


SINI
2014
24th Summer Institute in Nursing Informatics

 UNIVERSITY of MARYLAND
SCHOOL OF NURSING

GRAND CHALLENGES IN THE DATA-DRIVEN TRANSFORMATION OF HEALTH CARE

Informatics Enabling Patient-Centered Care Across the Continuum | July 16-18, 2014

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OBJECTIVES

- Understand the relationship between health information and health care transformation.
- Explore how organizations have leveraged data and information to transform health care delivery, improve patient experience and support strategic initiatives such as population health.
- Demonstrate tools and skills needed to:
 - Improve the effectiveness and efficiency in health care delivery
 - Improve the outcomes of disease
 - Reduce the variation in care
 - Reduce medical errors
- Reinforce the value of technology and health information in delivering precise and accurate measures to clinicians regarding adherence to the evidence.

1

JPS HEALTH NETWORK

Safety Net Provider



Safety Net provider for Tarrant County (Population 1.88 million)
Trauma Level I Facility
Thirty primary and specialty clinics
Nineteen school based clinics
Tarrant County's only psychiatric emergency center
Major Teaching Affiliation and the largest hospital-based family residency program in the nation
6,000 Team Members

2

HEALTH INFORMATION SINGLE MOST IMPORTANT DRIVER TO THE "FUTURE"

Simultaneous Changes Required for Transformation

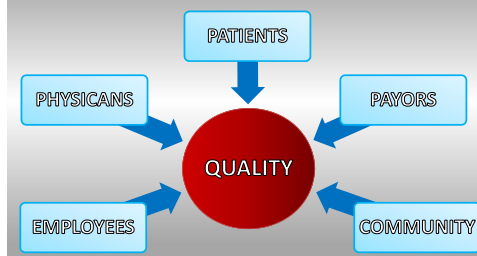
TODAY	FUTURE
Fragmented Care	Coordinated Care
Organized Around Providers	Organized Around Patients
Payment for Volume	Payment for Value
Facilities Focused	Information Focused
Physician Accountability	Care Team Accountability
Paper	Electronic
Episodic, Hospital-Based Care Models	Longitudinal, Multi-Site Care Models
Inconsistent, Variable Practices	Efficient, Evidence-Based Case
Data Silos	Robust Information Exchange

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3

ALL STAKEHOLDERS VALUE HEALTH INFORMATION

The Perception of Quality

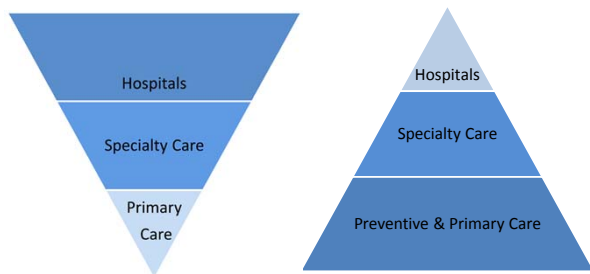


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4

THE GOAL OF HEALTH CARE REFORM INITIATIVES

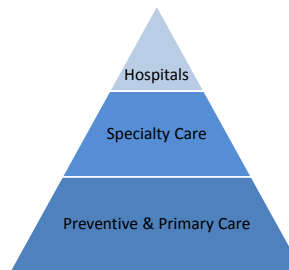
Flip the Healthcare Triangle and Manage Chronic Disease Through Prevention and Expansion of Primary Care Services



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5

HEALTH INFORMATION REQUIREMENTS FOR ALL TYPES OF PROVIDERS

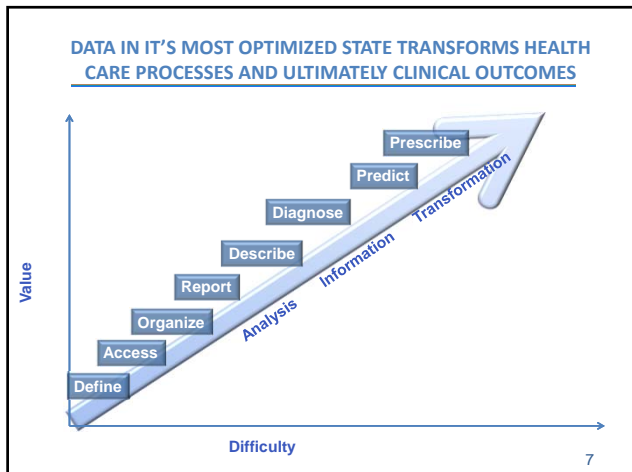


ACO's, Networks, and Stand-Alone Providers Require:

- Interoperable Electronic Medical Record (EMR) Across All Sites of Care
- Evidence Based Logic Built Into EMR
 - Care Coordinating Tools e.g. order sets and care plans
 - Best practice alerts
 - Referral guidelines
- Patient Engagement
- Real-time Quality Measures
- Longitudinal – Cross Continuum Process-Design
- Robust Business Intelligence and Analytics
- Health Information Exchange

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6



CHALLENGES IN DATA-DRIVEN TRANSFORMATION

Access, Organization, Integration

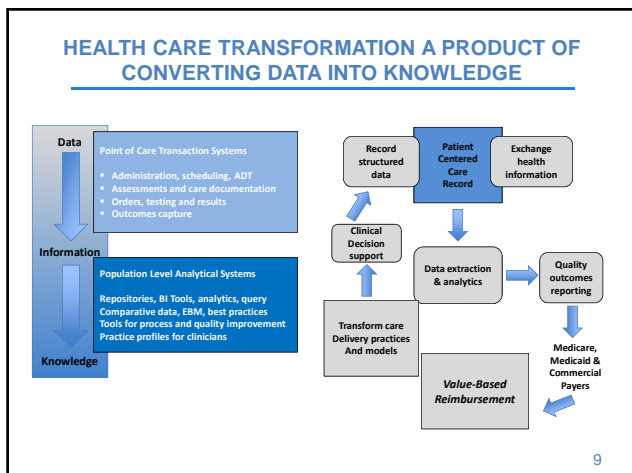
Access To Tools:

- Electronic Health Records(EHR)
- Data warehouse
- Health Information Exchange
- Data Registries
- Analytics
- Performance/quality reporting tools

Alignment and Interaction of Tools:

- Results in collection of patient data from different points along the care continuum
- Creates capability to follow the patient at different provider settings
- Produces actionable insights at the point of care

8



POPULATION HEALTH AND ACO MEASURES

Table: 33 ACO Quality Measures

DOMAIN	MEASURE	DESCRIPTION
Patient/ Caregiver Experience	ACO #1	Getting Timely Care, Appointments, and Information
Patient/ Caregiver Experience	ACO #2	How Well Your Doctors Communicate
Patient/ Caregiver Experience	ACO #3	Patients' Rating of Doctor
Patient/ Caregiver Experience	ACO #4	Access to Specialists
Patient/ Caregiver Experience	ACO #5	Health Promotion and Education
Patient/ Caregiver Experience	ACO #6	Shared Decision-Making
Patient/ Caregiver Experience	ACO #7	Health Status/Functional Status
Care Coordination/Patient Safety	ACO #8	Risk Standardized, All Condition Readmissions
Care Coordination/Patient Safety	ACO #9	ASC Admission: COPD or Asthma in Older Adults
Care Coordination/Patient Safety	ACO #10	ASC Admission: Heart Failure
Care Coordination/Patient Safety	ACO #11	Percent of PCPs who Qualified for HER Incentive Payment
Care Coordination/Patient Safety	ACO #12	Medication Reconciliation
Care Coordination/Patient Safety	ACO #13	Falls: Screening for Fall Risk
Preventative Health	ACO #14	Influenza Immunization
Preventative Health	ACO #15	Pneumococcal Vaccination
Preventative Health	ACO #16	Adult Weight Screening and Follow-up
Preventative Health	ACO #17	Tobacco Use Assessment and Cessation Intervention
Preventative Health	ACO #18	Depression Screening
Preventative Health	ACO #19	Colorectal Cancer Screening
Preventative Health	ACO #20	Mammography Screening
Preventative Health	ACO #21	Proportion of Adults who had blood pressure screened in past 2 years
Diabetes	ACO #22	Hemoglobin A1c Control (Aba1c) (<8 percent)
Composite	ACO #23	Low Density Lipoprotein (LDL) (<100 mg/dL)
ACO #24 - 26	ACO #24	Blood Pressure (BP) <140/90
	ACO #25	Tobacco Non Use
	ACO #26	Aspirin Use
At-Risk Population Diabetes	ACO #27	Percent of beneficiaries with diabetes whose HbA1c in poor control (>9 percent)
At-Risk Population Hypertension	ACO #28	Percent of beneficiaries with hypertension whose BP <140/90
At-Risk Population IVD	ACO #29	Percent of beneficiaries with IVD with complete lipid profile and LDL
At-Risk Population IVD	ACO #30	Percent of beneficiaries with IVD who use Aspirin or other anti-thrombotic
At-Risk Population HF	ACO #31	Beta-Blocker Therapy for LVSD
Composite	ACO #32	Drug Therapy for Lowering LDL Cholesterol
At-Risk Population CAD	ACO #32 - 33	ACO #33. ACE Inhibitor or ARB Therapy for Patients with CAD and Diabetes and/or LVSD

10

ACUTE CARE MEASUREMENT SYSTEM - QUALITY, FINANCE, PATIENT EXPERIENCE. EFFICIENCY DATA			
Resource Utilization		Emergency Medicine	
185 of 370 Measures			
Average Length of Stay (6)	Emergency	Readmission Rate	Patient Satisfaction (HCAHPS) Rate (Net. Avg. State Avg)
Average Length of Stay (6)	# Patients	Overall Readmission Rate	Rapid Response: Team (Code) Indicators
Average Length of Stay (6)	% Patients (% of ED)	ORF Readmission Rate for Mortality	Rate of Codes per 1,000 Discharges
Average Length of Stay (6)	# Patients	Acute Care Deaths - Surgical	Codes Outside Critical Care
Patient Discharges - Total	Emergency	Observed v Expected Mortality	Rapid Response Calls
Patient Discharges - Acute (Excludes PSY, DRG, NUR, END)	Emergency	Organ Procurement Agency	Rapid Response Survival Rate
Patient Discharges - Psych	Emergency	Total Potential Donors	Codes Outside CC with History of at least 1 Rapid Response Call in the same visit
Patient Discharges - Geriatric	EMS Response	Consent Rate	Code Success Rate (Excludes ICD & MDCU Codes)
Patient Discharges - Rehab	Critical Care	Conversion Rate	Survival to Discharge Rate (Excl. ED & MDCU Codes)
Patient Discharges - Skilled	Emergency	Organ Referral Rate	Falls Per 1000 Adjusted Patient Days - Hospitalwide
Average Daily Census - All	Emergency	Timely Notification Rate	Inpatient Falls Per 1000 Patient Days - Inpatient Only
Average Daily Census - Rehab	Emergency	Appropriate/Effective	Falls Per 1000 Adjusted Patient Days - Hospitalwide
Average Daily Census - Skilled	Emergency	Human Resources	Severely 3 Falls Per 1000 Patient Days - Hospitalwide
Case Mix Index - All Payer	Med/Surg	Clinical Team Member Turnover Rate (Nursing & Ancillary)	Fall Severity 2 Percentage - Falls Result of Severity 3 & Above / Total Falls
Case Mix Index - Medicare	% of Med	Non-Clinical Team Member Turnover Rate	Percent
Case Mix Index - Critical Care	% of Total		Percent Restraint Days - Hospitalwide - Medical
ALOS >= 20 Days (Percentage)	% of Total		Percent Restraint Days - Hospitalwide - Behavioral
			Medication Occurrences Reported
			Total at Discharge Admitted (> 7200)
			Total Medication Occurrences
			Medication Occurrences per 100,000 Doses Administered
			Medication Occurrences per 100,000 Doses Administered (Excludes Respiratory Therapy & Med Rec Status 2 - Former Medication Error Rate)
			Total Medication Occurrences with Category C or higher

MEASUREMENT SYSTEM - QUALITY, FINANCE, PATIENT EXPERIENCE. EFFICIENCY DATA			
Core Measures - Heart Failure (HF) Rate (JC National Average Rate, Top 10% Rate)		Total Joint Team	
185 of 370 Measures			
Core Measures - Composite Process	Volume - All Joint Cases	All Teams	
Core Measures - Appropriate Care	Average Length	Core Measures - Pneumonia (PI) Rate (JC National Average Rate, Top 10% Rate)	
Core Measures - Discharge Instruction	Volume - SNF (do)	Core Measures - Stroke Team	
Core Measures - Ejection Fraction	Average Length	Core Measures - VTE Prophylaxis by hospital day 2	
Core Measures - Ace Inhibitor/ARB	Volume - SNF (dk)	Core Measures - Antithrombotics at DC	
Core Measures - Smoking Cessation	Average Length	Core Measures - Afib-discharge on Anticoagulants	
Core Measures - Acute Myocardial Infarction (AMI) Rate (JC National Average Rate, Top 10% Rate)	Volume - SNF (dk)	Core Measures - After Hosp Arr (PN 2a)	
Core Measures - Composite Process	Average Length	Core Measures - Emergency Depo Received in Hosp	
Aspirin at Arrival (Within 24 Hours)	Prophylactic anti-surgical incision	Core Measures - Statin Therapy	
Aspirin Prescribed at Discharge	Prophylactic anti-after surgery em	Core Measures - Hours of Hospital Immunocompet	
ACE Inhibitors/ARBs for Left Ventricular Dysfunction	Prophylactic anti	Core Measures - Stroke Education	
Adult Smoking Cessation/Advice	Prophylactic anti	Core Measures - Smoking Cessation	
Beta-Blocker at Discharge		Core Measures - Assessed Rehab Services	
Beta-Blocker at Arrival (Within 24 Hours of Arrival)			
PTCA Within 90 Minutes of Arrival			

RECONCILE REPORTING REQUIREMENTS & INVENTORY KEY DATA SOURCES

Disparate data sources require integration

Data from Epic

- Operational Reports
- Daily Reports
- Registries

Quality Reporting for Board Level Reporting

• Epic	25%
• Midas	25%
• NRC Picker	25%
• Community Health Admin (manual)	15%
• NHSN & NDNQI (manual)	5%
• Finance	5%

13

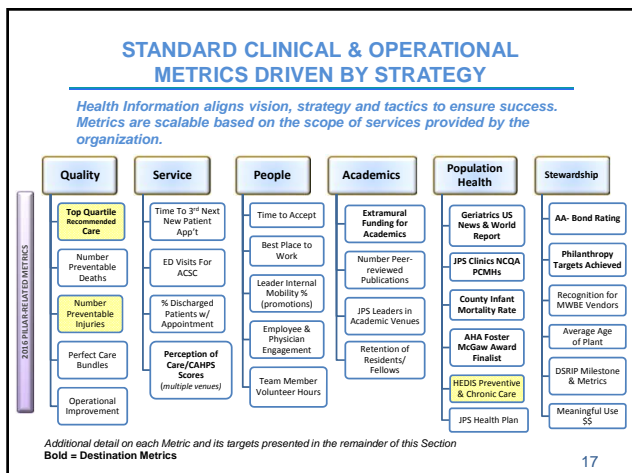
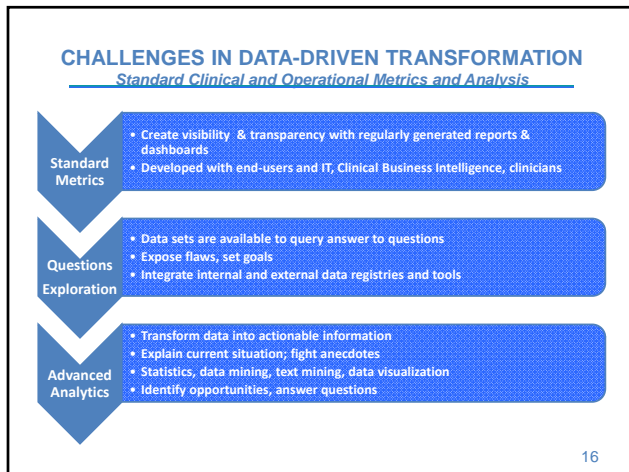
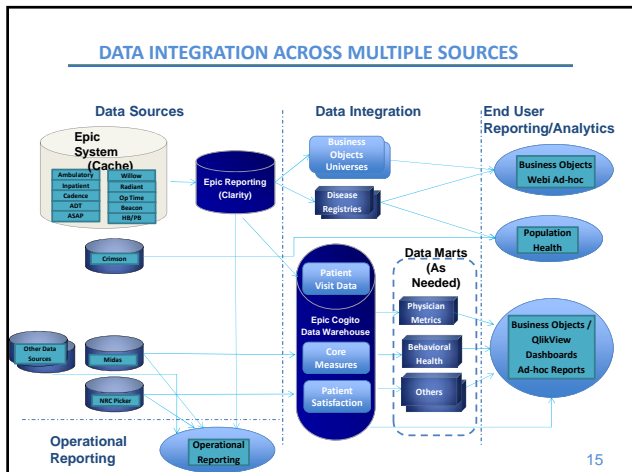
RECONCILE REPORTING REQUIREMENTS WITH INVENTORY KEY DATA SOURCES

Disparate data sources require integration

Population Health

- Epic
- Crimson
- Midas
- NRC Picker
- Community Partners)
- National Healthcare Safety Network (NHSN)
- Hospital Councils, Associations

14



STANDARD CLINICAL & OPERATIONAL METRICS DRIVEN BY STRATEGY

Any Performance Indicators	FY 2013 Results	FY 2014 Targets	Meat Report 3 Months	Meat 3	1-Mon Status	Overall Status	Monthly Trend	Comments
Quality								
Customer Based Care 80%								
Evidence Based Care Acute Setting	88.5%	90.0%	88.5%	88.8%	88.8%	88.2%	🟡	
Open Up The Book - ADT and H&C/C	81.8%	85.0%	82.6%	86.0%	86.7%	85.1%	🟡	
Evidence Based Care Acute Setting ADT & Core Measure Set	88.5%	100.0%	100.0%	100.0%	100.0%	100.0%	🟢	
ADT Measure Set	88.5%	100.0%	100.0%	100.0%	100.0%	100.0%	🟢	
Heart Failure Measure Set	88.5%	100.0%	100.0%	100.0%	100.0%	100.0%	🟢	
Pneumonia Measure Set	87.0%	88.0%	87.6%	88.0%	88.2%	88.2%	🟡	
SOB Measure Set	88.0%	100.0%	98.2%	98.7%	98.2%	98.2%	🟡	
Operational Improvement								
Operational Improvement - Cost Impact per 1000 IP Discharge	5.02	4.52	4.81	4.80	4.58	4.63	🟡	
GLTI - Rate per 1000 IP Discharges	1.03	0.88	1.02	1.03	1.10	1.10	🟡	
GLTI - Rate per 1000 IP Discharges (w/ 10% threshold - above last month target)	1.03	0.88	1.02	1.03	1.10	1.10	🟡	
GLTI - Rate per 1000 IP Discharges (w/ 10% threshold - above last month target)	1.03	0.88	1.02	1.03	1.10	1.10	🟡	
Operational Improvement - Health Plan								
HEDIS Preventive Health Bundle (Goal 1 of 1 @ 70% NCOA)	2	3	2	2	2	2	🟡	
Influenza Vaccination	N/A	78.0%	83.0%	83.0%	83.0%	84.0%	🟡	
Pneumonia Vaccination	78.0%	78.0%	78.0%	78.0%	78.0%	78.0%	🟡	
Breast Cancer Screening	88.0%	88.0%	87.0%	87.0%	87.0%	87.0%	🟡	
Cervical Cancer Screening	82.0%	74.0%	82.0%	82.0%	82.0%	82.0%	🟡	
Colon Cancer Screening	N/A	88.0%	82.0%	82.0%	82.0%	82.0%	🟡	
Operational Improvement - Health Plan (Goal 1 of 1 @ 70% NCOA)								
Diabetes Chronic Health Bundle (Goal 1 of 1 @ 70% NCOA)	N/A	3	3	3	3	3	🟢	
Diabetes - HbA1c - Good Control (w/ 9%)	N/A	57.0%	63.0%	63.0%	63.0%	63.0%	🟡	
Diabetes - Blood Pressure Control (w/ 140/90)	N/A	58.0%	63.0%	63.0%	63.0%	63.0%	🟡	
Diabetes - LDL-C Control (w/ 160mg/dl)	N/A	54.0%	60.0%	60.0%	60.0%	60.0%	🟡	
Diabetes - Average Annual Lip Level	N/A	54.0%	58.0%	58.0%	58.0%	58.0%	🟡	
Diabetes - Average Blood Sugar	N/A	11.0%	11.0%	11.0%	11.0%	11.0%	🟡	

HEALTH CARE INFORMATION OPERATIONAL MANAGEMENT TOOLS

United Quality
Laboratory Services Scorecard
Time Period: 2014

Laboratory Measures	2013 Actual	2014 Goal	Oct-13	Nov-13	Dec-13	14-Jan	14-Feb	14-Mar	Rolling 3-Mo Avg	Comments
Population Health										
Quality & Patient Safety										
Rate of Blood Culture Contamination	1%	< 3%	0.6%	0.6%	1.0%	0.9%	0.8%	0.7%	0.8%	Better than target.
Decrease urine Culture Contamination	52%	< 20%	61%	57%	57%	41%	60%	48%	50%	Greenbelt Project in progress to address this.
Crossmatch to Transfusion Ratio Main	50%	60%	46%	50%	54%	53%	61%	57%	56.9%	
Crossmatch to Transfusion Ratio Pavilion	56%	60%	58%	56%	55%	54%	48%	52%	51.4%	
Crossmatch to Transfusion average	53%	60%	52%	53%	54%	54%	54%	54%	54.2%	
Academics										
Cross-train staff in all Core Lab stations	NA	75%	NA	NA	NA	95%	86%	NA	46%	Cross-training scheduled through FY
Service										
Decrease PT TAT for Stroke patients < 45 Minutes at least 90% of time	NA	95%	100%	100%	100%	95%	50%	82%		Instrument issues; developing downtime process
Decrease ED TAT < 60 Minutes at least 90% of time	86%	90%	87%	83%	90%	90%	89%	86%	88.3%	Increase Lab automation for ED; staff w/ responsibility.
Decrease TAT for Complete Blood Counts (CBC) < 30 Minutes at least 90% of time	88%	90%	89%	86%	93%	85%	87%	84%	85.3%	84% instrument issues; service contract awarded. RMR completed.
Decrease POC TAT < 60 Minutes at least 90% of time	34%	90%	64%	70%	76%	73%	78%	70%	73.7%	New PI initiative fourth quarter
Decrease Troponin TAT < 45 minutes at least 90% of time	87%	95%	92%	96%	95%	95%	95%	95%	95%	At target
Rate of Apheresis Platelets Wastage	2.2%	< 4%	1.20%	2.00%	1.4%	0.5%	3.8%	1.3%	1.9%	Better than target.
Rate of Fresh Frozen Plasma (FFP) Wastage	5.1%	< 5%	4.24%	9.37%	9.2%	2.7%	4.0%	7.8%	4.8%	Continue to monitor
Rate of Red Blood Cell Products Wastage	0.7%	< 3%	0.71%	1.12%	2.2%	0.8%	0.5%	0.4%	0.6%	Better than target.
Stewardship										
Overtime		< 3%	2.80%	5.20%	4.80%	4.40%	3.20%	NA		Increase PRN coverage for Blood Bank; consolidation of department.
Lab VAT	\$489K	\$1.3M	NA	NA	NA	NA	NA	NA	\$607K	
Operating Expenses to Budget	5	NA	3	3	2	2	NA			
People										
Employee Satisfaction Rate	3.31%	4.13%	NA	NA	NA	NA	NA	NA	NA	
Residual Issues										
NA= Not available										

DATA DRIVEN TRANSFORMATION IN PATIENT CARE

Core Measures and Patient Safety Indicators

Heart Failure

- Working diagnosis generates option for Heart Failure order-set, forces search for documentation of ejection fraction, populates required language for HF specific discharge instructions

Surgical Care Improvement Project

- Procedure specific order sets; antibiotic selection based on procedure scheduled, calculation of antibiotic discontinuation based on incision time; discontinuation of Foley based on insertion time

Catheter Associated Urinary Tract Infections

- EMR Nursing driven Foley discontinuation protocols resulted in reduction in device days and UTI's

DATA DRIVEN TRANSFORMATION IN PATIENT CARE

Laboratory Examples

Reduction in Blood and Urine Culture Contamination Rates

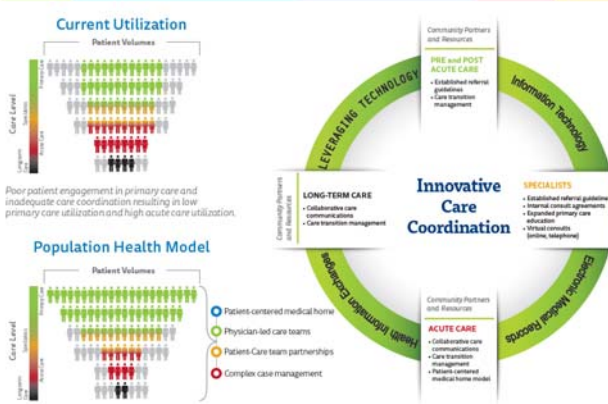
- Reduced inappropriate use of antibiotics,
- Shortened length of stay
- Decreased antibiotic resistance

Decrease Prothrombin Resulting Turn-around –Time

- Significant reduction in stroke residual effects

Blood Product Wastage – algorithms of clinical appropriateness within EMR prompts criteria population, ordering physician justifies or adjusts order based on criteria, e.g. last H&H

Population Health Model



DATA DRIVES CARE TRANSFORMATION

Current Utilization
 Patient Volume
 Poor patient engagement in primary care and inadequate care coordination resulting in low primary care utilization and high acute care utilization

Population Health Model
 Patient Volume
 Higher patient engagement in primary care and

Comprehensive longitudinal view: The individual patient's encounters across all providers (clinical & claims data)

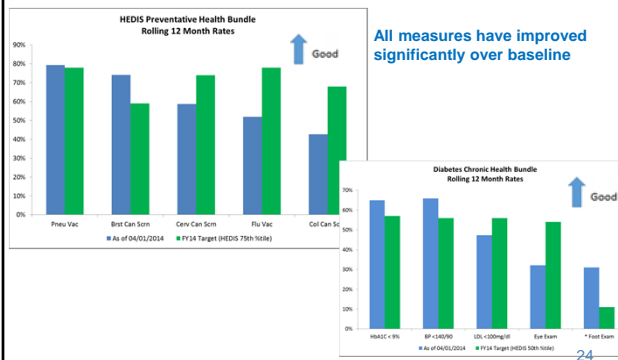
- Patient identified
- Needs assessed
- Care Plan based on needs
- Metrics support individual patient monitoring (Gap Closure)

Macro view of the population:

- Cohort analysis
- Segment population based on Low, Rising & High Risks
- Risk based strategies, e.g. Low risk –focus on preventive health

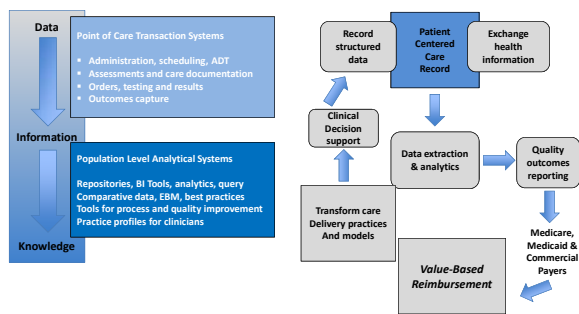
23

POPULATION HEALTH TRANSFORMATION - RESULTS



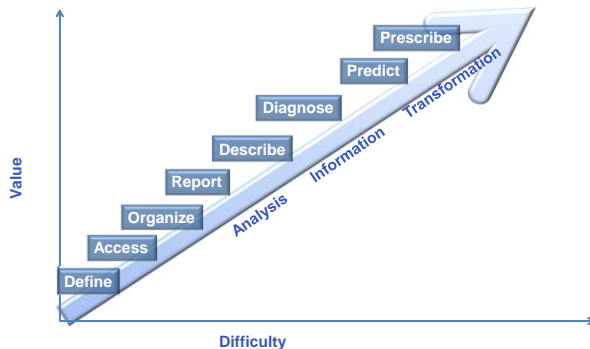
24

HEALTH CARE TRANSFORMATION A PRODUCT OF CONVERTING DATA INTO KNOWLEDGE



25

CLINICAL INFORMATICS PROFESSIONALS TRANSFORM HEALTH CARE



26

Thank you

Questions?

27