

Supporting a Continuous Process Improvement Model With A Cost-Effective Data Warehouse

Dave Hynson, Vice President and CIO

Juan Negrin, Manager of BI and Data Governance

OVERVIEW

I. ALIGNMENT TO BUSINESS NEEDS

- 1) ORGANIZATIONAL PROFILE AND VISION.
- 2) INITIAL BARRIERS.
- 3) EXECUTIVE/IT PARTNERSHIP AND DATA GOVERNANCE.

II. DESIGN AND IMPLEMENTATION APPROACH

- 1) KEY DECISIONS AND PROCESS STEPS.
- 2) CURRENT STATE: PART A and PART B.

III. ACO PROJECT

- 1) SUCCESS FACTORS.
- 2) RESULTS.

IV. QUALITY IMPROVEMENT SUPPORT

- 1) THE GBMC PROCESS.
- 2) LEVERAGING THE BI TOOLS.

GBMC HEALTHCARE SYSTEM

Located in Towson, MD

- GBHA: one of four ACOs in MD with a hospital partner*.
- GBMA: 40 primary and specialty physician practices.
- GBMC: 281-bed community, teaching hospital
- Gilchrist: largest hospice provider in MD

GBMC Healthcare

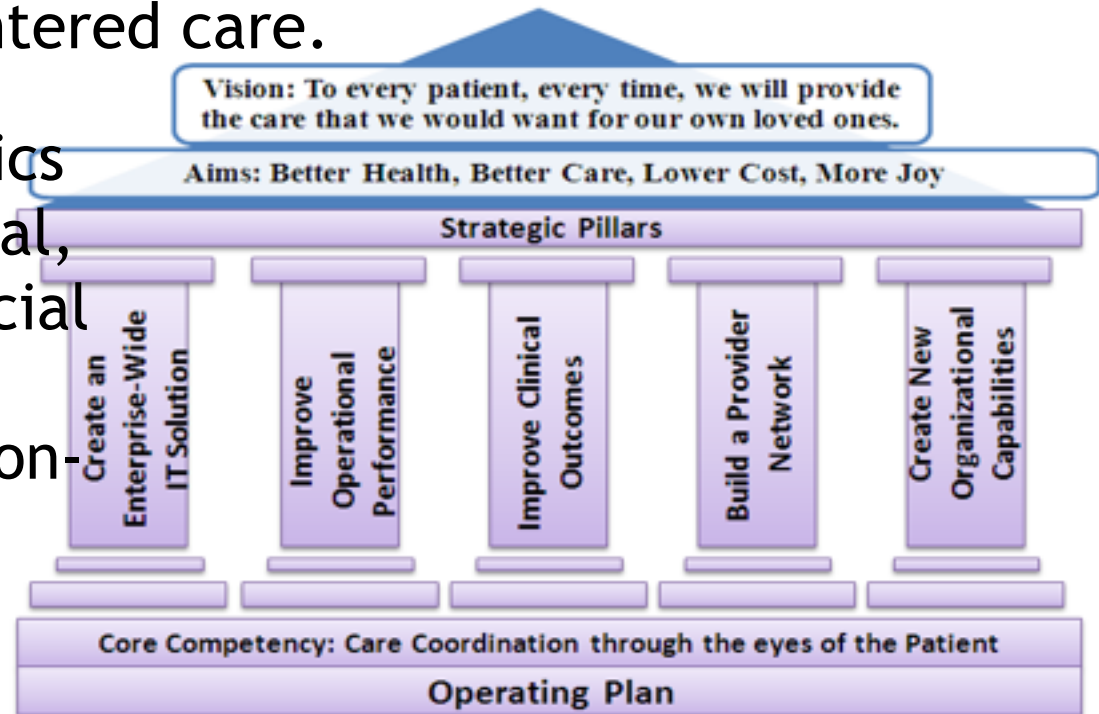


*As of January, 2014

ALIGNMENT WITH VISION

- 2010 retreat recognizes need to develop a model system for delivering patient-centered care.

- Reporting and Analytics strategy: merge clinical, operational and financial data into meaningful information for decision-making purposes.



- Service Line structure to oversee design and development of healthcare services in line with quadruple aims.

INITIAL BARRIERS

Lack of Trust in Data

Greater Baltimore Medical Center										
Daily Monitor										
Data Date: 10/7/2011										
Data Time: 3:45:21AM										
October 2011		Based On Charge Posted Date								
Day	Date	Adult Admit	Peds Admits	Births	Ambulance Arrivals	Adult ED Visits	Adult ED Admits	Peds ED Visits	O.R. Cases	Gross Revenue
1	10/01/2011	30	2	10	7	114	24	32	4	\$ 5'
2	10/02/2011	32		7	14	103	29	38	5	\$ 5L.....
3	10/03/2011	31	1	11	21	122	42	21	22	\$ 1,112,012

- THE “DAILY MONITOR”: different stakeholder needs incorporated over time, inconsistent definitions, e.g. admissions vs. count of admission charges, “heads on beds”.
- PHYSICIAN VOLUMES: roll-ups by primary specialty include unrelated procedures, roll-ups by procedure include similar operations set up so as to roll up to different services.

ALIGNMENT TO BUSINESS NEEDS

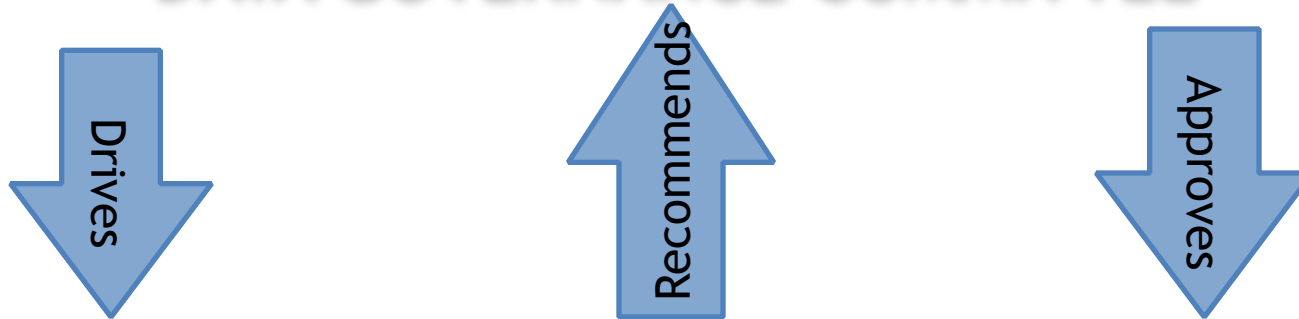
Executive/IT Partnership and Data Governance

- “Viewing our business through an integrated financial and clinical lens”: need for a clear line of sight between volume and revenue.
- Executive vision of clinical service line concept.
- Charter for data governance approach and initial data stewards.
- Essential support and foresight by CEO, COO and CIO.

DATA GOVERNANCE

CEO: Sets the vision

DATA GOVERNANCE COMMITTEE



- Who can view, create data.
- Validity checks.
- Data source selection.
- Standard data definitions.
- Data retention.
- Data Warehouse expansion.
- Report request process.
- Validation and Data Integrity.

DATA STEWARDSHIP GROUP(S)

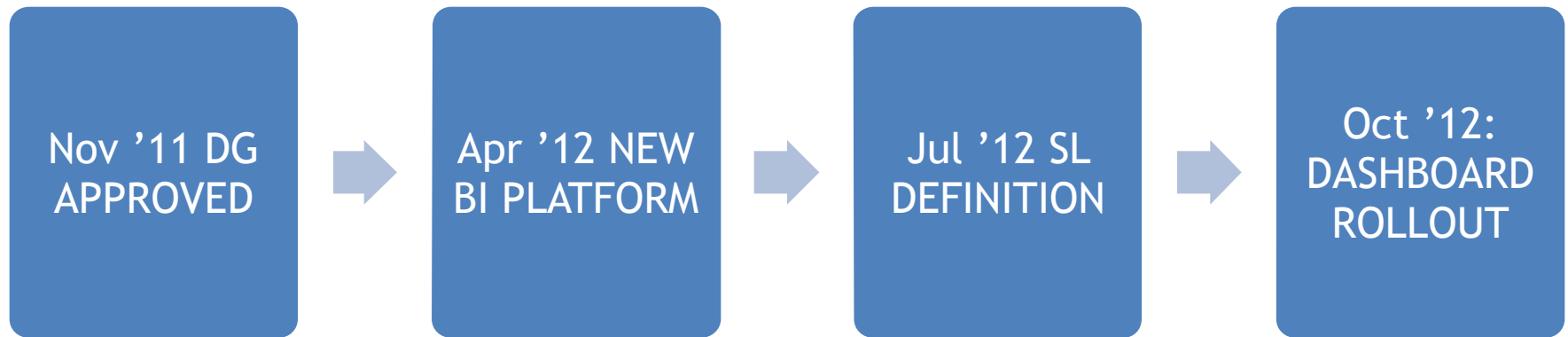
STEPS TO A DATA WAREHOUSE

The Technology Is the Easier Bit

- From the beginning, technical approach married to data governance model.
- Support of CIO with reputation as collaborative and getting things done was essential.
- Key decision to break up into manageable chunks:
 1. New SAP BI 4.0 reporting platform.
 2. Initial focus on one source of data: Meditech Data Repository (Hospital EMR).
 3. Scope narrowed down further to one dashboard replacing the ill-reputed “Daily Monitor”.

PROTOTYPE TIMELINE

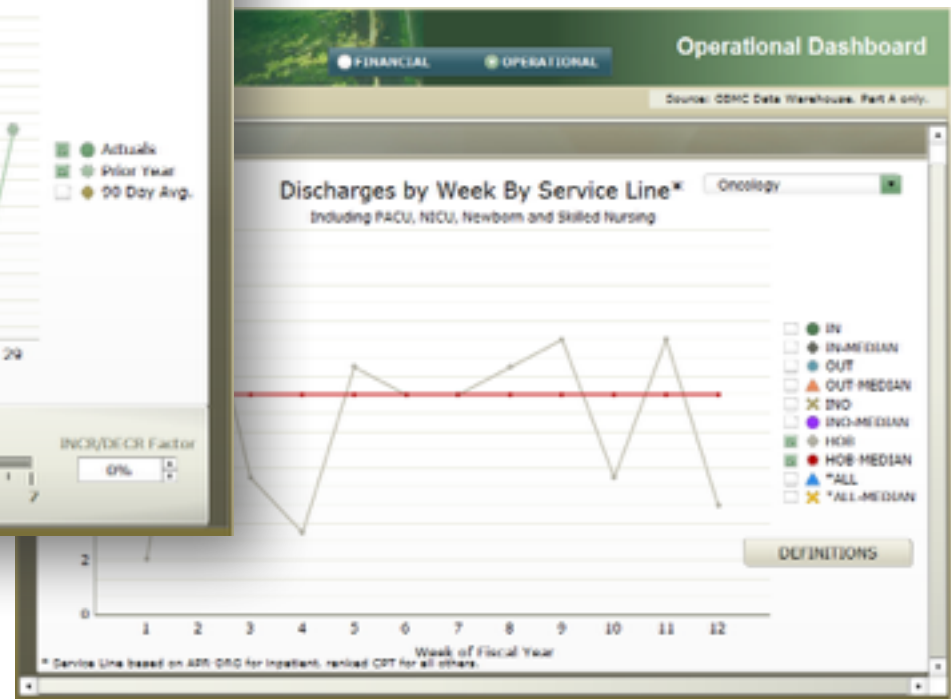
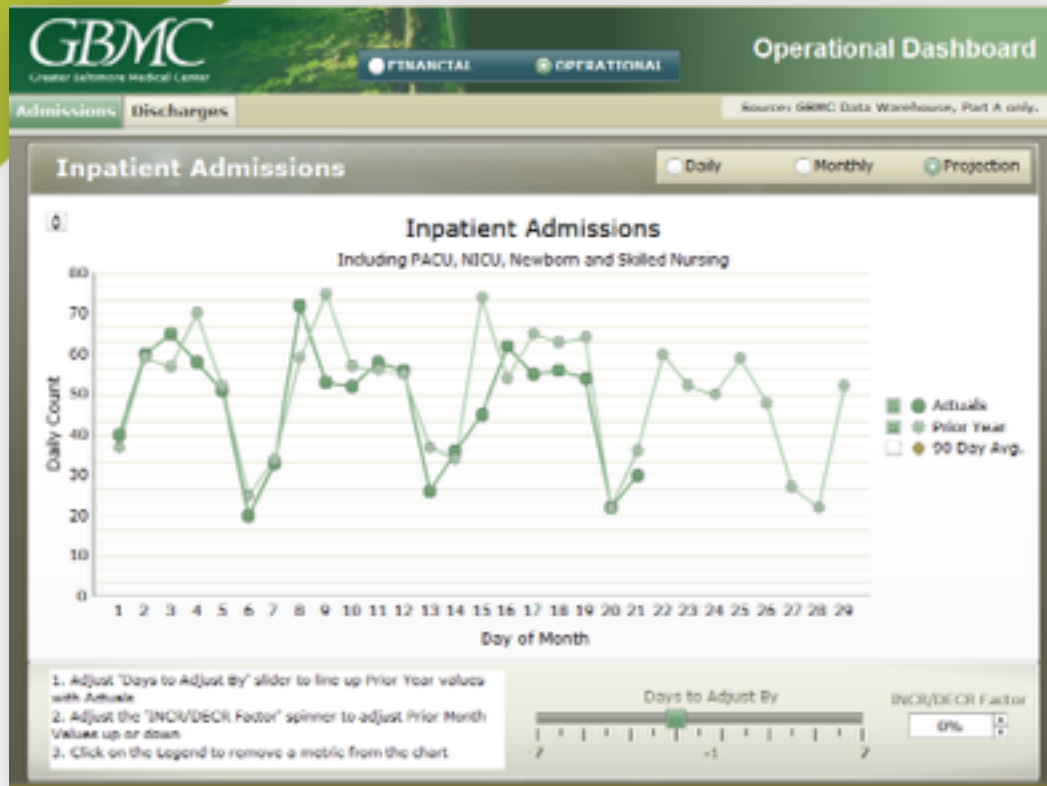
Technical work driven by data definitions



- Decision to define service lines clinically by:
 - Primary APR-DRG for inpatients.
 - Highest ranked CPT for outpatients.
- Each DRG/CPT rolls up to one and only one line.

NEW DASHBOARD

Replaced “Daily Monitor” Crystal Report



THE BIGGER PICTURE

Modular approach

- Build service line rollup in synch with Data Governance process.
- Define initial metrics focused on operational and financial needs.
- Progressive expansion of scope and addition of data sources managed via IT Steering Committee prioritization process.
 - ACO project: Part B integration.
 - Quality improvement support.

THE BIGGER PICTURE

Cost Management

INITIAL BI
PROJECT
CONTRACTOR
TEAM

- Build service line rollup in synch with Data Governance process.
- Define initial metrics focused on operational and financial needs.

CONTRACT
WITH
INDIVIDUAL DB
ARCHITECT

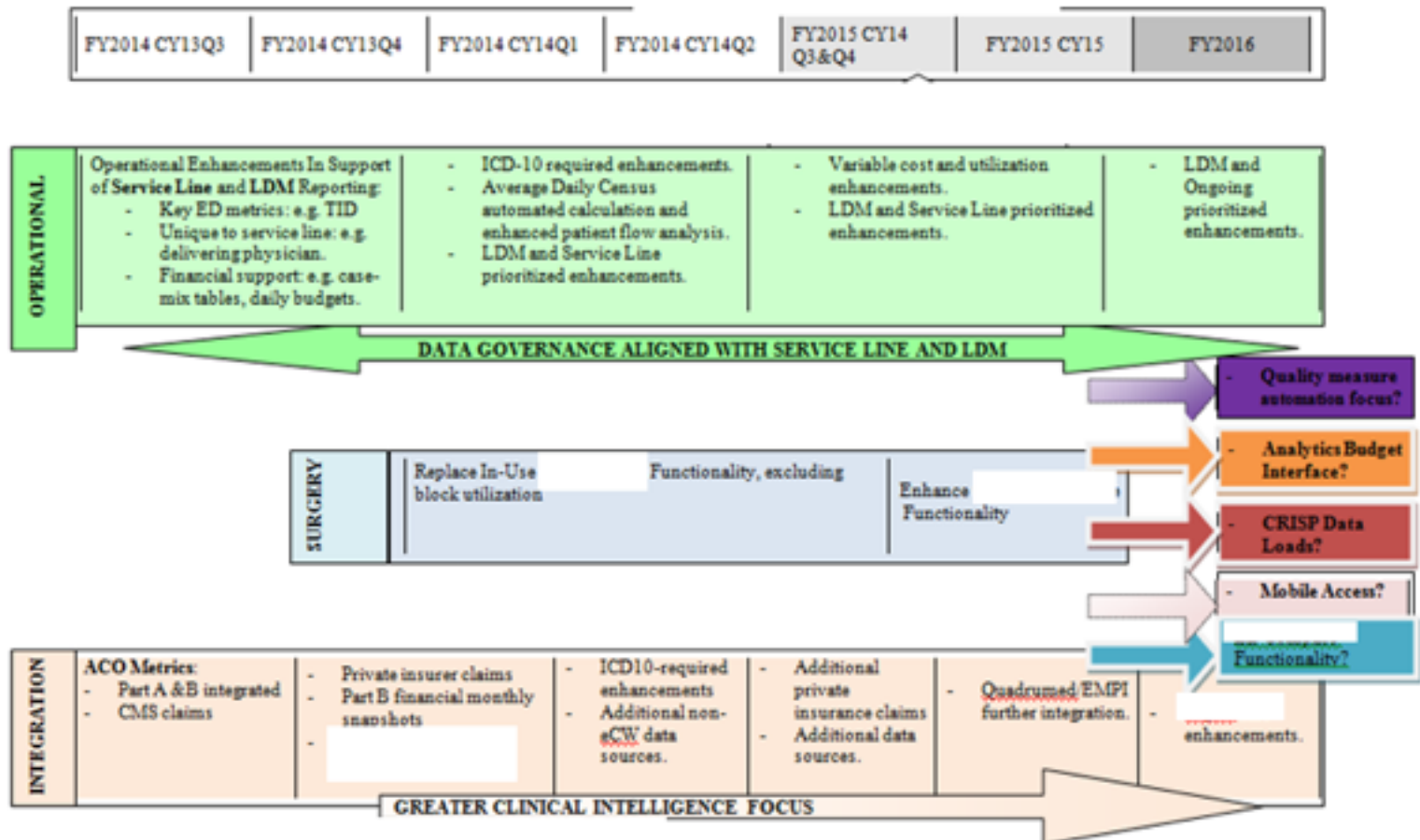
- Progressive expansion of scope and addition of data sources managed via IT Steering Committee prioritization process.
 - ACO project: Part B integration.
 - Quality improvement support.

DEVELOPMENT
OF INTERNAL
RESOURCES

ANNUAL SAVINGS FROM THIRD PARTY DATA MART
SUBSCRIPTION

THE BIGGER PICTURE

Roadmap



CURRENT STATE

As of October 2014

- 4 DYNAMIC DATA SOURCES: Meditech, Teletracker (Part A), eCW (Part B), Medical Staff DB.
- INTEGRATED DATA: PCP and patient demographics.
- DATA REFRESHED DAILY: as of prior day.
- OTHER STATIC SOURCES: Maryland Case Mix, ICD-9 diagnosis and procedure classifications, CMS ACO claims data, CMS NPI file, service line roll-ups, benchmarks.

PART A

Highlights

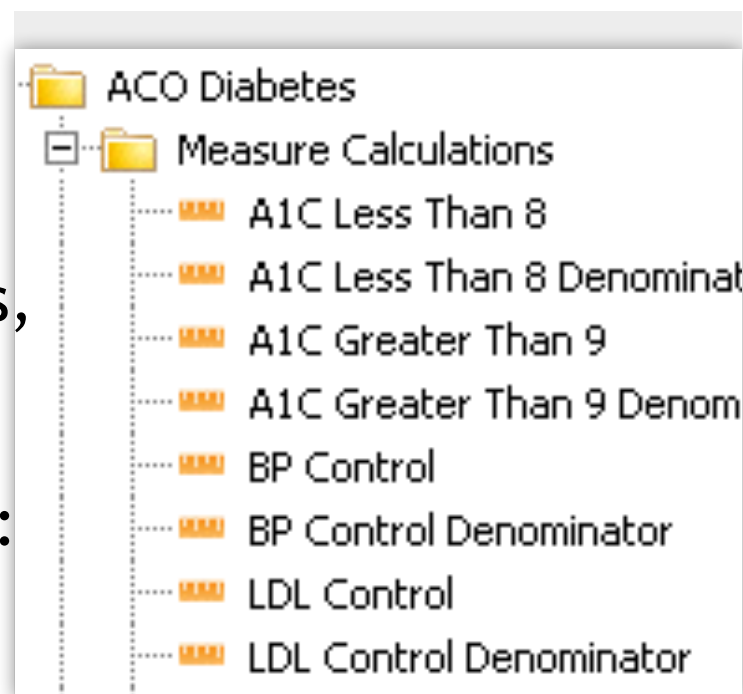
- Date dimensions (ED, admit, discharge, orders, charges, etc.).
- Visit and ED-specific metrics (location, severity, etc.).
- Service Line.
- Provider dimensions (for admitting, attending, etc.).
- OR data covering cases, surgeons, detailed operation information including supply costs.
- Financial charges.
- Insurance.
- Orders.
- CPT and ICD9.
- Teletracker.
- Lab measures and vital signs.
- Detailed events such as room and accommodation level changes.



PART B

Highlights

- ACO DOMAINS: CMS patient file data, diabetes, heart failure, hypertension, preventive care, scorecard measures,....
- PATIENT-LEVEL DATA: immunizations, labs, problem lists, insurance,...
- ENCOUNTER-LEVEL INFORMATION: date and rendering provider dimensions, assessments, CPTs, meds, vitals,....



ACO PROJECT

Success Factors

- Formal project management methodology, agile development approach.

Four Maryland health groups named Accountable Care Organizations

Jul 9, 2012, 3:51pm EDT | UPDATED: Jul 9, 2012, 4:41pm EDT

- Inter-disciplinary team:
 - ACO and population health administration experts, including GBHA's Executive Director.
 - Ambulatory practice experts.
 - Quality Administrators (including a nurse).
 - Practice managers, physicians.
 - Database architect.
 - IT experts.

ACO PROJECT

Process

- Annual reporting process was manual. Handling a sample of about 3,500 patients involved approximately 8 FTEs over several weeks.
- Originally planned EMR solution which did not pan out.
- Adopted organization-approved data governance model to guide development, consistent with overall data warehouse development approach:
 - Practice workflow changes to force standardization (e.g.: falls risk screening, structured fields: “have you fallen?”, “how many times?”).

ACO AUTOMATION

Results

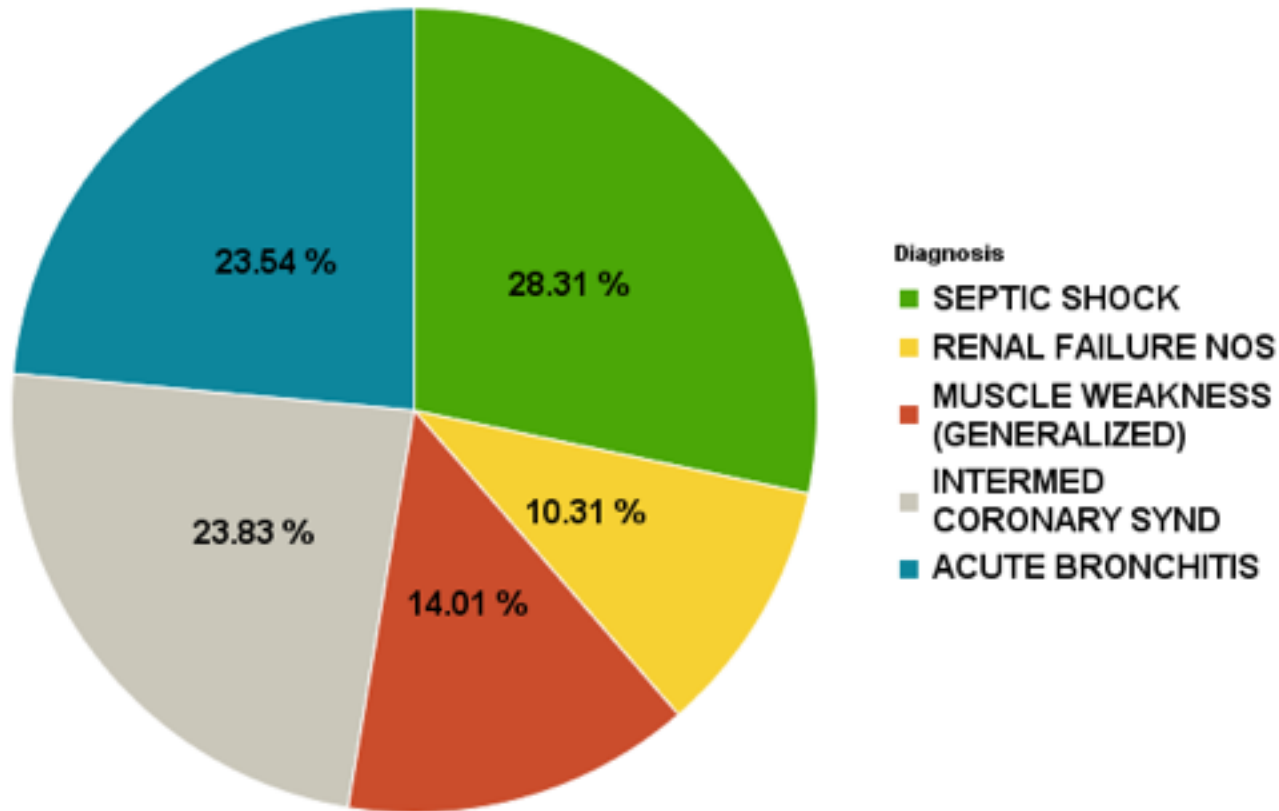
- Two people instead of eight.
- Reports can be generated monthly instead of annually: enables quality measure management.
- Metrics available for entire population, not just Medicare sample, including other payor patients.
- Patient and provider-specific scorecards now in place with hyperlinks to detailed reports.

MeasureID	Measure Description URL	Sample Size	Physician Rate	90th Percentile	ACO Rate
CARE1	Medication reconciliation	22	98.36%	90.00%	87.41%
CARE2	Falls Risk Screening	345	35.07%	73.35%	45.13%
CAD2	Lipid Control	110	93.64%	N/A	80.95%
CAD7	ACE/ARB with LVSD or DM	47	72.34%	N/A	78.34%
CADCOMP	CAD Composite	110	84.55%	79.84%	78.24%
DM2**	a1C Poor Control >9%	122	7.38%	10.00%	8.83%
DM13	BP Control	122	72.13%	N/A	75.60%

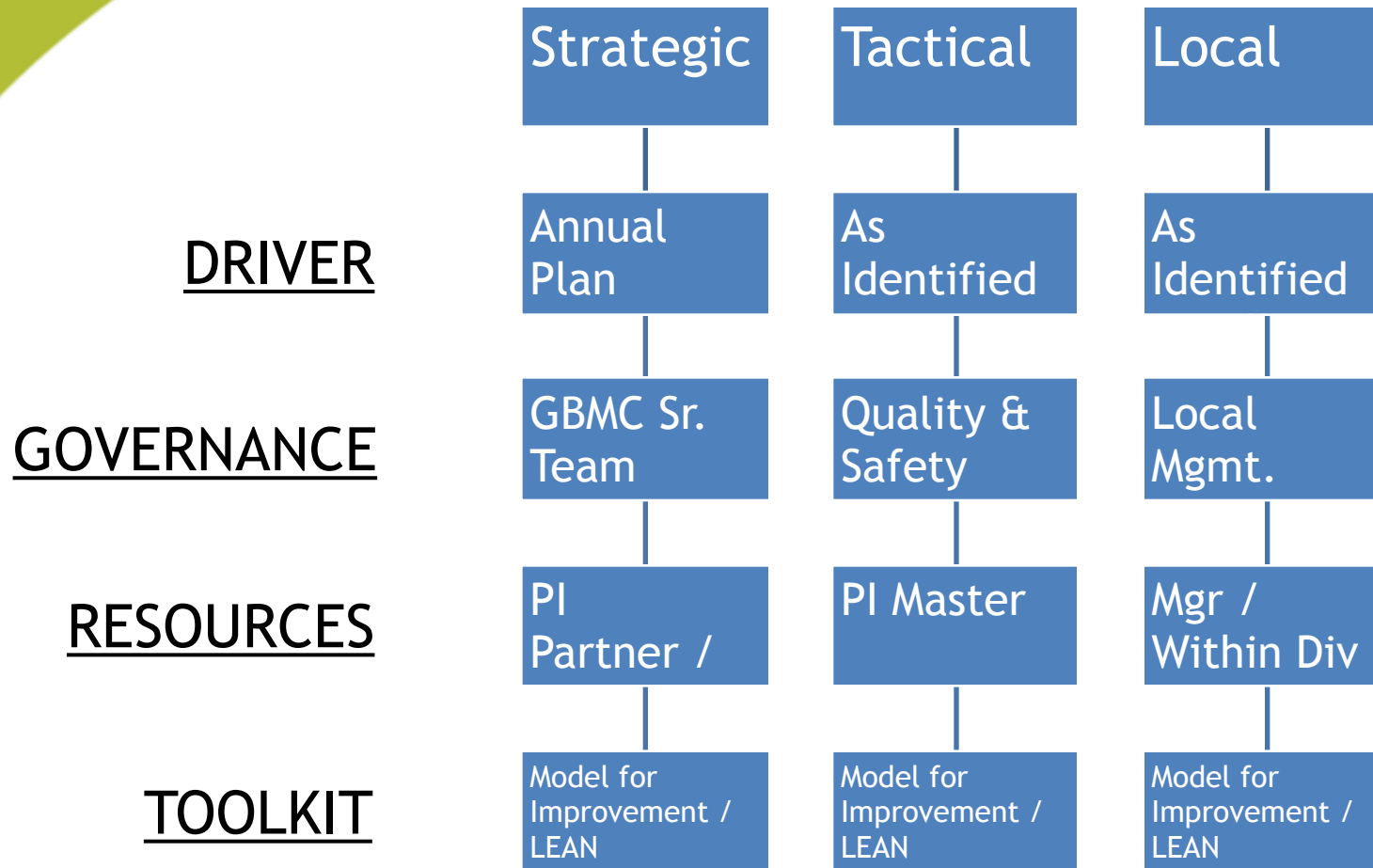
ACO CLAIMS ANALYSIS

Across Facilities And Providers

Diagnosis Breakdown By Facility

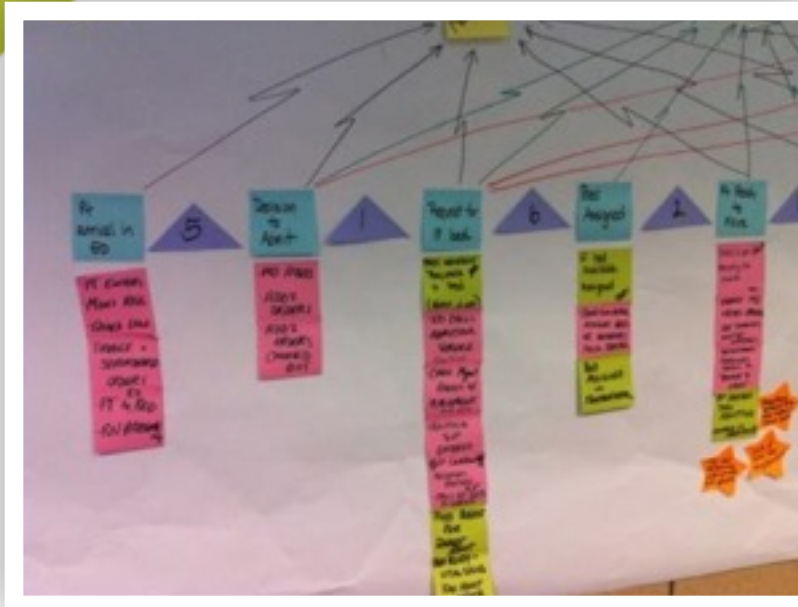


QUALITY IMPROVEMENT GBMC IMPROVEMENT SYSTEM



QUALITY IMPROVEMENT

Patient Flow Kaizen Events and LDM



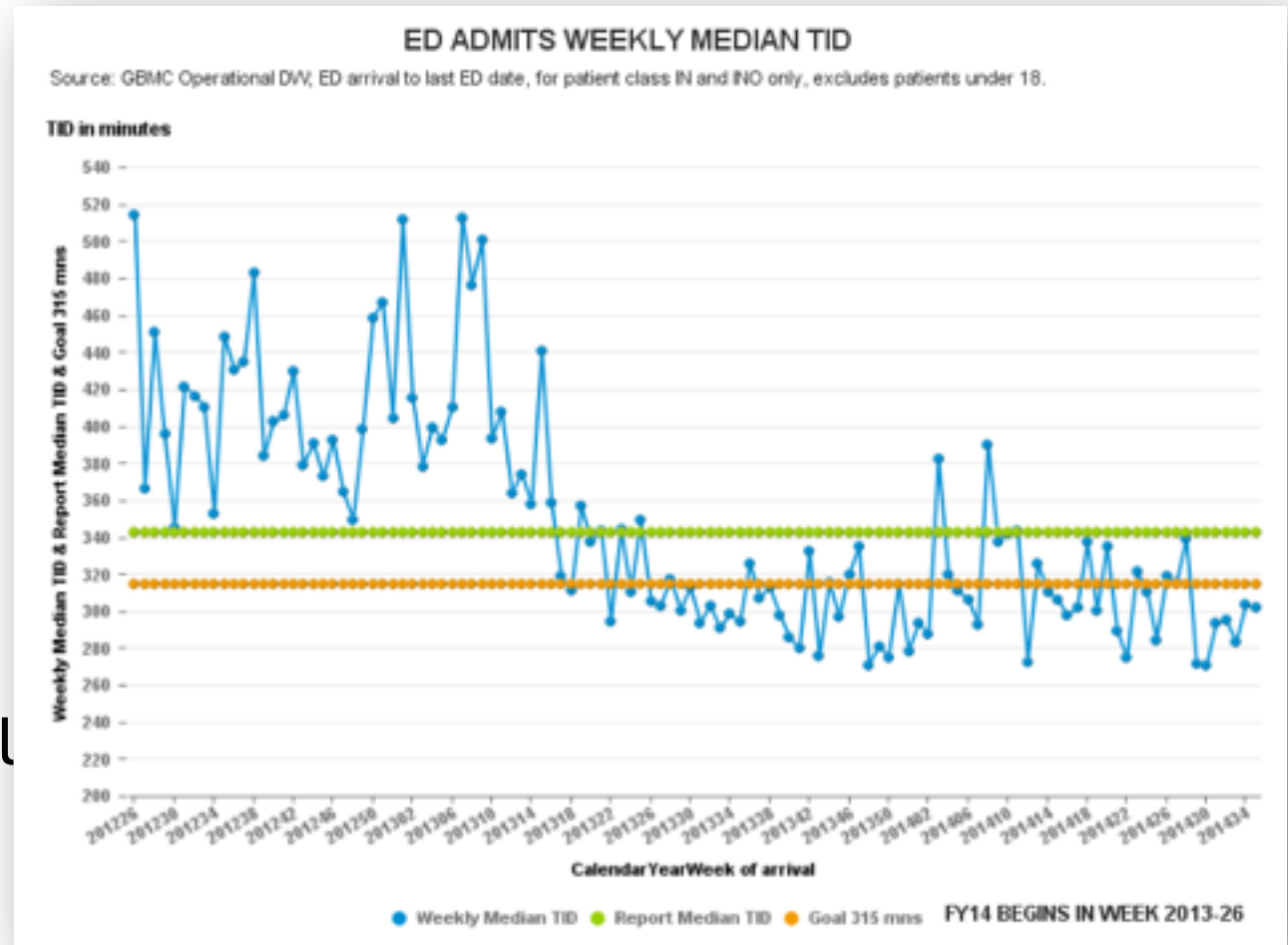
- Patient Throughput addressed via multiple Value Stream Mapping events, e.g. ED to IP.
- Inter-disciplinary representation, including external vendors and IT.

- Opportunities identified and prioritized.
- KPIs defined and incorporated into LEAN Daily Management and GEMBA walks.

QUALITY IMPROVEMENT

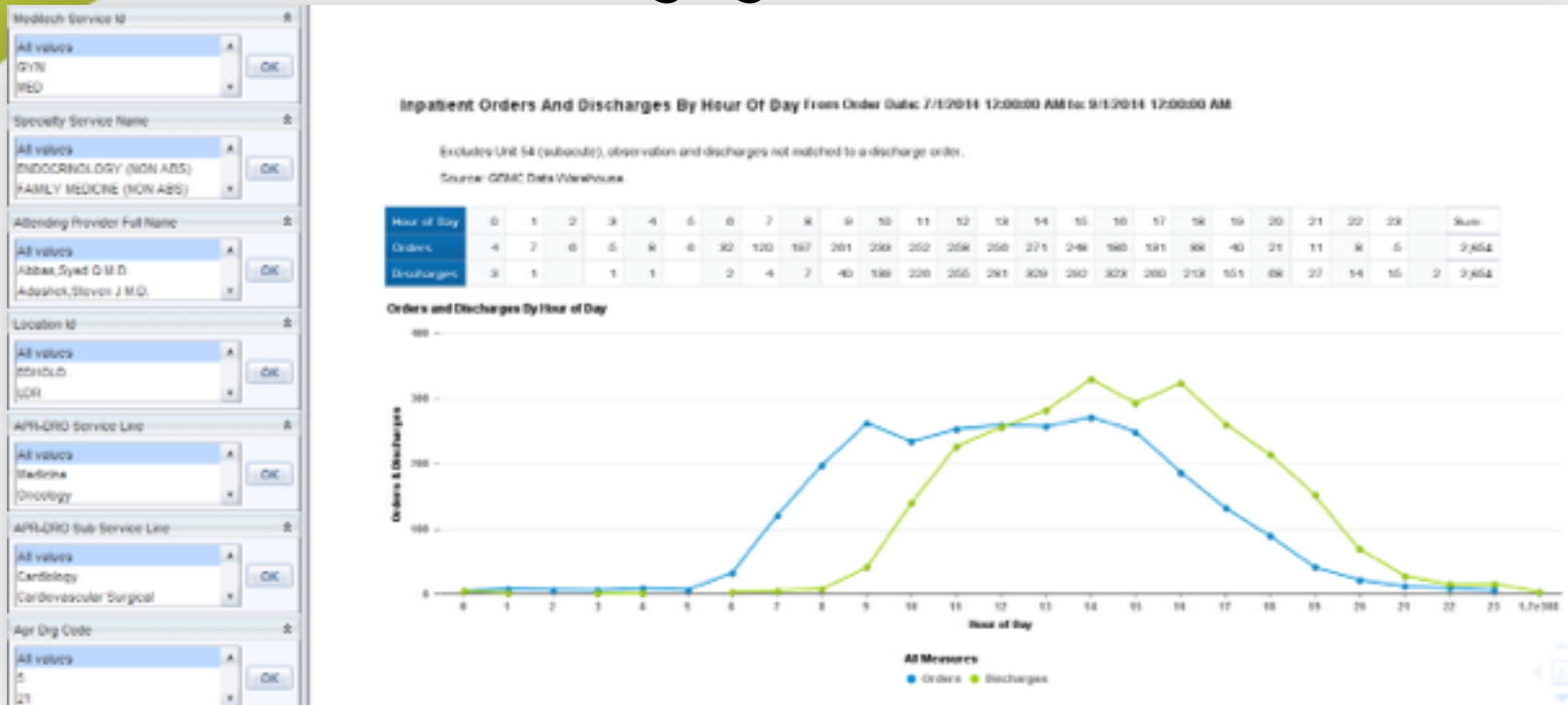
Leveraging the BI Tools

- KPI: ED to Inpatient Time In Department.
- Automated run charts with median provide visual cues to special cause variation.



QUALITY IMPROVEMENT

Leveraging the BI Tools



- KPI: Order to Discharge.
- “Shark Fin” diagram with interactive selection of dimensions such as location, service line and provider, for any time period.

LESSONS LEARNED

Comments and Questions

- Positive experiences.
- Hurdles.
- Questions.

THANK YOU!