Collaboration to Improve Population Health through Comparative Clinical Analytics

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Topics

- **Context**
  - US healthcare in transition
  - Population health management

- AMGA’s data-driven collaborative for shared learning

- Three examples
  - Medical group with outstanding improvement in blood pressure control
  - Predictive models—patients with COPD at risk of hospital admission
  - Similar improvement in glycemic control for patients with type 2 diabetes, but at very different cost
Social Determinants of Health

- Neighborhood and Built Environment
- Economic Stability
- Health and Health Care
- Education
- Social and Community Context

SDOH
Time Spent with Health Care Provider

- With provider
- On your own
Goal: The Triple Aim

- Sick care → health, prevention
- Individual → population
  - Outreach to people who need care but aren’t receiving it
- Eliminate low-value services
- Efficient allocation of resources
  - Primary prevention
  - Secondary prevention

Right care, at the right time
  - Evidence-based medicine
Care coordination
Respect patient preferences: shared decision-making
Changing the Payment Model: Volume to Value

Treating “One Patient at a Time” → Accountability for a Population

Fee for Service
- Any covered service provided to any covered patient

Pay for Performance
- Quality bonus
  - Process measures
- Bonus/penalty
  - Outcomes

Shared Savings
- Share in savings, compared to projected cost
  - Up-side risk
  - Up-side and down-side risk

Partial Capitation
- Fixed amount per member per month
  - Quality thresholds
  - Carve-outs

Full Capitation
- Actuarial risk
- New technology risk
- Performance risk
  - Prevention
  - Over-use
  - Unit cost

Any patient treated

Attributed population
- Ad hoc attribution → Prospective enrollment
Population Health Management

Cost

50% 15%

High risk

35% 35%

Rising risk

15% 50%

Minimal risk

Population

% of community

2010 data from Mayo Clinic Health Sciences Research
Population Health Management

2010 data from Mayo Clinic Health Sciences Research
AMGA supports its members in enhancing population health and care for patients through integrated systems of care.

Founded in 1949

- 430 member organizations
- 170,000 physicians
- Provide health care to more than 120 million patients per year, in 49 states
- Average group size is 395 FTE physicians, median 148 FTE physicians
- 80% of members are integrated delivery systems—up from 30%, five years ago
- Fully integrated, patient-centered, team-based care—emphasis on care coordination
- Systems thinkers—continuous improvement, lean process design
- Early adopters of electronic health records and e-prescribing
- Leadership on Accountable Care—emphasis on value, in terms of population health
Parallel AMGA Strategies

- **Advocacy:** Redesign payment system to align incentives around population health
  - Volume → Value

- **Support members in redesigning the delivery system to manage population health**
  - Conferences, webinars
  - Disease-focused collaboratives
  - National campaigns to reduce the burden of chronic disease—hypertension, diabetes
  - Comparative analytics → Extend AMGA’s model for shared learning

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**Comparative Data** → **What to improve**

**Shared Learning** → **How to improve**
Participants in AMGA’s Anceta Collaborative
Current Anceta Participants

- AppleCare Medical Group – Artesia, CA
- Aurora Health Care – Milwaukee, WI
- Baylor Scott & White Quality Alliance—Dallas, TX
- Billings Clinic – Billings, MT
- Brown & Toland Physicians – San Francisco, CA
- Carolinas HealthCare System – Charlotte, NC
- Colorado Springs Health Partners – Colorado Springs, CO
- Community Physician Network – Indianapolis, IN
- The Everett Clinic – Everett, WA
- Florida Medical Clinic – Zephyrhills, FL
- HealthEast – St. Paul, MN
- Henry Ford Health System – Detroit, MI
- Holston Medical Group – Kingsport, TN
- The Iowa Clinic – West Des Moines, IA
- Lehigh Valley Health Network – Allentown, PA
- Lexington Clinic – Lexington, KY
- Mayo Clinic – Rochester, MN
- Mercy Health System – St. Louis, MO
- Monarch HealthCare – Irvine, CA
- Mount Kisco Medical Group – Mount Kisco, NY
- NAMM California – Ontario, CA
- North Memorial Health Care – Robbinsdale, MN
- Piedmont HealthCare – Statesville, NC
- Premier Medical Associates – Pittsburgh, PA
- Riverside Health System – Newport News, VA
- Scripps Health – San Diego, CA
- Sentara Healthcare – Norfolk, VA
- Southwest Medical Associates – Las Vegas, NV
- Spectrum Health – Grand Rapids, MI
- Springfield Clinic – Springfield, IL
- SSM Health Care – St. Louis, MO
- SwedishAmerican Health System – Rockford, IL
- UMass Memorial Health Care – Worcester, MA
- Watson Clinic – Lakeland, FL
- WellMed – San Antonio, TX
- Wilmington Health – Wilmington, NC
Cross-Continuum Clinical & Claims Analytic Platform

Aggregate data across the continuum

Clean, normalize and validate data

Transform data into insight

Make insights actionable

Clinical claims & scheduling data
Automated extraction
Source system agnostic
Person-centric MPI

Mapping
Validation
NLP
Normalization

Predictive modeling
Disease models
Shared report library
Benchmarking

AMGA Research
Shared Learning
Translation

Optum One
The intelligent health platform

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Hypertension Control by Quarter, 2013

- Patients below had a 401.XX Dx or essential hypertension on their problem list and at least one E&M visit in 2011
- Green reflects patients seen in 2013 with BP in control (< 140/90 mm Hg), for 12-month periods ending each quarter
Kaiser HTN Step Care Approach

- **ACE-Inhibitor** / Thiazide Diuretic
  - Lisinopril / HCTZ
    - (Advance as needed)
    - 20 / 25 mg X ½ daily
    - 20 / 25 mg X 1 daily
    - 20 / 25 mg X 2 daily
  - Pregnancy Potential: Avoid ACE-Inhibitors

- If ACEI intolerant or pregnancy potential
  - Thiazide Diuretic
    - Chlorthalidone 12.5 mg → 25 mg
    - OR
    - HCTZ 25 mg → 50 mg

- If not in control
  - Calcium Channel Blocker
    - Add amlodipine 5 mg X ½ daily → 5 mg X 1 daily → 10 mg daily

- If not in control
  - Beta-Blocker OR Spironolactone
    - Add atenolol 25 mg daily → 50 mg daily (Keep heart rate > 55)
    - OR
    - IF on thiazide AND eGFR ≥ 60 mL/min/1.73m² AND K < 4.5
      - Add spironolactone 12.5 mg daily → 25 mg daily
Data Transparency Process

- Monthly data refresh from Optum One
- Publish/notify reports to Physicians and Site Managers
- Export data in graphic form to create individual physician report packet
- Personal delivery of packet to physicians by Joan and Betty
Hypertension Patients in Control by PCP
(B/P < 140/90)
YTD 2012 to YTD 2013

- AMGA Target 80%
- December 2013 Anceta Average 69.7%
- December 2012 CSHP Average 67.6%
- December 2013 CSHP Average 75%
Performance Improvement: Two Components

Hypothetical distribution of patients by overall cost of care

**Exception Management**
- Identify potential outliers
- Provide individualized attention
- “Case management”

**Care Process Redesign**
- Improve care for the *typical* patient
- Reduce variation, case-to-case
- “Care coordination”
Humedica Predictive Models

640,000 pts. w/ CHF
1,100,000 pts. w/ COPD
3,400,000 pts. w/ Diabetes

- Demographics
- Comorbid conditions
- Vital signs
- Clinical observations
- Lab results
- Medications
- Historical utilization

Logistic Regression

Probability of at least one disease-related inpatient admission in next 6 months

Organization’s Active Patients with COPD

Actual Proportion Over Next 6 Months: Pts. w/ COPD-Related IP Admissions

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Aurora: The Old Model

Patient sees primary care provider in office

Patient is scheduled to see PCP

Patient is discharged from hospital

Patient goes to ER

Patient is admitted as Inpatient

Patient has an episode

Treatment Regimen
Aurora: The New Model

Health Coach RN performs outreach call

Divide patient list among Health Coach RNs

Validate patient inclusion with local providers

Analytic report for target group

Team develops tx plan and visit schedule

Patient sees Health Coach RN & Provider (co-visit)

Health Coach RN continues to follow schedule & work with patient daily or weekly

Health Coach RN coordinates team members for the pt. (Pharmacy, Home Care...etc.)

Patient arrives for primary care visit
Clinical Successes

• Drop in Heart Failure admission rates:
  ➢ 60% reduction from 2012 to 2013!

• Decrease in ER utilization.

• Increase in Patient Wellness (moving to lower risk).

• Increase in Patient Satisfaction.

• Enhanced Care Coordination model with expanded primary care delivery team.

This required a fundamental shift from a reactive to a pro-active care process for the highest-risk 20% of patients identified by Humedica’s predictive model.
AMGA’s Role in Translation

- Predictive models allow/require a fundamental change in care process
  - Reactive → proactive
  - New roles, deeper protocols
  - Different relationship with patient

- Many elements of clinical translation can benefit from shared learning
  - Strategy and culture
  - Leadership development
  - Communication
  - Relationships within and among care teams
  - Engaging patients and families
  - Payers, finances, comp models
  - IT support
  - Monitoring and evaluation

- AMGA’s assistance with translation builds upon excellent support from Humedica Client Services for effective use of Optum One
Performance Improvement: Two Components

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Care Process Redesign
- Improve care for the typical patient
- Reduce variation, case-to-case
- “Care coordination”
Type 2 Diabetes: First Drug after Metformin

- **Moderate variation in outcomes, much greater variation in process of care**
  - Process of care → cost

- Patients with type 2 diabetes, age 20–89

- At least 2 physician office visits in each of 2 successive years

- At least 18 months on metformin (only)
  - Change in therapy
  - Or, continue metformin through end of data—may increase dose

- Choice of second drug, by HbA$_{1C}$
  - Last A$_{1C}$ prior to change in therapy (or last A$_{1C}$ if continuing on metformin)

- Choice of second drug, by medical group

- All groups achieved similar improvement in glycemic control
  - Overall, by initial A$_{1C}$
  - Also by major subgroups—age, sociodemographic factors, comorbid conditions, “engagement” with medical group (visit frequency)
Break Out ΔRx Cohort by Drug Class

- Proportion of patients at each initial HbA₁c level receiving each drug class or combination
  - All eRx activity within 30 days of ΔRx
- Overall, an orderly, graded response to HbA₁c level prior to adding the second drug

- 7–8%
- 8–9%
- 9–10%
- 10–11%
- > 11%

- Sulfonylurea
- Sulf + TZD
- DPP-4 inhibitor
- GLP-1
- Insulin
- Sulf + Insulin
- Sulfonylurea
- Continue Metformin
Prescribing Patterns Vary across Medical Groups

- Wide variation across groups in use of sulfonylureas, insulin, DPP-4 inhibitors, GLP-1 agonists, and TZDs
  - DPP-4 inhibitors and GLP-1 agonists can each add more than $3,000 per year to the cost of a patient’s care
- All of these medical groups achieved similar improvement in glycemic control

Arrows indicate groups who had developed and deployed internal protocols
What Have We Learned?

- Collaborative shared learning is valuable
  - Medical groups place high value on networking and collaboration in a trusted setting

- Transparent reporting is a very powerful tool for stimulating improvement
  - Beware of unintended consequences—improving only what’s reported

- Exploiting “big data” may require a fundamental transformation of the care process
  - Using predictive models requires switching from reactive to pro-active care

- Modest variation in outcomes, much greater variation in process (which drives cost)
  - Many organizations focus only on outcome measures

Feedback, questions, and follow-up are welcome!

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