Using data transparency to improve cancer care

Karma Kreizenbeck, Project Director
Hutchinson Institute for Cancer Outcomes Research
Mission

Eliminate cancer and related diseases as causes of human suffering and death.

Improve the effectiveness of cancer prevention, early detection and treatment services provided to patients in ways that reduce the economic and human burden of cancer.
Why HICOR? Why now?

Patients are bearing an ever-increasing share of the expense, causing a new side effect called financial toxicity.

There’s great variability in cost and quality of cancer treatments across the health care system.
Rising cancer care costs

Cumulative percent increase

- Cancer drugs
- Cancer medical
- Healthcare
- US GDP
Risk for Financial Toxicity

Cancer patients have higher rates of bankruptcy than non-cancer patients

Percent filing for bankruptcy

- Cancer patients

Western Washington, 1995-2010

Health Affairs, 2013
Risk for Financial Toxicity

Cancer patients have higher rates of bankruptcy than non-cancer patients

Percent filing for bankruptcy

Bankruptcy reform act signed into law, 2005
Bankruptcy reform act goes into effect, 2006

Western Washington, 1995-2010

Health Affairs, 2013
Variation in Care Quality

Prostate Imaging Around Diagnosis

Adherence

Mean: 74%

Average Patient Cost [+/- 2 months of diagnosis]

Total amount paid by health plan

Higher Volume Clinics
Lower Volume Clinics
Strategies: Data-driven community engagement to improve care
How we work

- Align care with best practices
- Reduce economic burden
- Improve outcomes for patients and families

- Characterize oncology care
- Prioritize areas for improvement
- Evaluate outcomes
- Design programs

- Treatment patterns
- Guideline adherence
- Utilization
- Cost
- Survival
- Benchmarking relative to region
- High variation in well-defined treatment settings
- Low-value care
- Poor patient outcomes
- Provider & patient behavior change
- Delivery system process change
- Financing models
- Incentives

- Evaluate expected change in practice patterns, patient outcomes, costs, and value
How we work

• Treatment patterns
• Guideline adherence
• Utilization
• Cost
• Survival
• Benchmarking relative to region

Provide patients, payers, providers and health systems with transparent information to support decision-making in cancer care.

First step in a community process to improve value
# Metrics Across Phases of Cancer Care

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Treatment</th>
<th>Continuing Care</th>
<th>End-of-Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate: Advanced imaging for staging <em>(Choosing Wisely)</em></td>
<td>Colony Stimulating Factor (CSF) use <em>(Choosing Wisely)</em></td>
<td>Breast: Advanced imaging and tumor marker testing in surveillance <em>(Choosing Wisely)</em></td>
<td>Use of: Chemo/Radiation Advanced imaging Hospital use Hospice use</td>
</tr>
<tr>
<td>Breast: Advanced imaging for staging <em>(Choosing Wisely)</em></td>
<td>Hospital use during chemotherapy or radiation therapy</td>
<td></td>
<td>Place of death</td>
</tr>
<tr>
<td></td>
<td>Hospital use following surgery</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Choosing Wisely* is a program by the American Society for Quality, aimed at improving the quality of health care. It encourages the use of evidence-based practices and promotes better outcomes for patients.
The patient story

Data driven insights

CANCER REGISTRY, pathological outcomes
Data driven insights

The patient story

- CANCER REGISTRY, pathological outcomes
- CLAIMS, utilization and costs

Diagram showing the patient story across stages:
- Diagnosis
- Treatment
- Continuing care
- End of life
Data driven insights

The patient story

- CANCER REGISTRY, pathological outcomes
- CLAIMS, utilization and costs
- EMR (Electronic Medical Forms), clinical results
The patient story

Data driven insights

- CANCER REGISTRY, pathological outcomes
- CLAIMS, utilization and costs
- EMR (Electronic Medical Forms), clinical results
- PROs (Patient Reported Outcomes) quality of life and patient experience

Diagnosis | Treatment | Continuing care | End of life
The patient story

Data driven insights

- CANCER REGISTRY, pathological outcomes
- CLAIMS, utilization and costs
- EMR (Electronic Medical Forms), clinical results
- PROs (Patient Reported Outcomes) quality of life and patient experience

Advanced imaging for breast cancer staging

- Colony Stimulating Factor (CSF) use
- Hospital use following surgery

Advanced imaging and tumor marker testing in breast cancer surveillance

End of life use of:
- Chemo/Radiation
- Advanced imaging
- Hospice

Place of death
Current data sources: claims + registry
Linking Data Sources

The Database

HEALTH CARE CLAIMS

DATES
January 1, 2007 – May 31, 2014

POPULATION
Premera: 1.2M
Regence: 4.3M
The Database

**HEALTH CARE CLAIMS**
- Dates: January 1, 2007 – May 31, 2014
- Population:
  - Premera: 1.2M
  - Regence: 4.3M

**CANCER REGISTRY RECORDS**
- Dates: January 1, 2007 – May 31, 2014
- Population:
  - CSS Registry: 13 counties in Western WA
Linking Data Sources

The Database

HEALTH CARE CLAIMS

DATES
January 1, 2007 – May 31, 2014

POPULATION
Premera: 1.2M
Regence: 4.3M

66,000+ cancer patients linked between the two data sources
Almost 25,000 patients enrolled at time of diagnosis

CANCER REGISTRY RECORDS

DATES
January 1, 2007 – May 31, 2014

POPULATION
CSS Registry: 13 counties
In Western WA
Tool: Oncology Informatics
Platform
Community Reporting

HICOR IQ

Use of Tumor Markers for Breast Cancer During Surveillance Period

All clinics

Clinic Volume
- High
- Medium
- Low

Utilization rates:
- 75%
- 50%
- 25%
- 0%

Regional average: 30.8%

Task order

Customize Report

View:
- Site Region
- Clinic

Breakdown:
- Demographic
- Risk

Population:
- In Age:
  - Select all
  - 64+ and
  - 30-63
- By Race:
  - Select all
  - White
  - White
- By Risk:
  - Select all
  - Low Risk
  - Intermediate Risk

In Gender:
- Select all
- Male
- Female

In Task:
- Select all
- Suggested
- Unassigned

IRB approval + minimal PHI constraints

HUTCHINSON INSTITUTE FOR CANCER OUTCOMES RESEARCH / 1100 Fairview Ave. N. / Mail Stop M3-B232 / Seattle, WA 98109 / fredhutch.org/HICOR
HICOR IQ\textsubscript{BETA}

HICOR’s oncology informatics platform

- Provides interactive reports of regional performance metrics
- Allows for exploration of regional and clinic-level variation of metrics
Welcome to HICOR’s Regional Oncology Informatics Platform

Vision
Provide patients, payers, providers and health systems with transparent information to support decision-making in cancer care. We view performance reporting as a first step in a community process to improve value in cancer care.

Please provide feedback on HICOR IQ Beta.
The initial launch includes a limited initial set of regional performance reports based on ASCO/ABIM 2012 Choosing Wisely Recommendations, generated from the HICOR cancer registry-health insurance claims linked Database.

Please provide feedback here: https://www.surveymonkey.com/s/HICORIQ

Future HICOR IQ iterations will include:
- Expanded data sources including electronic medical records and patient reported outcomes
- Additional data providers – payers, health systems and patients
- Expanded set of performance measures based on regional consensus
- Expanded functionality including partner-specific views

Contact us at hicorIQ@fredhutch.org with suggestions or questions

View Reports
<table>
<thead>
<tr>
<th>Name</th>
<th>Modified</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
</tr>
<tr>
<td>Use of Advanced Imaging for Staging Breast Cancer</td>
<td>2015-03-26</td>
</tr>
<tr>
<td>Use of Advanced Imaging for Staging Prostate Cancer</td>
<td>2015-03-26</td>
</tr>
<tr>
<td><strong>Treatment</strong></td>
<td></td>
</tr>
<tr>
<td>Colony-Stimulating Factor Use in Low and Intermediate FN Risk Chemotherapy</td>
<td>2015-03-26</td>
</tr>
<tr>
<td><strong>Continuing Care</strong></td>
<td></td>
</tr>
<tr>
<td>Use of Advanced Imaging for Breast Cancer During Surveillance Period</td>
<td>2015-03-26</td>
</tr>
<tr>
<td>Use of Testing for Breast Cancer During Surveillance Period</td>
<td>2015-03-26</td>
</tr>
<tr>
<td>Use of Tumor Markers for Breast Cancer During Surveillance Period</td>
<td>2015-03-26</td>
</tr>
<tr>
<td><strong>End of Life</strong></td>
<td></td>
</tr>
<tr>
<td>Use of Chemotherapy in last 30 Days of Life</td>
<td>2015-03-26</td>
</tr>
<tr>
<td>Use of Chemotherapy or Radiation Therapy in last 30 Days of Life</td>
<td>2015-03-26</td>
</tr>
<tr>
<td>Use of Radiation Therapy in last 30 Days of Life</td>
<td>2015-03-26</td>
</tr>
</tbody>
</table>
For more information about the methods used to create this visualization please read this documentation.
Customize Report

View: 
by Region

Breakdown: 
by Stage

Population:
by Age: 
✓ Select all
✓ <40
✓ 40s
✓ 50s
✓ 50+

by Cancer Site: 
✓ Select all
✓ Breast
✓ Colorectal
✓ Lung

by Clinic Volume: 
✓ Select all
✓ High
✓ Low
✓ Medium

by FN Risk: 
✓ Select all
✓ Low Risk
✓ Intermediate Risk

by Gender: 
✓ Select all
✓ Male
✓ Female

by Race: 
✓ Select all
✓ White
✓ Black
✓ Hispanic (any race)
✓ Asian/PI
✓ Other/Unknown

by Stage: 
✓ Select all
✓ Localized
✓ Regional
✓ Distant
✓ Unstaged

UPDATE  CANCEL
CSF Use in Low and Intermediate FN Risk Chemotherapy

Regional average by Stage

Utilization
100% -

75% -

50% -

25% -

0% -

Localized

Regional

Distant

Population Size:
399 out of 1,654 patients

Population Filters:
Cancer Site - Breast
FN Risk - Intermediate Risk

Excluded due to population size restrictions:
- Untaged

For more information about the methods used to create this visualization please read this documentation
CSF Use in Low and Intermediate FN Risk Chemotherapy

Regional average by Stage

<table>
<thead>
<tr>
<th>Stage</th>
<th>Localized</th>
<th>Regional</th>
<th>Distant</th>
</tr>
</thead>
<tbody>
<tr>
<td>52%</td>
<td>56%</td>
<td>42%</td>
<td></td>
</tr>
</tbody>
</table>

Population Size: 399 out of 1,654 patients

Population Filters:
- Cancer Site: Breast
- FN Risk: Intermediate Risk

Excluded due to population size restrictions:
- Untreated
HICOR IQ: Neutral, trusted, accessible data-source for identifying opportunities to improve care
How we work

- Treatment patterns
- Guideline adherence
- Utilization
- Cost
- Survival
- Benchmarking relative to region

- Evaluate expected change in practice patterns, patient outcomes, costs, and value

Align care with best practices

Reduce economic burden

Improve outcomes for patients and families

Characterize oncology care

Prioritize areas for improvement

Design programs

Evaluate outcomes

High variation in well defined treatment settings
- Low-value care
- Poor patient outcomes
- Provider & patient behavior change
- Delivery system process change
- Financing models
- Incentives
How we work

PRIORITIZE AREAS FOR IMPROVEMENT
- High variation in well defined treatment settings
- Low-value care
- Poor patient outcomes

DESIGN PROGRAMS
- Provider & patient behavior change
- Delivery system process change
- Financing models
- Incentives
Choosing Wisely Regional Reporting

In December 2014, HICOR held a Premera-sponsored meeting with oncology practices to share results.

Participants
- HICOR
- Premera
- Stanford University
- Cancer Care Northwest
- Everett Clinic
- MultiCare
- Northwest Medical Specialties
- Overlake Hospital
- Providence
- Proliance
- Seattle Cancer Care Alliance
- Skagit Valley Hospital
- Swedish Cancer Institute
- University of Washington
- Virginia Mason
Oncology Practice Reports

*In addition to the Regional Report, oncology practices received their own clinic-specific data*

Clinic specific information was shared with practices at the conclusion of the December 2014 meeting.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Regional Values</th>
<th>Your Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choosing Wisely #2: Prostate Imaging</td>
<td># of patients 518</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Adherence (%) 74%</td>
<td>20%</td>
</tr>
<tr>
<td>Choosing Wisely #3: Breast Imaging</td>
<td># of patients 1798</td>
<td>167</td>
</tr>
<tr>
<td></td>
<td>Adherence (%) 78%</td>
<td>66%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Regional Values</th>
<th>Your Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choosing Wisely #5: CSF Use</td>
<td># of patients 438</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>Adherence (%) 72%</td>
<td>86%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Survivorship</th>
<th>Regional Values</th>
<th>Your Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choosing Wisely #4: Breast Surveillance</td>
<td># of patients 667</td>
<td>61</td>
</tr>
<tr>
<td></td>
<td>Adherence (%) 51%</td>
<td>48%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>End of Life</th>
<th>Regional Values</th>
<th>Your Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choosing Wisely #1: Chemo/Radiation</td>
<td># of patients 1598</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Adherence (%) 78%</td>
<td>76%</td>
</tr>
</tbody>
</table>
Opportunity to learn from each other

No one clinic is consistently above average or below average in all areas

**Metrics**

- Diagnosis
- Treatment
- Continuing care
- End-of-life

**Clinics**

- Average
- Above average
- Below average

**Note:** Clinics defined as average are those that fall within + or - 3% points of the regional average.
Where are we going?
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View Reports
The patient story

Data driven insights

- CANCER REGISTRY, pathological outcomes
- CLAIMS, utilization and costs

Current database

- Diagnosis
- Treatment
- Continuing care
- End of life
Data driven insights

The patient story

- CANCER REGISTRY, pathological outcomes
- CLAIMS, utilization and costs
- EMR (Electronic Medical Forms), clinical results
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Example: MPower
Goals for HICOR IQ

Expand the flexibility of the tool

Integrate community feedback

“Make it intuitive and actionable”

“Protect our data and identity”

“Make it flexible and adaptable”
Partnership with LabKey to achieve goals of data transparency has included:

– Both out-of-the box software and custom development
– User interviews/feedback throughout the development process
– Collaboration on data visualization

Together we have developed a tool to get actionable data to healthcare decision-makers