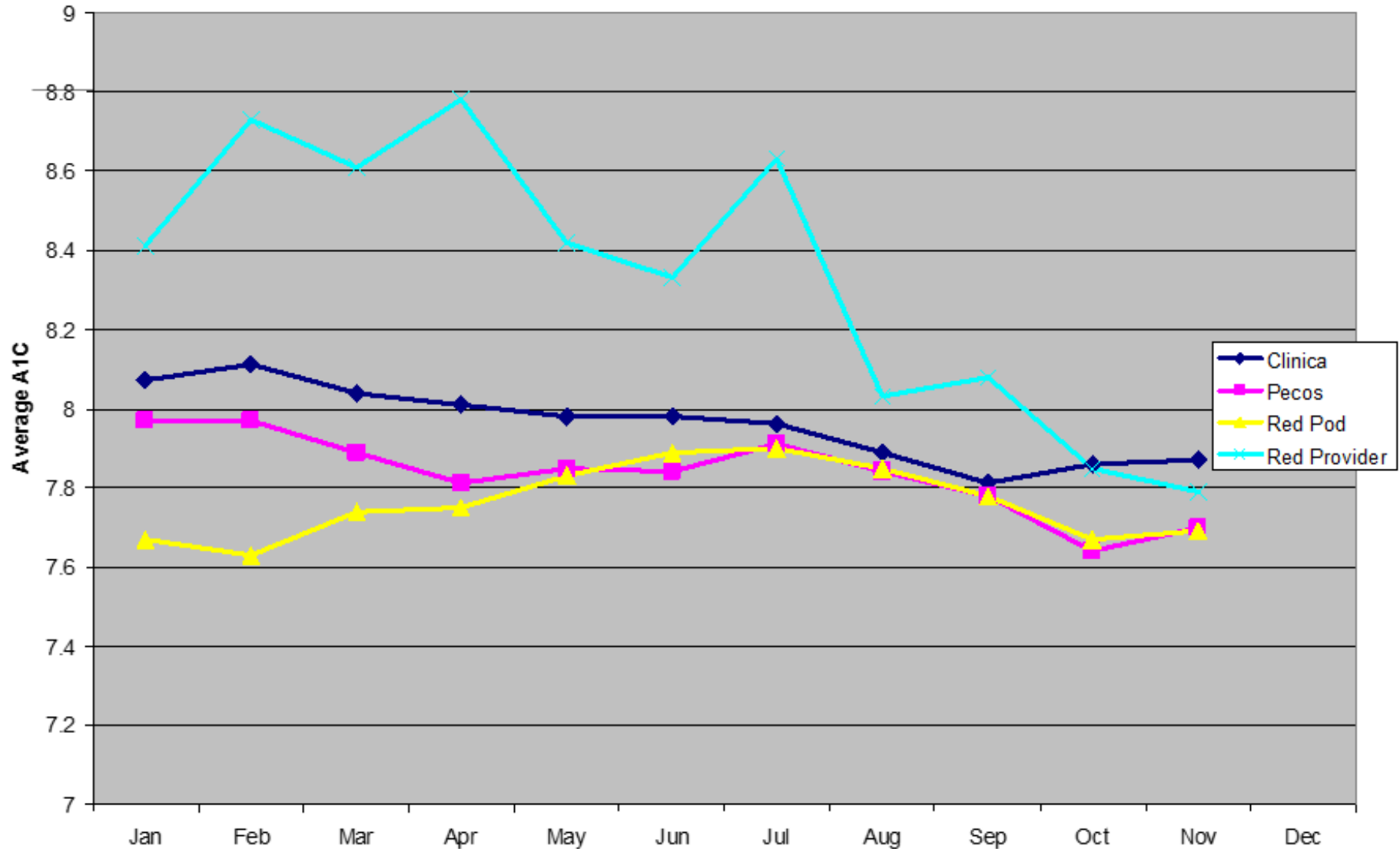
UDS Diabetes A1c Control
2012 Cumulative % of Patients A1c Control



□ A1c Missing
 □ > 9
 ■ >=8 and <=9
 ■ >=7 and <8
 ■ < 7

| | Jan-12 | Feb-12 | Mar-12 | Apr-12 | May-12 | Jun-12 | Jul-12 | Aug-12 | Sep-12 | Oct-12 | Nov-12 | Dec-12 |
|---------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| □ A1c Missing | 33.50% | 15.85% | 10.61% | 7.56% | 5.52% | 4.99% | 4.60% | 3.49% | 3.35% | 2.84% | 2.75% | 2.68% |
| □ > 9 | 17.00% | 20.95% | 22.19% | 20.27% | 18.41% | 18.68% | 18.36% | 18.08% | 18.02% | 17.02% | 16.79% | 16.75% |
| ■ >=8 and <=9 | 12.50% | 15.67% | 16.93% | 16.37% | 16.38% | 15.26% | 14.34% | 14.78% | 14.24% | 14.02% | 13.76% | 13.40% |
| ■ >=7 and <8 | 16.50% | 32.92% | 17.90% | 20.03% | 21.97% | 21.93% | 21.54% | 21.62% | 22.12% | 22.07% | 21.97% | 22.66% |
| ■ < 7 | 20.50% | 30.28% | 32.37% | 35.78% | 37.71% | 39.14% | 41.16% | 42.04% | 42.27% | 44.06% | 44.72% | 44.52% |

Red Pod Average HgbA1c



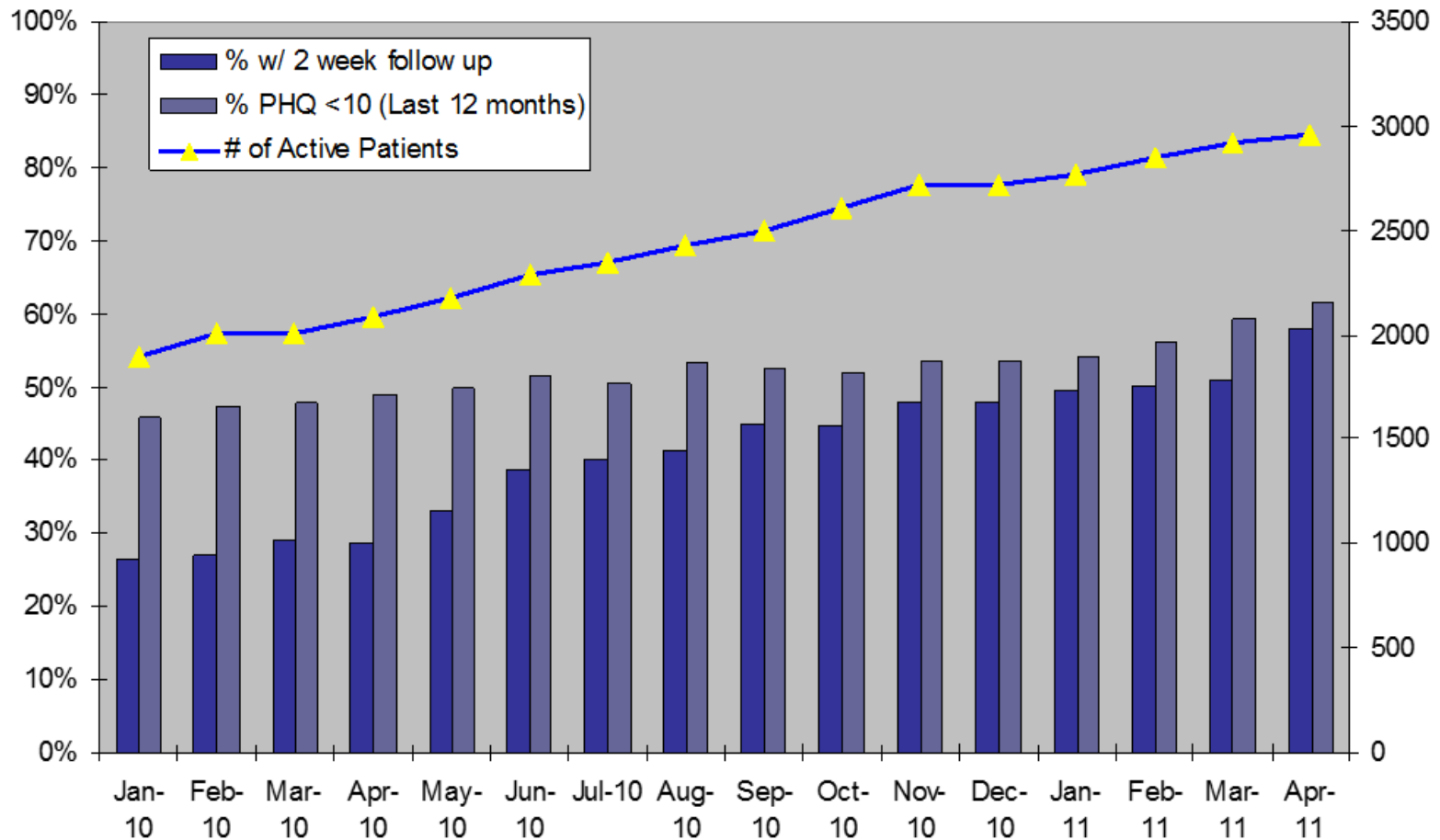
Possible Missed Immunization Opportunities

Possible Opportunities Missed Between 7/18/2011 And 8/1/2011

⊕ ?

| Visits | Patients | Missed Opportunities | % Missed Opportunities |
|-------------------------|----------|----------------------|------------------------|
| ⊕ Andrade, Jeannette CC | | | |
| 42 | 42 | 5 | 11.90% |
| ⊕ Arroyo, Zulema CC | | | |
| 16 | 16 | 0 | 0.00% |
| ⊕ Diaz, Martha CC | | | |
| 36 | 35 | 1 | 2.78% |
| ⊕ Garza, Alma CC | | | |
| 3 | 3 | 0 | 0.00% |

Complex Data Analysis



Making Data Useful

Conference
Rooms

Design
Design
Design

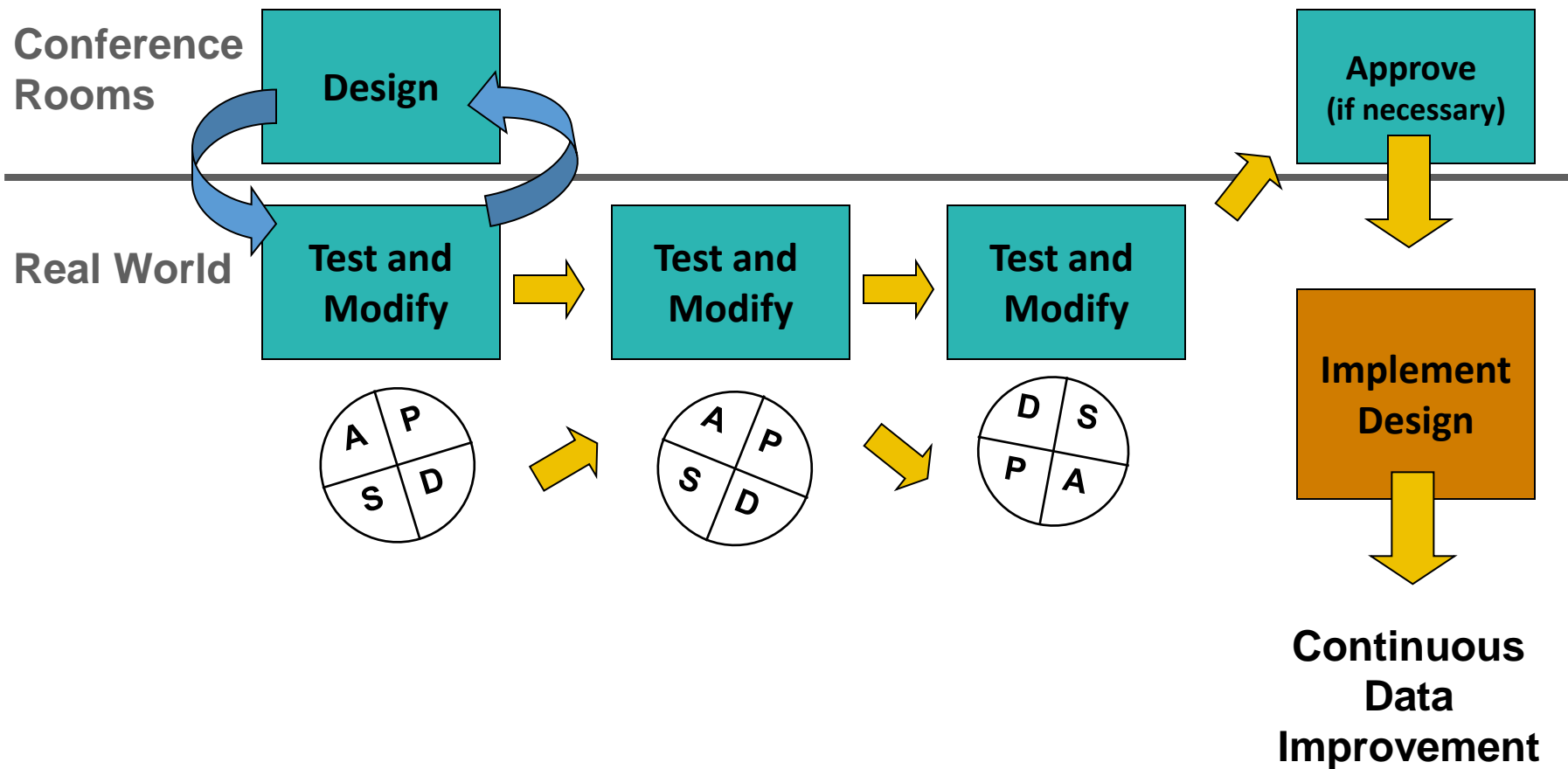
Real World

Reject!
Reject!
Reject!



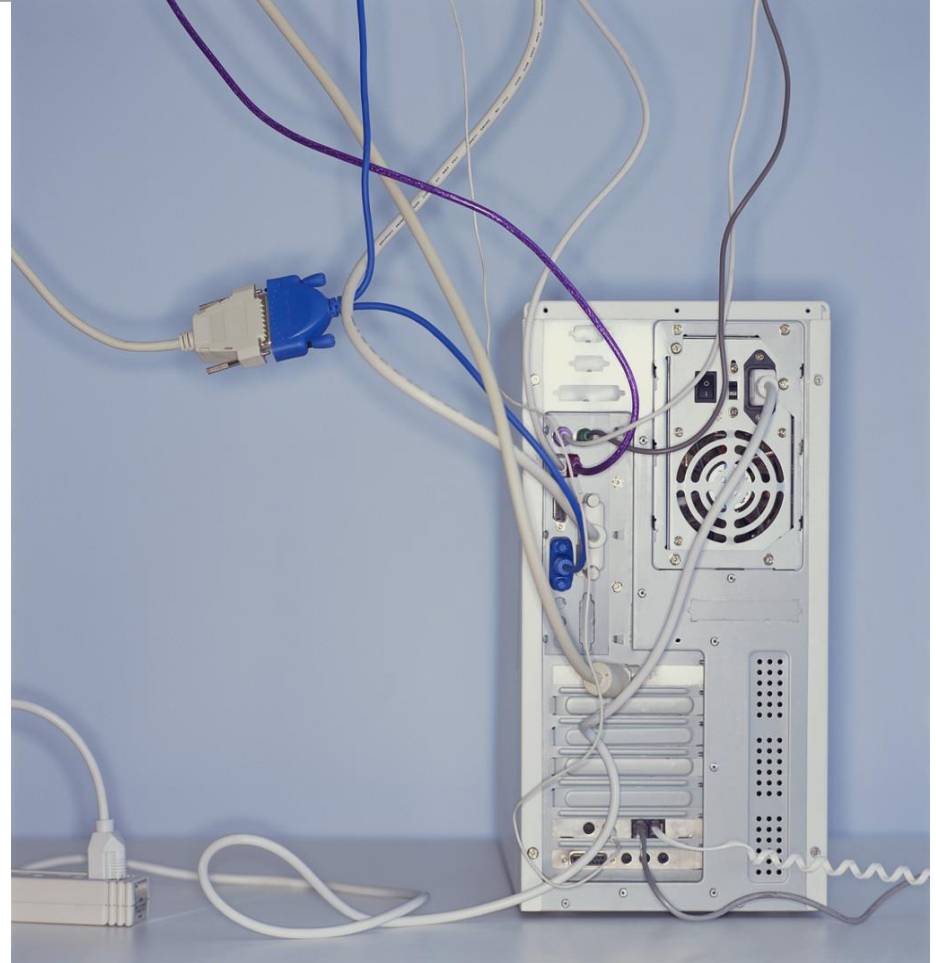
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graph TD; A[Design Design Design] --> B[Reject! Reject! Reject!]
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Making Data Useful

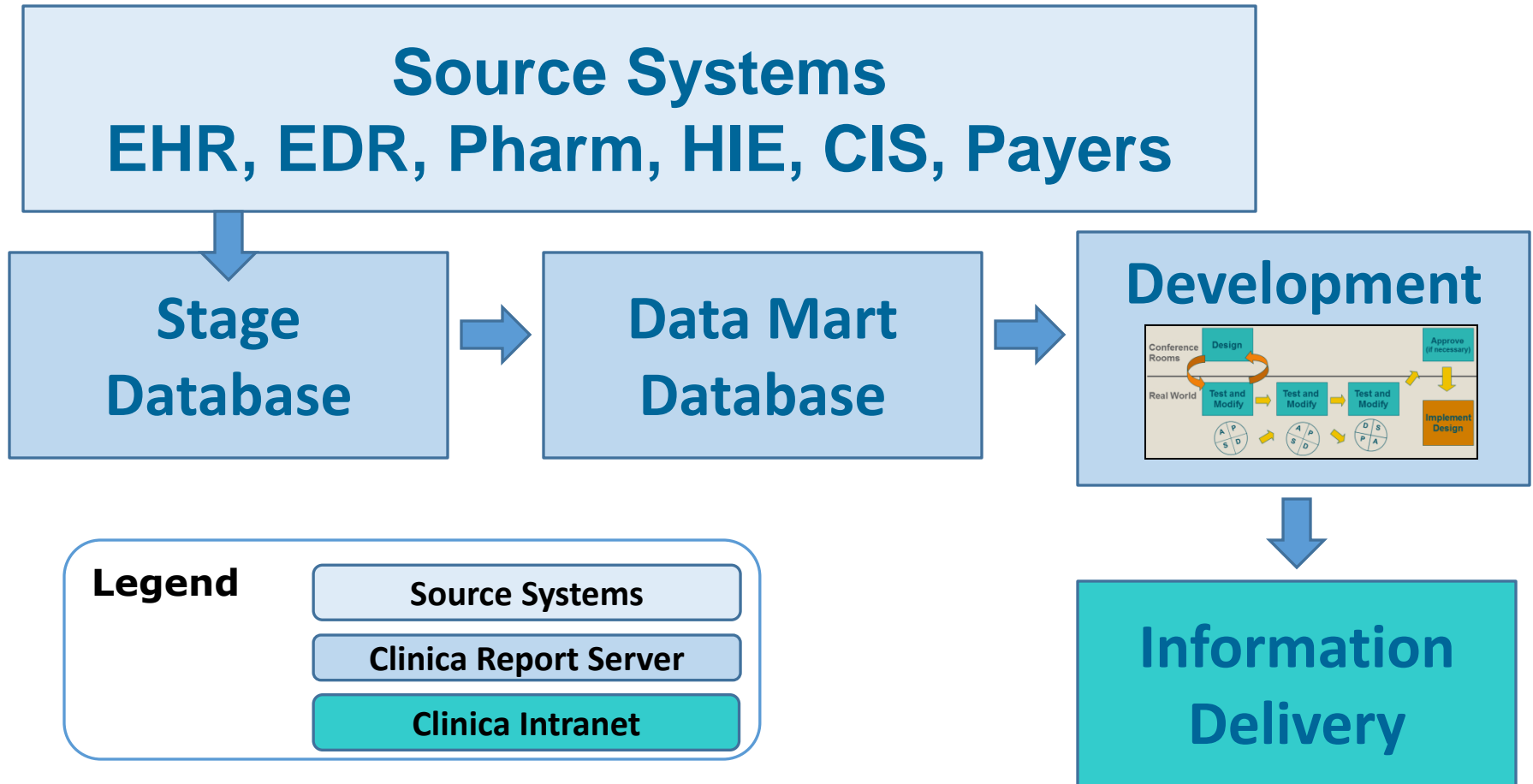


Clinica Data Tool Set

- EHR
 - Transactional data
- Business Intelligence Tool
 - Analytic, relational data



Clinica Data Warehouse Architecture



Attributes of Useful Data



Right Medication

Right Patient

Right Route

Right Time

Right Dose



Right Information

Right People

Right Tools

Right Time

Right Format

Clinica Commonly Used Reports

Commonly used BI Reports

[more reports...](#)

Data is as of: 4/22/2014 11:20:00 PM

CLINICAL

Abnormal Breast
Diagnostics

Assigned ACO Patients

CarePlanner SSRS

Current Gestation 42
Weeks or Greater

Delivery report by site-
pod-pcp

Diabetes Outcomes
SSRS

Monthly Depression
Followup Graphs SSRS

Patients with ER or
Hospital Visit SSRS

Planned Care Registry
Outreach SSRS

Possible Missed
Immunization
Opportunities SSRS

OPERATIONS

Appointment Event
Usage Graph SSRS

Co-Visit

Last WCC

NextGen Patient Portal
Dependant Cleanup

Open Referrals

Operations Dashboard

Patients Eligible to see
Hygienist on the Pod

Planned Care Patients -
Chart Location Does Not
Match PCP Location

Schedule Categories By
Site

Visit Missing slots

FINANCE

Front Desk Collections

Missing and Incomplete
Encounters

CRYSTAL

Hematocrit Audit

OB Med Recs

UDS

BMI Audit Graph SSRS

UDS Low Birth Weight
SSRS

UDS Missing Data

UDS Quality Indicators
Childhood Immunizations
2013 SSRS

UDS Quality Indicators
Table 6B and 7 2011 (OM
HTN IZ Pap Tobacco
Asthma Obesity) SSRS

UDS Quality Indicators
Table 6B and 7 2013
SSRS

UDS Table 4

UDS Table 5

UDS Table 6A-1

UDS Tobacco Last Asked
and Cessation Details

Outcomes-Operations Dashboard

| Available Appointment Slots | | | | |
|-----------------------------|-------|---|----------|-----------------------------------|
| Graphs | | Group Visit and Procedure Details | | |
| Category | Slots | Booked | Unbooked | Double Booked |
| All | 1339 | 1227 | 112 | 25 |
| | Total | 91% | 8% | 1% |
| Group Visits | 46 | 39 | 7 | 7 |
| | Total | 84% | 15% | 15% |
| Procedures | 11 | 8 | 3 | 0 |
| | Total | 72% | 27% | 0% |
| | | | | 3% of slots used for group visits |
| | | | | 0% of slots used for procedures |

| Scheduled Appointments | | | | |
|------------------------|-------|---|---------|------|
| Graphs | | Group Visit and Procedure Details | | |
| Category | Appts | Kept | No Show | Late |
| All | 1234 | 1107 | 127 | 31 |
| | Total | 89% | 10% | 2% |
| Group Visits | 47 | 37 | 10 | 1 |
| | Total | 78% | 21% | 2% |
| Procedures | 7 | 7 | 0 | 1 |
| | Total | 100% | 0% | 14% |

| Metrics | | |
|------------------------|-----------------|-----------------|
| Graphs | | |
| % Kept Appts | Future Capacity | Third Available |
| 82.67% | 64.39% | 2 |

| Continuity | | | |
|------------------------|-----|------------------------------------|---------------------|
| Graphs | | Continuity Details | |
| Visits | PCP | Team | Team without Floats |
| 554 | 428 | 499 | 499/554 |
| | 77% | 90% | 90% |

Planned Care Registry Outreach

REPORT SPECIFICATIONS Run 4/23/14 Federal

Green Pod 474 Patients

| Patient Details | Visits and Appointments | | Outreach Details | Patient Care Alerts |
|--|--|----------------------|---|--|
| Age: 50 Phone: Language: English ACO: N OB Status: Groups: | PCP: Van Eimeren, William Last Visit: 03/11/2014 Van Eimeren, W-RE Payer: Medicaid FQHC Next appt: Appt on 04/24/2014 for BRF-Cough, Lipids Recheck with Van Eimeren, William | Edit | Date Reviewed: 3/28/2014 Comments: OV 6 weeks--reassess cough and allergy, recheck lipids (mammo was ordered on 2-18-14 pt was to go to Lutheran Hospital) EF Call Attempt: Call Status: | Past Due - Colorectal Screening (colonoscopy, sigmoidoscopy or FOBT) Past Due - Last Blood Pressure >= 140/90 on 03/11/2014 Past Due - Mammography Screening |
| Age: 63 Phone: Language: English ACO: N OB Status: Groups: | PCP: Andreen, Kristin Last Visit: 04/15/2014 Andreen, K-RE Payer: Medicaid FQHC Next appt: Appt on 04/29/2014 Re-HTN Follow Up with Andreen, Kristin | Edit | Date Reviewed: 3/28/2014 Comments: Appt made for 4-08-14 with PCP for Glucose intolerance and FOBT cards. EF Call Attempt: 1st Call Call Status: Made contact | Past Due - ACO Care Team HRA Past Due - Colorectal Screening (colonoscopy, sigmoidoscopy or FOBT) Past Due - Tdap/TD Vaccine 04/23/2014 - Pneumovax Vaccine 1 Emergency Room Visit(s) in last 30 days - 04/10/2014 |
| Age: 51 Phone: Language: English ACO: N OB Status: Groups: DMGV | PCP: Van Eimeren, William Last Visit: 03/14/2014 Van Eimeren, W-DIA Payer: Medicaid FQHC Next appt: Appt on 04/29/2014 for RE - Meds/labs with Van Eimeren, William | Edit | Date Reviewed: 3/18/2014 Comments: per pcp pt due in 3 month 6-14-14. EF Call Attempt: Call Status: | Past Due - Colorectal Screening (colonoscopy, sigmoidoscopy or FOBT) Past Due - Diabetes Eye Exam Past Due - Self Management Goal (Diabetes, Hypertension, Tobacco,) Past Due - Tdap/TD Vaccine 04/23/2014 - Pneumovax Vaccine |
| Age: 53 Phone: Language: English ACO: N OB Status: Groups: | PCP: Andreen, Kristin Last Visit: 04/15/2014 Andreen, K-RE Payer: Medicaid FQHC Next appt: Appt on 04/29/2014 at 10:40AM for RE -Mood Recheck with Andreen, Kristin | Edit | Date Reviewed: 5/29/2013 Comments: recent loss of godmother today, pt upset and crying, has support from children and her mother. CM reminded pt she can call the clinic at anytime for any additional support she may need. Erlinda ext 7560 Call Attempt: 1st Call Call Status: Made contact | Past Due - ACO Care Team HRA Past Due - Mammography Screening Past Due - Tdap/TD Vaccine 04/23/2014 - Consider Pnuemovax Vaccine |

Lessons Learned In-reach and Outreach Tools

Outreach-Registry

Mature outreach tool

Decision support

Top of the line process

Supports team based care

In-reach-Huddle

Chart scrubbing tool

Linked to outreach

Shared with patient

Supports team based care

Outreach Linked to the Visit

| Patient Details | Visits and Appointments | Outreach Details | | Patient Care Alerts |
|--|---|----------------------|--|---|
| Steve DOB: Long time ago Age: 62 Phone: Language: English ACO: N OB Status: Groups: | PCP: Chen, Carolyn Sze-yun Last Visit: 09/28/2012 Chen, C-BRF, 09/28/2012 Davis, M- Payer: Medicaid FQHC Next appt: Appt on 11/07/2012 at 02:40PM for RE -Bp, A1c with Chen, Carolyn Sze-yun | Edit | Date Reviewed: 11/5/2012 Comments: PT has an upcoming appt with PCP (IH) Call Attempt: Call Status: | Past Due - Colorectal Screening (colonoscopy, sigmoidoscopy with a barium enema or FOBT) Past Due - DM Eye Exam Past Due - Last A1c > 9 on 07/25/2012 Past Due - Needs Review of Pain Contract Past Due - Pain Needs Review of FAS Past Due - Pain Needs Review of PHQ Past Due - Universal SBIRT Screen Due Now - Last BP >= 140/90 on 09/28/2012 |

CarePlanner Link to Outreach

| Person Nbr | Patient Name | PCP/ Status | Phone Number | Age/ DOB | Gender | Last Visit | ACO |
|------------|--------------|--|--------------|------------|--------|-------------------------------------|-----|
| 9999 | Steve | PCP: Chen, Carolyn Sze-yun Status: Active | | 62 Year(s) | M | 09/28/2012 Chen, C CarePlan Rvw: | X |

| Alerts | Appts | Active Problem List |
|---|--|--|
| Past Due - DM Eye Exam Past Due - Last A1c > 9 on 07/25/2012 Past Due - Universal SBIRT Screen Past Due - Needs Review of Pain Contract Past Due - Pain Needs Review of PHQ Past Due - Pain Needs Review of FAS Past Due - Colorectal Screening (colonoscopy, sigmoidoscopy with a barium enema or FOBT) Due Now - Last BP >= 140/90 on 09/28/2012 Abnormal BMI - BMI was 28.21 on 09/14/2012 ACO Care Team Score is 2 | Appt on 11/07/2012 at 02:40PM for RE -Bp, A1c with Chen, Carolyn Sze-yun | 07/11/2012 - Hypertension - 401.9 07/29/2010 - Ulcer, acute duodenal w/hemorrhage w/o obst - 532.00 07/22/2009 - Diabetes II, uncomplicated - 250.00 04/08/2008 - Low back pain - 724.2 Depressive disorder, NOS - 311 |

| Active Medications | | | | |
|--------------------|------------|----------------------|----------------------------------|---|
| Start Date | Stop Date | Brand Name | Generic Name | Instructions |
| 10/31/2012 | 11/29/2012 | VICODIN | HYDROCODONE BIT/ACETAMINOPHEN | take 1 Tablet by Oral route every 12 hours |
| 07/11/2012 | 07/12/2013 | LISINOPRIL | LISINOPRIL | 1 tablet daily |
| 07/11/2012 | 07/12/2013 | OMEPRAZOLE | OMEPRAZOLE | take 1 capsule (40MG) by oral route every day before a meal |
| 07/11/2012 | 07/12/2013 | SIMVASTATIN | SIMVASTATIN | take 1 tablet (10MG) by oral route every day in the evening |
| 07/11/2012 | 07/11/2013 | GLIPIZIDE ER | GLIPIZIDE | take 1 tablet (5MG) by oral route every day with a meal |
| 07/11/2012 | 07/10/2013 | METFORMIN HCL | METFORMIN HCL | take 1 tablet (500MG) by ORAL route every evening for 365 days at bedtime |
| 03/20/2012 | 03/19/2013 | ACCU-CHEK AVIVA | BLOOD SUGAR DIAGNOSTIC | take by Misc.(Non-Drug; Combo Route) route for 365 days as directed |
| 03/20/2012 | 03/19/2013 | LANCETS | LANCETS | apply by Misc.(Non-Drug; Combo Route) route for 365 days as directed |
| 03/19/2012 | | ACCU-CHEK AVIVA PLUS | BLOOD-GLUCOSE METER | apply 1 Strip by Percutaneous route 2 times every day to test blood sugar for diabetes 250.00 |
| 01/04/2012 | 01/04/2013 | MICONAZOLE NITRATE | MICONAZOLE NITRATE | apply by topical route 2 times every day to the affected area(s) in the morning and evening |

| Diabetes - High Risk | | | | |
|----------------------|-----------|----------|-----------|-------------------|
| Systolic | Diastolic | Eye Exam | Foot Exam | A1c (Last 3) |
| 170 | 84 | 01/01/00 | 7/11/12 | 07/25/2012 - 12.7 |

| | | | | | | | |
|--|--|---|--|------------|---|---|--|
| | | PCP: Farrell, Edward Status: Active Payer: Medicare Clinica FQHC Group Visits: DM EF | | 57 Year(s) | M | 04/04/2014 Farrell, E CarePlan Rvw: 4/12/13 | |
|--|--|---|--|------------|---|---|--|

| Alerts | Appts | Active Problem List |
|---|--|--|
| Past Due - Diabetes Eye Exam Past Due - Yearly Substance Risk Screening (SBIRT) Past Due - Self Management Goal (Diabetes, Hypertension, Anticoagulation,) Past Due - CRC Screen (colonoscopy, sig or FOBT) Due Now - INR - Last INR 2.30 on 4/4/14 Target 3.00 - 4.00 2 Wks - Last A1c 7 - 9 on 02/07/2014 Abnormal Body Mass Index - was 48.81 on 02/07/2014 | Appt on 04/25/2014 at 08:20AM for BRF-Follow Up And INR with Farrell, Edward Appt on 04/25/2014 at 08:20AM for BRF-Follow Up And INR with Thornton Charlotte Ricchetti PharmD | 08/23/2013 - S/P CABG x 1, in 1999 and 2001-V45.81 08/20/2013 - Hx of PE x 2 and DVT x 3 - 415.19 01/09/2013 - Hyperlipidemia LDL goal <70 - 272.4 03/15/2012 - Obesity - 278.00 03/15/2012 - Unspecified essential hypertension - 401.9 06/01/2010 - DM w/renal manifest, type II - 250.40 10/02/2009 - Emphysema - 492.8 Anticoagulant therapy - V58.61 Chronic ischemic heart disease - 414.9 DM w/renal manifest, type II - 250.40 |

| Active Medications | | | | | |
|--------------------|------------|-----------------------|-----------------------------|-------------|--|
| Start Date | Stop Date | Brand Name | Generic Name | Dose | Instructions |
| 01/08/2014 | 01/08/2015 | HUMULIN R | INSULIN REGULAR, HUMAN | 100 unit/mL | 30 units SQ TID before meals and sliding scale |
| 01/08/2014 | 01/08/2015 | METOPROLOL TARTRATE | METOPROLOL TARTRATE | 100 mg | take 1 tablet by oral route 2 times every day with meals |
| 10/22/2013 | 10/21/2014 | WARFARIN SODIUM | WARFARIN SODIUM | 5 mg | take 2 Tablet by oral route every day |
| 08/30/2013 | 08/29/2014 | HUMULIN N | NPH, HUMAN INSULIN ISOPHANE | 100 unit/mL | inject 120 units by Subcutaneous route every morning and 100 units every evening |
| 08/23/2013 | 08/23/2014 | ALBUTEROL SULFATE HFA | ALBUTEROL SULFATE | 90 mcg | inhale 1 - 2 Puff(s) by INHALATION route every 4 - 6 hours as needed |
| 08/16/2013 | 08/17/2014 | GLUCOPHAGE | METFORMIN HCL | 1,000 mg | 1 tablet twice daily |
| 08/16/2013 | 08/16/2014 | AMLODIPINE BESYLATE | AMLODIPINE BESYLATE | 10 mg | take 1 tablet (10MG) by ORAL route every day |
| 07/02/2013 | 07/02/2014 | CRESTOR | ROSUVASTATIN CALCIUM | 40 mg | take 1 tablet by oral route every day (stop lipitor) |
| 05/13/2013 | 05/12/2014 | FUROSEMIDE | FUROSEMIDE | 80 mg | take 1 tablet by oral route 2 times every day |
| 05/07/2013 | 05/08/2014 | METOLAZONE | METOLAZONE | 5 mg | take 1 tablet (5MG) by oral route every day |

| Diabetes - High Risk | | | | |
|----------------------|-----------|----------|-----------|--|
| Systolic | Diastolic | Eye Exam | Foot Exam | A1c (Last 3) |
| 120 | 66 | 06/23/11 | 8/23/13 | 02/07/2014 - 8.0 01/17/2014 - 8.0 11/15/2013 - 8.4 |
| Group Visit: DM EF | | | | |

| Anticoagulation | | | | | |
|--|---------------|-----------------|--|-------------|------|
| Indication(s) | Therapy Start | Therapy Durtion | INR | Goal Range | Risk |
| 7111-OTH PULMONARY EMBOLISM&INFARCTION | 01/01/1997 | lifelong | 4/4/2014 - 2.30 3/21/2014 - 3.90 3/7/2014 - 2.20 | 3.00 - 4.00 | Low |

| Open Referrals | | Future Labs | Diagnostics |
|---|--|-------------|--|
| 11/15/2013 - Referral: Orthopedics. Evaluate and treat. | | | 06/20/2013 - scheduled - MRI, cervical spine, w/o contrast - |

Data Lessons Learned

- Everyone is a data steward to some degree
 - Get the culture right, anticipate errors
 - It's about the patient
 - Get the right tools-buy, build, or share
 - Start small and build
 - Learn over time and iterations
 - Align data entry with organizational goals
 - Schedule regular review of algorithms and protocols
 - Use population based registries and in-reach tools to optimize team based care
 - Focus on the aims, measures and PDSA data, the accountability date will improve
-
- A vibrant, stylized graphic centered around a black laptop with a blue screen and white hands typing. From the laptop, several thick, winding green lines radiate outwards, connecting to various colorful icons. These icons include: a bar chart with an upward arrow (pink circle), a musical note (orange circle), a thumbs up (yellow circle), a lightbulb (blue), a Wi-Fi symbol (green), a location pin (red), a person icon (yellow), a speech bubble with a bird (purple), a chain link (red), a magnifying glass with a plus sign (green), and another person icon (red). The overall theme is digital connectivity, data analysis, and collaborative work.



Q&A:

