Addressing Health Literacy and Health Communication in Population Health

Russell L. Rothman MD MPP
Professor, Internal Medicine, Pediatrics and Health Policy
Vice President, Population Health Research
Director, Center for Health Services Research
Chief, Internal Medicine/Pediatrics Section
Vanderbilt University Medical Center
Disclosures

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• Disclosures: EdLogics (Advisory Board), Boehringer Ingelheim
Outline

• Increasing demand for population and health system related research
• Definition of population health
• Addressing Health Literacy and Health Communication in Population Health
Health Challenges

- Over 50% of recommended care is not achieved.
  - Significant disparities in health outcomes
  - Overuse, underuse and misuse of health services

- Up to 50% of patients do not comply with care recommendations.
  - 20% of patients do not fill initial prescriptions
  - 50% of patients do not take prescriptions as recommended
  - Lifestyle changes can be more challenging

- Navigation of our complex health system is challenging:
  - Patients asked to perform more complex self-care
  - Clinic visit times and hospitalizations are shorter
  - Patients only recall 20% of what is told to them in the doctor’s office.
  - Less than 50% of patients know their discharge medications or plan.

- Rapidly changing health care environment (ACA, ACOs, bundled payments, etc)
- Resources are limited with increased emphasis on patient-centeredness, population health, CER, quality, and cost-effectiveness
Why inadequate care?

Community
- Cultural beliefs
- Access to Care
- Access to Diet
- Access to Exercise
- Environmental Factors

System
- Insurance/Financing
- Focus on Acute Care
- Delivery structure
- EHR systems

Patient
- Physiology/genetics
- SES factors
- Knowledge/Attitudes/Beliefs
- Behaviors/Adherence
- Health Literacy

Provider
- Knowledge
- Attitudes/Beliefs
- Behaviors
- Incentives
- Health Communication Skills

Quality
Population Health Definition

- Population health is defined as the health outcomes of a group of individuals, including the distribution of such outcomes within the group.
- Population health is not just the overall health of a population but also includes the distribution of health, and the health of individuals.
- Distinct from public health which traditionally includes public health departments focused on preventing epidemics, containing environmental hazards, and encouraging healthy behaviors.

http://www.improvingpopulationhealth.org/blog/what-is-population-health.html
Population Health Paradigm

http://www.improvingpopulationhealth.org/blog/what-is-population-health.html
Population Health Management

Increased emphasis on Translational Research
Addressing the Evidence Gaps
Status of Population Health Research

• Observational data documenting the importance of social, behavioral, and health system factors as key determinants of health outcomes.

• Intervention studies, including RCTs, have demonstrated the value of behavioral interventions, system level interventions, and community interventions.

• Studies to date can be limited by residual confounding, short duration of follow-up, inadequate assessment of adverse events, lack of scalability, and other factors.

• Opportunities for more robust research – particularly related to the role of health communication/health literacy!

• Health Affairs, 2014
• Advancing the Science to Improve Population Health, August 2016, NAS
Concern about Literacy and Numeracy Skills

U.S. STUDENTS RANK LOW IN MATH AND SCIENCE

WHAT DOES THAT SAY?
Literacy is a Complex Skill

- Cultural and Conceptual Knowledge
- Listening
- Speaking
- Writing
- Reading
- Numeracy
  - Oral Literacy
  - Print Literacy

IOM, Health Literacy, 2004
Health Literacy/Numeracy Linked to Poor Understanding

- Over 90% of patients struggle to understand food labels
- Over 2/3 of patients have poor estimation of portion sizes
- Subjects with lower Literacy/Numeracy had more difficult time understanding health information.

Health Numeracy Linked to Worse Diabetes Knowledge and Control

• Difficulties performing many literacy and numeracy related diabetes tasks:
  – Over 25% of patients could not interpret glucose meter
  – Over 40% could not calculate carbohydrate intake
  – Over 30% could not dose insulin correctly

• Self-care skills linked to underlying numeracy.

• Diabetes numeracy skills associated with self-management, self-efficacy, and A1C.

Huizinga et al, BMC Health Services Res, 2008
Cavanaugh et al, Annals of Internal Medicine, 2008
Literacy Interventions
Initial Diabetes Intervention

217 Patients with T2DM → Initial Pharmacist Session → 112 Interv.

Baseline: 105 Control
6 Month Follow-Up: 99 Control
1 Year Follow-Up: 95 Control
Intervention

• Diabetes Education
• Evidence-based medication algorithms
• Database to track and manage patient outcomes
• Diabetes Care Coordinator

• Addressed literacy by using:
  – Individualized verbal education
  – Low literacy material
  – Teaching concepts in a simplified manner
  – “Teach back” techniques to confirm learning
Significant Clinical Improvements at 12 months

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control (n=95)</th>
<th>Intervention (n=98)</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C (%)</td>
<td>-1.2%</td>
<td>-2.1%</td>
<td>0.9% (0.8, 1.0)</td>
</tr>
<tr>
<td>SBP (mmHg)</td>
<td>+2.3</td>
<td>-6.9</td>
<td>9.2 (2.3, 16.1)</td>
</tr>
<tr>
<td>DBP (mmHg)</td>
<td>+1.2</td>
<td>-3.6</td>
<td>4.8 (1.1, 8.6)</td>
</tr>
<tr>
<td>ASA (mmHg)</td>
<td>+6%</td>
<td>+47%</td>
<td>41% (25-55)</td>
</tr>
<tr>
<td>T. Chol. (mg/dL)</td>
<td>-12</td>
<td>-27</td>
<td>15 (-4, 35)</td>
</tr>
</tbody>
</table>

Rothman AM J Med, 2005
Literacy was an Important Factor

Influence of Patient Literacy on the Effectiveness of a Primary Care–Based Diabetes Disease Management Program

High Literacy Patients

Low Literacy Patients

* Difference (Adjusted)
-0.6, 95% CI (-1.2, 0.1)

-1.2, 95% CI (-1.9, -0.6)
Diabetes and Numeracy RCT

Taking care of your diabetes

If you have diabetes, you need to:

• Check your blood sugar every day.

• Be aware of how much starch and sugar (carbohydrates) you eat at every meal.

• Be active every day!

• Take your diabetes medicines every day.

• Clean and look at your feet every day.

• Go to your doctor’s office for regular check ups.
DLNET Toolkit

Text at 5th grade reading level

Color coding

Pictures for key concepts

Step-by-step instructions

Simplified medication instructions

Practice skills worksheets

Wolff K et al. The Diab Educ 2009
Study Demonstrates Value of Addressing Health Literacy

*Adjusting for age, gender, race, type of diabetes, income level, site of intervention and baseline DNT score and Hba1c levels

A1c

-2
-1.5
-1
-0.5
0

Intervention

Control

3-Months

-1.63*

-0.97*

*P = 0.03

Cavanaugh KL et al. Diabetes Care 2009
Diabetes Nutrition Education Study (DINES)

150 pts with T2DM

- Arm 1: Usual Care with PCP & 3 "Control" Contacts focusing on non-nutrition education. 3 month Outcomes 6 month Outcomes
- Arm 2: Usual Care with PCP & 3 RD CDE Contacts focusing on Carbohydrate Counting 3 month Outcomes 6 month Outcomes
- Arm 3: Usual Care with PCP & 3 RD CDE Contacts focusing on Modified Plate Method 3 month Outcomes 6 month Outcomes
Carb Counting vs Plate Method

Practice One Serving Size

Use the label below:

What is the serving size?

How many carbohydrate grams are in each serving?

If you eat one serving, you will get ____________ grams of carb.

Nutrition Facts

Serving Size 2 crackers (11 g)
Servings Per Container About 21
Amount Per Serving
Calories 60  Calories from Fat 15
% Daily Value* 2%  21%
Total Fat 1.5 g  2%
Saturated Fat 0 g  0%
Trans Fat 0 g
Cholesterol 0 mg  0%
Sodium 70 mg  3%
Total Carbohydrate 10 g  3%
Dietary Fiber Less than 1 g  3%
Sugars 8 g
Protein 2 g

Vitamin A 6%  +  Vitamin C 6%
Calcium 6%  +  Iron 21%

* Percent Daily Values are based on a 2,000 calorie diet. Individual results may vary depending on your calorie needs.

2 servings is ____________ crackers
Add
_________ grams of carb from 1 serving
+ __________ grams of carb from 1 serving
= __________ grams of carb from 2 servings

1/2 serving is ____________ crackers
_________ grams of carb from 1 serving
     divided by 2
= __________ grams of carb from 1/2 serving

For Lunch and Dinner: You Should Divide Your Plate into 3 Parts

1. Fill up this part of your plate with Free Foods

2. Use this part of your plate for Protein Foods

3. Protein should be about the size of your palm

For Carbs you can have any ________ from this list

Free Foods
- Nuts
- Grains
- Fruits
- Vegetables

Protein Foods
- Bread, bagels, or pasta
- Grains
- Eggs
- Fish
- Cheese
- Chicken
- Turkey
- Cottage cheese
- Tofu

Carbohydrate-Further Analysis
Results Demonstrate Value of Simpler Diabetes Education
New Standards for Diabetes Education

National Standards for Diabetes Self-Management Education and Support

LINDA HAAS, PHC, RN, CDE (CHAIR)^1
MELINDA MARYNIUK, MED, RD, CDE (CHAIR)^2
JONI BECK, PHARM, CDE, BC-ADM^3
CARLA E. COX, PHD, RD, CDE, CSSD^4
PAULINA DUKER, MPH, RN, BC-ADM, CDE^5
LAURA EDWARDS, RN, MPA^6
EDWIN B. FISHER, PHD^7
LENITA HANSON, MD, CDE, FACE, FACP^8
DANIEL KENT, PHARM, BS, CDE^9
LESLIE KOLB, RN, BSN, MBA^10
SUE MCLAUGHLIN, BS, RD, CDE, CPT^11
ERIC ORZECK, MD, FACE, CDE^12
JOHN D. PIETTE, PHD^13
ANDREW S. RHINEHART, MD, FACP, CDE^14
RUSSELL ROTHMAN, MD, MPH^15
SARA SKLAROFF^16
DONNA TOMKY, MSN, RN, C-NP, CDE, FAAD^17
GRETCHEN YOUSSEF, MS, RD, CDE^18
ON BEHALF OF THE 2012 STANDARDS REVISION TASK FORCE

nonaccredited and nonrecognized providers and programs.

Because of the dynamic nature of health care and diabetes-related research, the Standards are reviewed and revised approximately every 5 years by key stakeholders and experts within the diabetes education community. In the fall of 2011, a Task Force was jointly convened by the American Association of Diabetes

Diabetes Care, 2012
PRIDE Study

- **PaRtnering to Improve Diabetes Education**
- Goal to address health communication issues to improve diabetes care in middle TN
- Collaboration between TN Dept. of Health, Vanderbilt, and Meharry
- 5 year NIDDK R18 study
- Cluster RCT with 10 Clinics and 400 diabetes patients
- Develop a sustainable model for improved diabetes care
If Your Patient needs help with:

<table>
<thead>
<tr>
<th></th>
<th>Consider these handouts:</th>
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<tbody>
<tr>
<td>1</td>
<td>General Information For all Patients with Diabetes:</td>
</tr>
<tr>
<td></td>
<td>• What is Diabetes</td>
</tr>
<tr>
<td></td>
<td>• Low Blood Sugar</td>
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<tr>
<td>2</td>
<td>Glucose Monitoring</td>
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<tr>
<td></td>
<td>• Blood Sugar Checks</td>
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<tr>
<td></td>
<td>• Blood Sugar Log Sheet - Simple</td>
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<td></td>
<td>• Blood Sugar Log Sheet - Advanced</td>
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<tr>
<td>3</td>
<td>Nutrition Information</td>
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<tr>
<td></td>
<td>• Nutrition for Diabetes</td>
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<tr>
<td></td>
<td>• Using your Plate to Manage your Carbs</td>
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<tr>
<td></td>
<td>• Counting your Carb grams</td>
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<tr>
<td></td>
<td>• What Can I Eat for a Snack?</td>
</tr>
<tr>
<td></td>
<td>• What Should I Eat When I Eat Out?</td>
</tr>
<tr>
<td>4</td>
<td>Oral Diabetes Medication</td>
</tr>
<tr>
<td></td>
<td>• Diabetes Pills</td>
</tr>
<tr>
<td></td>
<td>• Taking Your Medicines</td>
</tr>
<tr>
<td>5</td>
<td>Insulin and Byetta</td>
</tr>
<tr>
<td></td>
<td>• Drawing and Self-Injecting Insulin (BD)</td>
</tr>
<tr>
<td></td>
<td>• Mixing Insulin for Self-Injecting (BD)</td>
</tr>
<tr>
<td></td>
<td>• How To use an Insulin Pen</td>
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<td></td>
<td>• Set Dose Insulin</td>
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<td></td>
<td>• Insulin for Set Dose Plus Correction</td>
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<tr>
<td></td>
<td>• Long Lasting Insulin Dose Chart</td>
</tr>
<tr>
<td></td>
<td>• How To Take Byetta</td>
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<td></td>
<td>• Taking Your Medicines</td>
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<tr>
<td>6</td>
<td>Lifestyle Management and Behavior Change</td>
</tr>
<tr>
<td></td>
<td>• Be Active</td>
</tr>
<tr>
<td></td>
<td>• How Can Losing Weight Help Me?</td>
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<td></td>
<td>• Smoking and Diabetes</td>
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<td>7</td>
<td>Foot Care</td>
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<td></td>
<td>• Foot Care Do’s and Don’ts (BD)</td>
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<tr>
<td>8</td>
<td>Cardiovascular Risk Factors</td>
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<tr>
<td></td>
<td>• Blood Pressure Control</td>
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<td>• Cholesterol</td>
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<td>• Taking Your Medicines</td>
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<td>9</td>
<td>Coping with Stress and Depression</td>
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<td>• Stress and Depression</td>
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<td>10</td>
<td>Oral Health</td>
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<td>• Problems With Your Teeth and Mouth</td>
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<td>11</td>
<td>Women’s Health</td>
</tr>
<tr>
<td></td>
<td>• How Diabetes Can Affect Women</td>
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</tbody>
</table>
HIT approaches for Diabetes

• Web-based and mobile phone interventions to promote problem solving skills and self-care in adolescents with diabetes (NIDDK DP3 x 2)

• Use of electronic patient portal to address medication adherence (NIDDK R01)
Greenlight Study

• NIH (NICHD) Funded R01
• **Design:** Cluster Randomized Trial of Literacy Sensitive Obesity Prevention intervention vs Active Control (Injury Prevention)
• **Setting:** 4 academic primary care resident clinics (Vanderbilt, NYU, UNC, and U Miami)
• **Participants:**
  – Over 400 pediatric residents at the 4 sites
  – 865 English and Spanish speaking families with children enrolled at 2 months of age and followed until 2 years of age
  – Children with weight/length z score >3% (WHO Criteria) without significant chronic health issues or FTT or history of prematurity (<35 weeks)

Resident Training in Effective Health Communication

- Lectures, pre-clinic conference, role-playing
- Use effective health communication principles
  - Use plain language. Avoid jargon
  - Limit advice to 1-3 key concepts
  - Use “teach back” technique to confirm understanding
  - Address culture, language and family issues
  - Perform shared goal setting
- Perform in-room observations (“certifications”)
Greenlight Toolkit Materials

• 1-2 Booklets per Well Child Visit
  – 1 CORE booklet focused on key behaviors
  – 1-3 SUPPLEMENTAL booklets *(Provider Chooses)*
  – Booklets are 2-6 pages and end with goal setting

• Designed to be used interactively during the visit

• Available in English and Spanish
Sample Materials: 15 months

Keep Your Toddler Growing Healthy!

Milk and water are best. Your toddler does not need juice or other sugary drinks.

Choose healthy foods and offer the right amount. Teach your child to like healthy foods from the start!

Be active with your toddler. TV time is not active time.

Plan The Dinner Plate – for your 15-18 month old

It's easy to do – just split the plate into 3 parts, the largest part for vegetables.

This dinner plate has:
- 2 servings vegetables
- 1 serving rice & beans
- 1 serving fish

Start with 1 tablespoon of each food and let your toddler ask for more!

7 inch plate
Goal Setting with the Toolkit

- Last page of each CORE booklet
  - Parent-centered
  - Do-able; “baby step”
  - Make goal with specific time frame
  - Can choose from examples or can WRITE ONE DOWN

I Can Keep My Baby Growing Healthy!

- Pick one of these ideas or write down 1 or 2 things you would like to do in the next few weeks.

- I will let my baby feed himself for part of the meal ___ times this week.

- Next week, when I leave the house, I will bring __________ as a healthy snack for my baby.

- Tomorrow, when I give ________ to my baby, I will start with 2 tablespoons and see if he wants more.

- I will only give my baby ___ ounces of juice each day, ___ times next week.

- I will turn off the TV when my baby is in the room ___ afternoons next week.

- ____________________________
  ____________________________
  ____________________________
Health Literate Organization

• “Health care organizations that make it easier for people to navigate, understand, and use information and services to take care of their health.”

Brach C, et al. IOM Roundtable, 2012
Patient Interactions

- Patient and Family
- Provider
- Administrative Staff
- Support Services
- Information
- Organizational leadership and policies
- Appointments, Insurance, billing, regulatory
- Health care team (MD, NP, RN, RD, LPN, etc)
- Translators, patient navigators
- Educational materials, patient portal, medication lists, discharge instructions
Principal Investigators:
Russell Rothman MD MPP, Vanderbilt University Medical Center
Trent Rosenbloom MD MPH, Vanderbilt University Medical Center
Paul Harris PhD, Vanderbilt University Medical Center
Tim Carey MD MPH, University of North Carolina at Chapel Hill
Jay Moskowitz MD, Health Sciences of South Carolina
PCORI Initiative

• Patient Centered Outcomes Research Institute (PCORI) has awarded:
  – 13 sites to build Clinical Data Research Networks (CDRN)
  – 20 sites to build Patient Powered Research Networks

• Goals
  – Each CDRN engages 1 million or more patients across 2 or more health systems
  – Build infrastructure to share data, build novel informatics tools, engage key stakeholders
  – Perform comparative effectiveness research and pragmatic clinical trials.
Mid-South CDRN Clinical Reach

Vanderbilt Medical Center: hospitals, >100 clinics engaging 2 million patients. Meharry/Metro General Hospital: 100,000 patients

VHAN: 8 health systems, >30 hospitals, >300 clinics engaging >3 million patients

Greenway Health: 1600 clinics engaging 14 million patients

Carolinas Collaborative with > 6 million patients
Pragmatic Research: Use Cases

1. De-identified data/HIPAA Limited data for prep to research or observational research
2. Fully-identified data for observational research
3. Contact patients for observational (survey) research
4. Pragmatic intervention studies at patient, clinic, or system level to answer practical clinical questions and improve patient care
Data Aggregation Across CDRN

1. Queries and Analytic Software Packages from PCORI
2. CDRN returns Counts and Aggregate resulting data

> 110 million patients!
PCORI Common Data Model V 3.0

CONDITION
A condition represents a patient’s diagnosed and self-reported health conditions and diseases. The patient’s medical history and current state may both be represented.

DEATH
Reported mortality information for patients.

DEATH_CAUSE
The individual causes associated with a reported death.

DEMOGRAPHIC
Demographics record the direct attributes of individual patients.

DIAGNOSIS
Diagnosis codes indicate the results of diagnostic processes and medical coding within healthcare delivery.

DISPENSING
Outpatient pharmacy dispensing, such as prescriptions filled through a neighborhood pharmacy with a claim paid by an insurer. Outpatient dispensing is not commonly captured within healthcare systems.

ENROLLMENT
Enrollment is a concept that defines a period of time during which all medically-attended events are expected to be observed. This concept is often insurance-based, but other methods of defining enrollment are possible.

ENCOUNTER
Encounters are interactions between patients and providers within the context of healthcare delivery.

LAB_RESULT_CM
Laboratory result Common Measures (CM) use specific types of quantitative and qualitative measurements from blood and other body specimens. These standardized measures are defined in the same way across all PCORnet networks.

PCORNET_TRIAL
Patients who are enrolled in PCORnet clinical trials.

PRESCRIBING
Provider orders for medication dispensing and/or administration.

PRO_CM
Patient-Reported Outcome (PRO) Common Measures (CM) are standardized measures that are defined in the same way across all PCORnet networks. Each measure is recorded at the individual item level: an individual question/statement, paired with its standardized response options.

PROCEDURES
Procedure codes indicate the discreet medical interventions and diagnostic testing, such as surgical procedures, administered within healthcare delivery.

VITAL
Vital signs (such as height, weight, and blood pressure) directly measure an individual’s current state of attributes.
## Additional Linkage for “Complete” Data

<table>
<thead>
<tr>
<th>Data Source</th>
<th>Description</th>
</tr>
</thead>
</table>
| **TN State Health Data**                        | • Includes statewide hospital/emergency dept discharge claims, and birth/death certificates. Years 2011-2013 will be available  
• Agreements in place, data submission in process |
| **TennCare Data**                               | • Includes health claims data derived from approx. 1,480,430 individuals covered under the states Medicare coverage  
• Agreements in place, linkage/pipeline in process of being built |
| **CMS Data (RESDAC, CMMI data)**                | • Reuse application development and plan in process  
• CDRN-wide linkage plan in development |
| **Vanderbilt Health Plan (Aetna)**              | • Includes health claims data derived from approx. 19,600 employees and dependents covered. Years 2011-2016 available  
• Agreements in place, data linkages in process |
| **Linkage to NC BC/BS Data and NC Medicaid Data**| • Data Use Agreements complete;  
• Linkage approved on a case by case basis |
| **Linkage to SC Claims Data**                   | • Data Use Agreement Complete  
• Linkages available on a per project basis |
Novel Informatics Tools

- Tools for quickly running queries and analyzing electronic health data
- Tools for identifying and contacting patients
  - Email, Text, Phone (> 300K emails at VUMC)
  - My Research at Vanderbilt (20K)
- New electronic consent process
- Expanded survey tools for collection of patient reported outcomes (via web/mobile platforms, automated phone, embedded video/audio, etc.)
- Integration of PROMIS measures into REDCAP
- Electronic payment processes for study participation
- Potential integration of patient survey data into the EHR for clinical use
- Expansion of clinical decision support tools
Weight Cohort Example

- Email blast to >10,000 Vanderbilt patients with over 30% response rate!
- Surveyed > 10,000 patients across multiple health systems/clinic sites in < 6 months
### Overall Preliminary Survey Results

N=10,446

<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Mean (SD) or %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender (% female)</td>
<td>71.7%</td>
</tr>
<tr>
<td>Race</td>
<td></td>
</tr>
<tr>
<td>White, Non-Hispanic</td>
<td>83.8%</td>
</tr>
<tr>
<td>Black, Non-Hispanic</td>
<td>10.5%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.9%</td>
</tr>
<tr>
<td>Other, Non-Hispanic</td>
<td>3.7%</td>
</tr>
<tr>
<td>Income</td>
<td></td>
</tr>
<tr>
<td>&lt;$35,000</td>
<td>23.4%</td>
</tr>
<tr>
<td>$35,000-$74,999</td>
<td>51.9%</td>
</tr>
<tr>
<td>≥$75,000</td>
<td>24.5%</td>
</tr>
</tbody>
</table>
How confident are you filling out medical forms by yourself?
How often do you have someone help you read medical materials?
How often do you have problems learning about your medical condition because of difficulty understanding written information?

Response Options 1 (All of the time) to 5 (None of the Time)
**Numeracy**

- How often do you find numerical information to be useful?
- How good are you at working with fractions?
- How good are you at figuring out how much a shirt will cost if it is 25% off?

**Response Options:** 1(Never/Not at all good) to (Very often/Extremely good)

![Graph showing subjective numeracy distribution with mean (14.7, SD 3.4) and median (16, IQR 13-17)]
Mobile Data Collection

- 396 enrolled participants
- 11,189 meals
- Mean of 28.3 (17.6) meals/person
Identifying Eligible CHD Patients

- Case 1: 2 outpatient visits billed for MI or CHD
  - N=27,194
- Case 2: 1 or more revascularization procedure codes
  - N=3,637 additional
- 26,343 of 30,831 pts (85.4%) had encounter in last 2 yrs

<table>
<thead>
<tr>
<th>CHD Disease Positive</th>
<th>CHD Disease Negative</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHD algorithm detected</td>
<td>192</td>
<td>3</td>
</tr>
<tr>
<td>CHD algorithm NOT detected</td>
<td>11</td>
<td>264</td>
</tr>
<tr>
<td>TOTALS</td>
<td>203</td>
<td>267</td>
</tr>
</tbody>
</table>

| Positive Predictive Value | 192/195 | 98.5% |
| Negative Predictive Value | 264/275 | 96.0% |
| Sensitivity (true positives) | 192/203 | 94.6% |
| Specificity (true negatives) | 264/267 | 98.9% |

Available in Phenotype Knowledge Base:
Roumie CL, Shirey-Rice J, Kripalani S. MidSouth CDRN – Coronary Heart Disease algorithm. PheKB (a knowledgebase for discovering phenotypes from electronic health records). Available at: https://phekb.org/phenotype/midsouth-cdrn-coronary-heart-disease-algorithm
CHD “Personome”

- 70% married
- 12% divorced
- 12% widowed
- 21% live alone

- 17% disabled
- 9% not high school graduate
- 26% missed their meds at least once in the last week
- 35% make ≤ $35k

Self-rated health

- Excellent
- Very Good
- Good
- Fair

Emotional Support

- All of the time
- Most of the time
- Some of the time
- A little of the time
- None of the time

Difficult to Pay Bills

- Not at all
- Not very
- Somewhat
- Very

Fatigue

- Not at all
- A little bit
- Somewhat
- Quite a bit
- Very much
Study flow diagram

Stakeholder Engagement Cohort: 4,667 participants

CHD Cohort: 2,656 participants

Healthy Weight Cohort: 11,775 participants

19,098 participant records

1,253 duplicates removed

17,845 participants

1,872 did not answer all 7 'Interest in Research' questions

15,973 participants
Measures

• We assessed health literacy using the Brief Health Literacy Screen (BHLS) and numeracy using the Subjective Numeracy Scale (SNS-3)

<table>
<thead>
<tr>
<th></th>
<th>Health literacy (BHLS) N=15,718</th>
<th>Numeracy (SNS-3) N=15,692</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Maximum</td>
<td>15.0</td>
<td>18.0</td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>13.6 ± 2.2</td>
<td>14.3 ± 3.7</td>
</tr>
</tbody>
</table>
Summary of responses

<table>
<thead>
<tr>
<th>What Type of Projects Would You Consider Taking Part In?</th>
<th>Very Interested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completing survey 2 or more times</td>
<td>53.3%</td>
</tr>
<tr>
<td>Giving a blood sample</td>
<td>37.2%</td>
</tr>
<tr>
<td>Taking part in a study that involves talking by phone or is over the internet</td>
<td>40.0%</td>
</tr>
<tr>
<td>Taking part in a study where you have to take medication</td>
<td>14.5%</td>
</tr>
<tr>
<td>Taking part in a study that involves meeting at a local community center or school</td>
<td>15.7%</td>
</tr>
<tr>
<td>Taking part in a study that involves you and other people in your family</td>
<td>16.5%</td>
</tr>
<tr>
<td>Taking part in a study where you would stay in the hospital for 1 or more days</td>
<td>12.1%</td>
</tr>
</tbody>
</table>
Results

- Responses to all 7 questions were summed to create a “willingness to participate in research” index.

Index summary (n=15,973)

<table>
<thead>
<tr>
<th>Range</th>
<th>Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 to 21</td>
<td>13.7 (3.6)</td>
</tr>
</tbody>
</table>
Health literacy, numeracy and willingness to participate in research

*Adjusted regression model also showed that health literacy and numeracy were independently associated with willingness to participate in research.

**Model adjusted for age, race, gender, previously research participation, income, education, marital status, and employment status.
Stakeholder Engagement

- **Governance:**
  - Co-Investigator – 1 member
  - Stakeholders at Oversight Committee – 2 members
  - Stakeholder Advisory Council – 4 members (3 VU, 1 Carolinas)

- **Stakeholder input:**
  - Surveys
    - 480 Providers - (30% racial/ethnic minorities, 16% Community Health Centers)
    - >5,000 consumers – completed
  - Provider Interviews
    - 59 (44.1% Physician)
  - Community Engagement studios – 58 stakeholders

- **Proposal Review:**
  - Stakeholder Engagement Review Process
Front Door

We invite PCORnet researchers and other investigators, patient groups, healthcare organizations, clinicians and clinician groups, government, industry scientists, and sponsors to collaborate on important patient-centered studies through the Front Door. Through the PCORnet Front Door you can submit three different types of requests: 1) Data Network Requests, 2) Requests for Network Collaboration, and 3) (COMING SOON) Requests for PCORnet Study Designation. For an overview of the Front Door processes click here. See also our Frequently Asked Questions (FAQs) section below. For general questions or to submit a request for information or consultation, contact us at frontdoor@pcornet.org

Data Network Request

Request for Network Collaboration

Request for PCORnet Study Designation

SUBMIT
Data Network Request

SUBMIT
Request for Network Collaboration

PCORnet’s study designation may be desirable to reflect the PCORnet brand and its association with high-quality, efficient, and timely people-
Health Care Reform

“First we’re going to run some tests to help pay off the machine.”
Future Value-driven, Coordinated Care

Delivery System Changes
- Care Coordination
- Provider Feedback & Accountability
- Measurement around Quality & Efficiency
- Fragmented event driven care

Insurance Exchanges open
Individual coverage Requirement
Disproportionate Care reductions

Payment System Changes
- Fee-for-Service
- Episode or Comprehensive Care Payment
- Clinical Integration

Future
- CMS CPC+
- CMS Quality Payment Program (APMs and MIPS)
- Hospital-Acquired Conditions Penalties
- HITECH/ Meaningful Use Penalties
- TennCare Bundles
- Optional Commercial Bundles

2016...

Value-driven, Fragmented Care

Volume-driven, Fragmented Care

CMS Bundled Payment Pilot
CMS PQRS

DRG Readmissions Penalties

Value-Based Purchasing Incentives
HITECH/ Meaningful Use Incentives

CMS Community Care Transition Program

...2011 2012 2013 2014

2015
Medicare Access and CHIP Reauthorization Act of 2015

Replaces the 1997 SGR formula, which capped Medicare physician per beneficiary spending growth at GDP growth rate

• Overwhelming bipartisan support.
• Provides new tools in implementing the payment reforms.
• Applies to expanded group of clinicians
• Creates clear timetable and benchmarks.

On 3/26, the House passed H.R. 2 by 392-37 vote.

On 4/14, the Senate passed the House bill by a vote of 92-8, and the President signed the bill.
Track 1: Value-based payments

- 2016: 85% of all Medicare payments
- 2018: 90% of all Medicare payments

Track 2: Alternative payment models*

- 2016: 30% of all Medicare payments
- 2018: 50% of all Medicare payments

Source: Premier
### MACRA reform timeline

*(Medicare Access and CHIP Reauthorization Act of 2015)*

<table>
<thead>
<tr>
<th>Year</th>
<th>Permanent repeal of SGR</th>
<th>Updates in physician payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>Permanent repeal of SGR</td>
<td>Updates in physician payments</td>
</tr>
<tr>
<td>2016</td>
<td>0.5% (7/2015-2019)</td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>0% (2020-2025)</td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td></td>
<td></td>
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<tr>
<td>2019</td>
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<td>2020</td>
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<td>2021</td>
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<td>2022</td>
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<td>2023</td>
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<td>2024</td>
<td></td>
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<tr>
<td>2025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2026</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Premier*
ACOs

• ~ 30 million patients now enrolled (CMS and Commercial)

• Initial evaluations of CMS ACOs suggest modest reduction in initial costs (~1%) with significant improvements in quality metrics

• New CMS ACO models emphasize:
  – Integrated care for assigned Medicare beneficiaries
  – Shared savings or losses dependent on:
    • Costs from baseline assessment
    • Quality metrics

JAMA, 2016
CMS, 2016
Medicare Shared Savings Program ACO and Pioneer ACO Assigned Beneficiary Population by ACO by County
(counties with more than 1 percent of an ACO’s assigned beneficiaries)
# MIPS Scoring

## Summary of MIPS Performance Categories

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Maximum Possible Points per Performance Category</th>
<th>Percentage of Overall MIPS Score (Performance Year 1 - 2017)</th>
</tr>
</thead>
</table>
| **Quality**  
Clinicians choose six measures to report to CMS that best reflect their practice. One of these measures must be an outcome measure or a high-value measure and one must be a crosscutting measure. Clinicians also can choose to report a specialty measure set. | 80 to 90 points depending on group size | 50 percent |
| **Advancing Care Information**  
Clinicians will report key measures of patient engagement and information exchange. Clinicians are rewarded for their performance on measures that matter most to them. | 100 points | 25 percent |
| **Clinical Practice Improvement Activities**  
Clinicians can choose the activities best suited for their practice; the rule proposes over 90 activities from which to choose. Clinicians participating in medical homes earn “full credit” in this category, and those participating in Advanced APMs will earn at least half credit. | 60 points | 15 percent |
| **Cost**  
CMS will calculate these measures based on claims and availability of sufficient volume. Clinicians do not need to report anything. | Average score of all cost measures that can be attributed | 10 percent |
CMS Transforming Clinical Practice Initiative (TCPI)

- Assist practices with the transition from fee-for-service payments to value-based payments by providing personalized resources and financial assistance.
TCPI’s Five Phases of Transformation

PHASE I
Detailed Transformation Planning
- Developing Shared Vision of Transformed Practice
- Creating Plan to Achieve Transformation including Targeted Metrics

PHASE II
Reporting and Using Data To Generate Improvements
- Monitoring Metrics
- Training Staff on QI
- Initiating Population Management & Care Coordination

PHASE III
Progressing Towards Success in Value-Based System
- Improving Metrics
- Incorporating QI Activities into Day-to-Day Operations
- Enhancing Access to Care
- Implementing Multiple Care Coordination, Population Management, and Team-Based Care Strategies

PHASE IV
Sustaining Progress Over Time
- Meeting Metric Targets for One Year
- Decreasing Utilization and Unnecessary Testing
- Consistently Delivering Evidence-Based, Patient-Focused, Coordinated Care

PHASE V
Preparing to Thrive in Value-Based System
- Sharing Financial Data within Practice To Optimize Success in APMs
- Graduating to APM Prepared to Thrive Long-Term
MIDSOUTH PRACTICE TRANSFORMATION NETWORK

Improving Quality of Care for Patients and Families throughout Tennessee, Mississippi, and Arkansas

- CMS contract for up to $28 million over four years to help more than 4,000 clinicians transform their clinical practices to improve quality of care and hold down costs.
- Partnership between Vanderbilt, the Vanderbilt Health Affiliated Network (VHAN), including its major partner, Baptist Memorial Health Care, and the Safety Net Consortium of Middle Tennessee (SNCMT).
- Part of CMS’ Transforming Clinical Practices Initiative (TCPI) to reach 140,000 clinicians nationally.
Mid-South PTN
Training in Transformation

- Understanding of value-based health care system
- Quality measurement and evaluation
- PDSA cycles for rapid quality improvement
- Care coordination and disease management
- Improved access/scheduling/referral patterns
- Optimizing technology in clinical care
- Patient-centered care
- Collaborative care models (ex. Psychiatry)
- Engagement of local resources and community
Summary

• Population health is a growing field aimed at improving care for individuals and populations

• Heath Literacy/numeracy and health communication are important components to addressing population health

• Significant opportunities to advance the science of health literacy/health communication in population health
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Questions