Using Patient Centered Outcomes Research to Improve Care

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Kaiser Foundation Health Plan & Hospitals
Kaiser Permanente
Disclosure

- This discussion will include the use of a commercial product, Archimedes IndiGO, which is a subsidiary of Kaiser Permanente.

- Speaker also serves as the Chair of the Board of Directors for Archimedes.

- Discussion will also include mention of other commercial companies, including:
  - Nous
  - Healthwise
  - HeathDialog
  - WiserCare
  - EMMI
Our Mission

Kaiser Permanente exists to provide high-quality, affordable health care to our members and patients and to improve the health status of the communities we serve.
Our Numbers

- 8 regions serving 9 states and the District of Columbia
- 8.9 million members (as of 2/11)
- 15,000 physicians
- 164,000 employees (including 45,000 nurses)
- 35 medical centers (with hospitals)
- 454 medical offices (ambulatory care buildings)
- $44 billion operating revenue (2010)
Key Topics

- Overview of Patient-Centered Outcomes Research
  - What Is It?
  - How does it improve health?

- Patient-Centered Outcomes Research and Technology
  - A Look At Kaiser Permanente’s Total Joint Registry
  - Challenges and Opportunities

- Patient-Centered Outcomes Research In Action: A Look At Archimedes IndiGO
  - Using The IndiGO Tool To Impact Care

- Using Shared Decision Making To Improve Care
  - A Look At Decision Aids

- Conclusion
  - Your Questions
Proactive Patients Participating in Their Care Decisions is the Sometimes Present, and Necessary Future of Care Delivery

“If you want to know how Mrs. Smith is doing, unfortunately you’re going to have to ask her.”

Attributed to John Ware PhD
“Patient-centered outcomes research can improve health outcomes by developing and disseminating evidenced-based information to patients, providers and decision makers about the effectiveness of different treatments.”

- Kathleen Sebelius, HHS Secretary
PATIENT-CENTERED OUTCOMES RESEARCH INSTITUTE

The Patient-Centered Outcomes Research Institute (PCORI) is an independent organization created to help patients, clinicians, purchasers and policy makers make better informed health decisions. PCORI will commission research that is responsive to the values and interests of patients and will provide patients and their caregivers with reliable, evidence-based information for the health care choices they face.
Patient Centered Outcomes Research (PCOR) answers patient-focused questions:

1. “Given my personal characteristics, conditions and preferences, what should I expect will happen to me?”

2. “What are my options and what are the benefits and harms of those options?”

3. “What can I do to improve the outcomes that are most important to me?”

4. “How can the health care system improve my chances of achieving the outcomes I prefer?”

www.pcori.org
To answer these questions, PCOR:

- Assesses the benefits and harms of preventive, diagnostic, therapeutic, or health delivery system interventions to inform decision making.

- Is inclusive of an individual's preferences, autonomy and needs, focusing on outcomes that people notice and care about such as survival, function, symptoms, and health-related quality of life.

- Incorporates a wide variety of settings and diversity of participants to address individual differences and barriers to implementation and dissemination.

- Investigates (or may investigate) optimizing outcomes while addressing burden to individuals, resources, and other stakeholder perspectives.
Does Collecting PRO Improve Health?

- Study conducted in 2011 by Valderas, et. al on impact of measuring PRO in clinical practice.
- Findings include:
  - Detection of physical or psychological or psychological problems previously not found
  - Standardized monitoring of disease progression
  - Facilitation of patient-physician communication and shared decision-making
  - Improving adherence to prescribed treatment
  - Improving patient satisfaction

Are PROs Responsive to Clinical Interventions?

- Impact on PROs – Large Effects (>+.8 standard deviations)
  - Physical health have been found with hip replacements or heart valve replacements
  - Mental health including clinical depression
  - Alternative treatments
    - Cardiac Rehabilitation
    - Menstrual loss
    - Allergies

*Adapted from “Responsiveness of SF-36 Scores To Treatment Effects”, Quality Metric, Inc., March 2000
Caution!
In clinical trials, patients' self-assessed outcomes can mask a real lack of an objective effect, according to a *New England Journal of Medicine* study.

Nearly 50 patients with stable asthma underwent each of four treatments over a series of visits: albuterol inhaler, sham inhaler, sham acupuncture, or watchful waiting in the clinic (control).

Forced expiratory volumes at 1 second (FEV1s) were measured during each visit, as were patients' subjective ratings of symptom improvement.

Improvements in FEV1s were significant only after albuterol treatment, but not after any of the other three. However, subjective measures of symptom improvement increased markedly after all but the control treatment.

The authors conclude: "Objective outcomes should be more heavily relied on for optimal asthma care."

An editorialist questions this interpretation, asking, "What is the more important outcome in medicine: the objective or the subjective, the doctor's or the patient's perception?"

How Do We Meld Patient Centered Outcomes Research with Our Electronic Records to Improve Care?
Kaiser Permanente’s Total Joint Replacement Registry is the first and largest interregional population-based implant registry in the United States.

- More than 350 surgeons and 50 hospitals contribute to the database.
- Between April 2001 and March 2010, the registry recorded 100,000 joint replacement procedures.
Total Joint Registry Risk Calculator

TJR Total Knee

Age: __________ years __________ months

Gender: □ Male □ Female

Height: __________ feet __________ inches

Weight: __________ pounds

Diabetes: □ No □ Yes

Osteoarthritis: □ No □ Yes

Inflammatory Arthritis: □ No □ Yes

Post Traumatic Arthritis: □ No □ Yes

Rheumatoid Arthritis: □ No □ Yes

Osteonecrosis: □ No □ Yes

Calculate □ Clear

Your risk of a revision is (within 5 years): ___

JavaScript and ActiveX controls are required to use calculators.

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Pilot Study Objective

- Implement a patient reported outcome component to the Total Joint Replacement Registry and augment the existing PRO component of the Anterior Cruciate Ligament (ACL) Registry.

Pilot Study Approach

- Survey instruments: VR-12 (general health survey), UCLA Activity Score, HOOS-PS or KOOS-PS, Visual Analog Scale (VAS) for pain
  - Pre-op and 6 months, 12 months, and 2 years post-op
- Selected pilot sites: Downey Park, Fresno, Oakland, Orange County for implementation in 2011
  - About 2,600 TJA patients
- Exploring modes of administration within and outside KPHealthConnect® to capture members and non-members
  - E-mail, mail, texting, PDA
Option 1: Registry identifies pre-op patients

Implant Registry Database

Non-respondents complete survey at pre-op visit in person using an ECM (e.g. kiosk)

Follow-up survey administered at 6, 12, and 24 mos. post-op

Option 2: Pre-op patient identified through KPHC and sent survey through secure messaging

Follow-up survey administered at 6, 12, and 24 mos. post-op

Option 1: Registry receives data electronically

Option 2: Registry collects data from KP HealthConnect

Data entered and stored in registry

Patient receives automated summary feedback report; physician receives notification if results abnormal

Proposed Workflow
How Do We Display Such PRO Data?
Spinal Stenosis: Outcomes and Costs at Two and Four Years for Surgical and Non-Surgical Patients

Stenosis Outcomes @ 2 Years

- Functional: 23, 1.54 QALY
- Clinical: 12, 1.37 QALY
- Costs: $13,519, $26,222
- Satisfaction: 63%, 29%
- Costs: $77,600

Stenosis Outcomes @ 4 Years

- Functional: 20, 2.94 QALY
- Clinical: 12, 2.72 QALY
- Costs: $24,611, $37,758
- Satisfaction: 53%, 23%
- Costs: $59,400

Notes: “As Treated” Results for SPORT. Year 2 based on original article, no new data. Blue denotes surgical patients & yellow denotes non-surgical patients. Costs on bars reflect the estimated total direct costs plus indirect costs for spine care. QALY denotes “quality adjusted life years” associated with treatment. Costs in center of circle denote the incremental cost per QALY conferred by surgical treatment over non-surgical treatment.

These satisfaction #s are incorrect – see corrected tables above.

Elliott Fisher, MD, MPH and Gene Nelson, DSc, MPH

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Patient-Centered Outcomes Research In Action …
Personalized Medicine

Informed by outcomes and biology of ‘People Like Me’
A Look at Archimedes IndiGO

What Is IndiGO?
- Archimedes IndiGO is a unique decision support tool designed for use by physicians and other health care providers and patients.
- IndiGO is intended for any provider group that is focused on improving patient outcomes and lowering medical costs.

How IndiGO Works
- IndiGO creates individualized guidelines, designed to assist the provider and patient in making the best preventive care decisions.
- IndiGO uses each individual’s personal health information to calculate their risks of different diseases, the overall health impact of different medications and lifestyle interventions.

www.archimedesmodel.com... a KAISER PERMANENTE Innovation
Archimedes: Improving The Content of Care

- If we want to improve the quality and reduce the cost of healthcare, we need to look at the content of care
  - Which people get what treatments, when?

- The content of care is determined largely by guidelines

- There are inherent limitations in the way guidelines are currently designed and applied
  - Focus on one variable at a time (e.g., BP)
    - Ignore other risk factors
  - Use sharp thresholds (e.g., SBP > 140)
    - Ignore the continuous nature of risk factor
  - Example: JNC 7 guideline for hypertension
    - “Treat if SBP > 140, of if have diabetes, treat if SBP > 130

- Correcting these limitations will enable us to simultaneously improve quality and lower costs

Archimedes: Quantifying Healthcare ... a KAISER PERMANENTE Innovation
“Individualized Guidelines”
- Take into account all the information about a patient
- Consider all conditions, risk factors, interventions
- Take into account continuous nature of risk factors
- Set priorities across interventions
- …and across people
- That is, tailor the care to each person

“IndiGO” (Individualized Guidelines and Outcomes)
- Based on Archimedes Model
- For each person
  - Takes into account all pertinent information
  - Calculates current risks of outcomes
  - Calculates potential benefits of all treatments
- Identifies which people will benefit most from which interventions
- Provides a list, in order of expected benefit

*David M. Eddy, MD, PhD et al “Individualized Guidelines: The Potential for Increasing Quality and Reducing Costs” Annals of Internal Medicine, 3 May 2011 Volume 154 • Number 9 629
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Outputs of Current IndiGO

Risk of Outcomes
- Cardiovascular Disease (CVD)
  - Myocardial Infarction
  - Stroke
- Diabetes Onset
- Diabetes Complications
  - Foot ulcers
  - Blindness
- Cancer (breast, colon, and lung)
- ESRD
- Death

Benefit of Interventions
- Statins
- Anti-hypertensives
  - ACE Inhibitors
  - Beta Blockers
  - Thiazide Diuretics
  - Calcium Channel Blockers
  - Combinations
- Aspirin
- Insulin (A1c Reduction)
- Metformin
- Mammogram and FOTB
- Niacin and fish oil
- Weight Loss
- Smoking Cessation
- Exercise

ARCHIMEDES
Quantifying Healthcare
... a KAISER PERMANENTE Innovation
Ways IndiGO Can Improve Care

- **Before The Visit**
  - Set priorities for outreach programs

- **During The Visit**
  - Find high-risk patients not identified by guidelines
  - Prioritize interventions for each patient

- **After The Visit**
  - Members more engaged
  - Better compliance
  - More likely to return
Personalizing Decision - Making
“The care patients need and no less; the care they want, and no more.”

~ Al Mulley, MD
Medicare beneficiaries living in the Lincoln, Nebraska HRR were nearly five times more likely to undergo joint replacement surgery for osteoarthritis of the knee than beneficiaries living in Honolulu (13.8 per 1,000 beneficiaries versus 2.9 per 1,000).

### Medical Decision Making Can Be Improved

**What matters most depends on who you ask**

<table>
<thead>
<tr>
<th>Decision</th>
<th>% of patients who say top priority</th>
<th>% doctors who say top priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast cancer surgery</td>
<td>86%</td>
<td>14%</td>
</tr>
<tr>
<td>Hip replacement</td>
<td>84%</td>
<td>40%</td>
</tr>
<tr>
<td>Knee replacement</td>
<td>78%</td>
<td>35%</td>
</tr>
<tr>
<td>Spinal stenosis</td>
<td>46%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Q: Is doing what the doctor thinks best a top priority?

With Shared Decision Making, organizations have seen:

- Improved **quality** (outcomes that are more concordant with patient’s values)
- Improved patient **satisfaction**
- Significantly improved **utilization** of resource intense, preference sensitive procedures

Shared Decision Making aids are most useful when there is more than one treatment option, and are most effective when they ensure:

- Patient understanding of clinical options and probability of outcomes (Knowledge base)
- Patient clarification of their own values and preferences for outcomes (Value base)

- Handley, M., MD, Group Health Cooperative, KP National Quality Conference, May 2010
The Evidence

- 55 Randomized clinical trials
- Decision aids performed better than usual care interventions in terms of:
  - informed decision making
  - reduced rates of elective invasive surgery in favor of conservative options
- The effects of decision aids on other outcomes (patient-practitioner communication, consultation length, continuance, resource use) were inconclusive

- 40% decrease in Benign Prostatic Hyperplasia surgeries

- Revascularization chosen by 75% with usual care vs 58% with SDM
- Revascularization performed on 66% with usual care vs 52% with SDM

- Palliative Care: 70% increase in Oncology comfort care rates

- GHC saw a $4 million decrease in costs associated with knee surgeries combined with phenomenal patient satisfaction
Shared Decision Making Developers – A Growing Market

There are many developers of patient decision aids though they often call them something different….

<table>
<thead>
<tr>
<th>Developer</th>
<th>Country</th>
<th>Decision Aids Called</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthwise</td>
<td>US</td>
<td>Decision Points</td>
<td>155</td>
</tr>
<tr>
<td>Health Dialog (Health Crossroads)*</td>
<td>US</td>
<td>Shared Decision Making Programs</td>
<td>19</td>
</tr>
<tr>
<td>Mayo Clinic</td>
<td>US</td>
<td>—</td>
<td>18</td>
</tr>
<tr>
<td>Nous Foundation, Inc.*</td>
<td>US</td>
<td>Advanced Care Planning Decisions</td>
<td>10+</td>
</tr>
<tr>
<td>Midwives Information and Resource Service</td>
<td>(MIDIRS)UK</td>
<td>Informed Choice</td>
<td>7</td>
</tr>
<tr>
<td>University of Sydney</td>
<td>Australia</td>
<td>Decision Aids</td>
<td>6</td>
</tr>
<tr>
<td>National Cancer Institute (NCI)</td>
<td>US</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>Patient Decision Aid Research Group</td>
<td>Canada</td>
<td>Patient Decision Aids</td>
<td>5</td>
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<tr>
<td>American Society of Clinical Oncology</td>
<td>US</td>
<td>Decision Aid Tool</td>
<td>3</td>
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<tr>
<td>Agency for Healthcare Research and Quality</td>
<td>US</td>
<td>Consumer Summary Guide</td>
<td>2</td>
</tr>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td>US</td>
<td>Decision Guide</td>
<td>2</td>
</tr>
<tr>
<td>Cardiff University</td>
<td>UK</td>
<td>Decision Explorer</td>
<td>1</td>
</tr>
<tr>
<td>King Saud University</td>
<td>Saudi Arabia</td>
<td>Decision Aid</td>
<td>1</td>
</tr>
<tr>
<td>Public Health Agency of Canada</td>
<td>Canada</td>
<td>Decision Aid</td>
<td>1</td>
</tr>
<tr>
<td>Queen's University</td>
<td>Canada</td>
<td>Decision Aid</td>
<td>1</td>
</tr>
<tr>
<td>University of Laval</td>
<td>Canada</td>
<td>Outil d'aide a la decision</td>
<td>1</td>
</tr>
<tr>
<td>University of Saskatchewan</td>
<td>Canada</td>
<td>Decision Support Guide</td>
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<tr>
<td>University of Wollongong</td>
<td>Australia</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>WiserCare</td>
<td>US</td>
<td>Shared Decision Making</td>
<td>1</td>
</tr>
</tbody>
</table>

*: currently in negotiations with KP
Patients Don’t Know What They Don’t Know

- Patients make a surprisingly large number of medical decisions each year:
  - 82% of adults over the age of 40 have made a medical decision in the past two years.
  - 54% of these adults have faced two or more of these types of decisions.

“The National Survey of Medical Decisions (the DECISIONS Study)”.  
Brian Zikmund Fisher, PhD, University of Michigan
Patients Don’t Know What They Don’t Know

- When asked about 9 major medical decisions:
  - Patients on average knew less than 1/2 of the critical information

- Why does this matter?
  - 1/3 of medical decisions have two or more treatment options
  - There is no ‘right’ course of action. The patient must be fully informed and decide with their physician.

The National Survey of Medical Decisions (the DECISIONS Study)
Brian Zikmund Fisher, PhD, University of Michigan
Shared decision making:

- A patient has ≥ two effective treatment options
- Options have different constellations of side effects
- They work with their doctor to understand their options
- The patient chooses the one that's right for them

The process involves:

- Use of shared decision making aids
- Open discussion
Spinal Stenosis: Should I Have Surgery?

You can use this information to talk with your doctor or loved ones about your decision.

1. Get the facts
2. Compare your options
3. What matters most to you?
4. Where are you leaning now?
5. What else do you need to make your decision?

FAQs

- What is spinal stenosis?
- What tests may help in choosing treatment?
- What nonsurgical treatments are used for spinal stenosis?
- What is the surgery for spinal stenosis?
- How well does surgery work?
- What are the risks of surgery for spinal stenosis?
- What are the risks of not having surgery for spinal stenosis?
Group Health’s Experience with Health Dialog

2009-2010

Number of videos distributed, by month
Total: 8,808*

1. Hip osteoarthritis
2. Knee osteoarthritis
3. Coronary artery disease
4. Benign prostatic hyperplasia
5. Prostate cancer
6. Uterine fibroids
7. Abnormal uterine bleeding
8. Early stage Breast Cancer
9. Ductal carcinoma in situ
10. Breast reconstruction
11. Spinal stenosis
12. Herniated disc

*As of 12/31/2010; does not include decision aids viewed on the web after Oct 2009

*Courtesy Matt Handley, MD Group Health Cooperative
Group Health’s Approach: It’s All About Workflow

- **Link to MyGroupHealth streaming videos**
  - Secure messaging to patients through MyGroupHealth
  - Links embedded in After-Visit Summaries with providers

- **Providers can order DVD Versions through the EMR**
  - EMR order capability for each video
  - Order info embedded in After-Visit Summaries for patients

**Example: Orthopedics**
- Surgeons want to integrate delivery of DAs into referral process
- Every patient who has knee or hip replacement in GH will be asked to view the decision aid before their first appointment with an orthopedic surgeon
- At time of referral a RN, PA, or MD reviews every new case and will place DVD order for knee and hip OA patients

*Courtesy Matt Handley, MD Group Health Cooperative*
<table>
<thead>
<tr>
<th>Question</th>
<th>Answers</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall, how would you rate this program?</td>
<td>Poor  Fair  Good  VeryGood  Excellent  Total</td>
<td>% G/VG/Excel</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>0  1  12  17  8  38</td>
<td>97%</td>
</tr>
<tr>
<td>Helped you understand your health condition?</td>
<td>Poor  Fair  Good  VeryGood  Excellent  Total</td>
<td>% G/VG/Excel</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>1  1  17  12  6  37</td>
<td>95%</td>
</tr>
<tr>
<td>Helped you understand treatment choices?</td>
<td>Poor  Fair  Good  VeryGood  Excellent  Total</td>
<td>% G/VG/Excel</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>0  0  15  14  8  38</td>
<td>100%</td>
</tr>
<tr>
<td>Helped you understand what is most important to you when thinking about treatment choices?</td>
<td>Poor  Fair  Good  VeryGood  Excellent  Total</td>
<td>% G/VG/Excel</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>0  3  15  14  6  38</td>
<td>92%</td>
</tr>
<tr>
<td>Helped you prepare to talk with your provider about treatment choices?</td>
<td>Poor  Fair  Good  VeryGood  Excellent  Total</td>
<td>% G/VG/Excel</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>0  1  12  17  6  36</td>
<td>97%</td>
</tr>
<tr>
<td>How important is it to you that providers make programs like this available to their patients?</td>
<td>Not Important  Somewhat  Very  Extremely  Total</td>
<td>% Very/Extrem.</td>
</tr>
<tr>
<td>Prostate Cancer</td>
<td>0  1  24  13  38</td>
<td>97%</td>
</tr>
</tbody>
</table>

*Group Health, as of early 2011, has signed a 3-year contract with HD

*Courtesy Matt Handley, MD Group Health Cooperative
Decision Making Continuum Within Kaiser Permanente

Health Education

What can I learn about my health/lifestyle?
How do I stay healthy?
How do I help the people I care about stay healthy?

Shared Decision Making
Focus on Decision Quality

What are the treatment options for my condition?
What should I do?
What do I value?
How do I weigh the pros and cons?
What information do I need to assess tradeoffs?

Diagnosis

Self Care/Other

Informed Consent
Prepare for Procedure

Procedure

Self Manage

Patient Questions

SDM Videos

EMMI Videos

What are the next steps to arrange for my procedure?
How should I prepare?
What will recovery be like?
Kaiser Permanente Southern California Region – Pilot

Scope:
- **Ortho** – Knee & Hip Osteoarthritis – 3 sites (1 with coaching – 2 without)
- **Uro** – Prostate Cancer – 3 sites (1 with coaching – 2 without)
All other sites will be treated as the control group

Timeline: January - September 2011

As of 4/4/2011: Close to 500 patients have been offered these videos (200 by mail & 300 via the web)

Investment:
- HD contract:
  - 700 DVD packets
  - Web link for online access Coaches training
  - Account Management

PO & Region:
- Project management
- Workflow Development & implementation
- Data collection
- KP HealthConnect interface
## Evaluation:

<table>
<thead>
<tr>
<th>Evaluation Focus Areas</th>
<th>OUTCOME</th>
<th>MEASURE – Pre and Post Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. PATIENT EXPERIENCE</strong></td>
<td>Patient Survey Results</td>
<td>a. Measure patients understanding of condition-specific information, treatment options</td>
</tr>
<tr>
<td>(Concurrence with patient values + knowledge)</td>
<td></td>
<td>b. Measure experience with DAs + in interaction w/ provider(s) - with Treatment decisions</td>
</tr>
<tr>
<td><strong>2. UTILIZATION IMPACT</strong></td>
<td>Surgery Rates</td>
<td>a. Surgery rate by intervention methods DAs, DAs + coach (compared to surgery rates at non-pilot facilities and pre DA)</td>
</tr>
<tr>
<td><strong>3. CLINICIAN EXPERIENCE</strong></td>
<td>Clinician Survey Results</td>
<td>a. Measure Clinician experience w/ DAs - in interaction with patients - with DAs in treatment decisions</td>
</tr>
<tr>
<td><strong>4. Monitor USAGE of DECISION AIDS</strong></td>
<td>Use of DAs materials</td>
<td>a. Number of patients who access DAs (both hard copy &amp; online access)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. # of patients with DA coaching</td>
</tr>
</tbody>
</table>
Other Shared Decision Making Efforts Within Kaiser Permanente

- CMI has an initial agreement with the Nous Foundation, Inc. (Advanced Care Planning) to allow all KP regions to have unrestricted use to any of their 10 (five minutes duration) videos so they can be tried in a number of different Palliative Care settings, interventions, scenarios and then decide whether to expand.

- Proposed support:
  - Create a learning network to share how the interventions are working or not working (e.g., implementing them in oncology vs, for dementia).
  - Put together a provider satisfaction survey that could be used with all interventions
  - Recent Webinar w/Dr. Volandes on how to get started
Evidence and Measurement Cycles of the Future

- Basic Clinical Research (NIH)
- Basic Efficacy Research
- Clinical Efficacy Research
- Health Services Research
- Meta-Analysis & Computerized Modeling
- Synthesize Evidence Guidelines
- Measure Development
- Develop CDS
- Measure Testing
- Embed Measures & in EMR/EHR
- Practice EHRs
- Rapid-learning Database

*Courtesy Phyllis Torda, VP Strategy & Quality Solutions Group, NCQA*
The Goal

Personalized Medicine

Informed by outcomes and biology of ‘People Like Me’
Questions?
**KOOS-Physical Function Shortform (KOOS-PS)**

<table>
<thead>
<tr>
<th>Activity</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rising from bed</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Putting on socks/stockings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rising from sitting</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bending to floor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twisting/pivoting on your injured knee</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kneeling</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Squatting</td>
<td></td>
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</tr>
</tbody>
</table>

**HOOS-Physical Function Shortform (HOOS-PS)**

<table>
<thead>
<tr>
<th>Activity</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Severe</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Descending stairs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Getting in/out of bath or shower</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sitting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Running</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Twisting/pivoting on your loaded leg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Appendix: Survey Instruments: UCLA Activity Scale & VAS

Of the following options, which statement best describes your activity level? Please indicate your answer with a mark beside the appropriate statement.

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Regularly participate in impact sports, such as jogging, tennis, skiing, acrobatics, ballet, heavy labor, or backpacking.</td>
</tr>
<tr>
<td>9</td>
<td>Sometimes participate in impact sports.</td>
</tr>
<tr>
<td>8</td>
<td>Regularly participate in very active events, such as bowling and golf.</td>
</tr>
<tr>
<td>7</td>
<td>Regularly participate in active events: such as bicycling.</td>
</tr>
<tr>
<td>6</td>
<td>Regularly participate in moderate activities, such as swimming and unlimited housework or shopping.</td>
</tr>
<tr>
<td>5</td>
<td>Sometimes participate in moderate activities.</td>
</tr>
<tr>
<td>4</td>
<td>Regularly participate in mild activities, such as walking, limited housework, and limited shopping.</td>
</tr>
<tr>
<td>3</td>
<td>Sometimes participate in mild activities.</td>
</tr>
<tr>
<td>2</td>
<td>Mostly inactive: very restricted to minimum activities of daily living.</td>
</tr>
<tr>
<td>1</td>
<td>Wholly inactive: dependent upon others; cannot leave residence.</td>
</tr>
</tbody>
</table>

Visual Analog Scale

*How severe is your pain today? Place a vertical mark on the line below to indicate how bad you feel your pain is today.*

No pain | Very severe pain
# Appendix: Survey Instruments: VR-12

## The Veterans Rand 12 Item Health Survey (VR-12)

**Instructions:** This questionnaire asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities.

Answer every question by marking the answer as indicated. If you are unsure how to answer a question, please give the best answer you can.

(Circle one number on each line)

1. In general, would you say your health is:

<table>
<thead>
<tr>
<th>EXCELLENT</th>
<th>VERY GOOD</th>
<th>GOOD</th>
<th>FAIR</th>
<th>POOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

   a. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf?
      
      | YES, LIMITED A LOT | YES, LIMITED A LITTLE | NO, NOT LIMITED AT ALL |
      |-------------------|-----------------------|------------------------|
      | 1                 | 2                     | 3                      |

   b. Climbing several flights of stairs?
      
      | 1 | 2 | 3 |
      |

3. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?

   a. Accomplished less than you would like.
      
      |----------------------|---------------------------|----------------------|----------------------|----------------------|
      | 1                    | 2                         | 3                    | 4                    | 5                    |

   b. Were limited in the kind of work or other activities.
      
      | 1 | 2 | 3 | 4 | 5 |
      |

4. During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?

   a. Accomplished less than you would like.
      
      |----------------------|---------------------------|----------------------|----------------------|----------------------|
      | 1                    | 2                         | 3                    | 4                    | 5                    |

   b. Didn't do work or other activities as carefully as usual.
      
      | 1 | 2 | 3 | 4 | 5 |
      |

5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and house work)?

<table>
<thead>
<tr>
<th>NOT AT ALL</th>
<th>A LITTLE BIT</th>
<th>MODERATELY</th>
<th>QUITE A BIT</th>
<th>EXTREMELY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.

6. How much of the time during the past 4 weeks:

   a. Have you felt calm and peaceful?
      
      |-----------------|------------------|------------------------|-----------------|----------------------|------------------|
      | 1               | 2                | 3                      | 4               | 5                    | 6                |

   b. Did you have a lot of energy?
      
      | 1 | 2 | 3 | 4 | 5 | 6 |
      |

   c. Have you felt downhearted and blue?
      
      | 1 | 2 | 3 | 4 | 5 | 6 |
      |

7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?

<table>
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<tr>
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<td>1</td>
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<td>5</td>
</tr>
</tbody>
</table>

Now, we’d like to ask you some questions about how your health may have changed.

8. Compared to one year ago, how would you rate your physical health in general now?

   MUCH BETTER | SLIGHTLY BETTER | ABOUT THE SAME | SLIGHTLY WORSE | MUCH WORSE |
<table>
<thead>
<tr>
<th></th>
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<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

9. Compared to one year ago, how would you rate your emotional problems (such as feeling anxious, depressed or irritable) now?

   MUCH BETTER | SLIGHTLY BETTER | ABOUT THE SAME | SLIGHTLY WORSE | MUCH WORSE |
<table>
<thead>
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<th></th>
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