The Case for a New Paradigm in Health care Delivery

Bruce A. Feinberg, D.O.
Vice President and Chief Medical Officer
Cardinal Health Specialty Solutions,
Clinical Pathways
"Information is not knowledge."--- Einstein
Market Forces Invoking New Care Paradigm

Volumes Increasing
Cancer Incidence

Costs Rising
Cost of Cancer Care

Emerging Trends

1. Focus on evidence-based medicine
2. Development of new care models
3. Shift in focus of clinical innovation
4. Increased role of consumer in decision-making

Commercial Payors Confront Startling Cost Growth

- 0.68% Cancer patients as a total of a commercially insured population
- 10% Cancer costs as a percentage of the total health care costs incurred

Annual Rate of Cost Growth

<table>
<thead>
<tr>
<th>Overall</th>
<th>Cancer</th>
</tr>
</thead>
<tbody>
<tr>
<td>9%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Cancer Drugs Not Working for Majority of Patients

Percentage of Patients for which a Particular Drug is Ineffective, on Average

- Asthma Drugs: 40%
- Diabetes Drugs: 43%
- Arthritis Drugs: 50%
- Alzheimer’s Drugs: 70%
- Cancer Drugs: 75%

$8 billion spent annually on ineffective chemotherapy
In Near-Term, A Substitute for Full Genome Sequencing

Many Tumors Candidates for Targeted Therapy

Percentage of Tumors Driven by Genetic Mutations, by Type of Cancer

- Melanoma: 73%
- Thyroid: 56%
- Colorectal: 51%
- Lung: 41%
- Pancreatic: 41%
- Breast: 32%

Drug Pipeline Increasingly Relying on Companion Diagnostics

- 30% of drugs in late clinical development
- 50% of drugs in early clinical development
- 60% of drugs in preclinical development
Evolving Business Case

**Oncotype DX® : Decreasing Chemo Use in Breast**

Breast Cancer Volumes, Revenue Projections for Leslie Cancer Center After Adopting OncotypeDX®

- **Estimated Change in Chemotherapy Volumes**
  - Without test: 774
  - With test: 565
  - 27% decrease

- **Estimated Change in Chemotherapy Revenues**
  - Without test: $3.9 M
  - With test: $2.9 M

**Nationwide Impact**

$330 M

Potential national savings from Oncotype DX

**Test in Brief: Oncotype Dx®**

- 21-gene assay developed by Genomic Health that provides a recurrence score for women diagnosed with estrogen receptor-positive breast cancer
- Studies show no significant benefit to providing adjuvant chemotherapy to women with low risk of recurrence
NSABP-20 TRIAL SHOWED OVERALL BENEFIT OF CHEMOTHERAPY IN TAMOXIFEN-TREATED PATIENTS

Tam vs Tam + Chemo – All 651 Patients

Benefit from Chemo (Prediction)

4.4%

Prognosis in “control arm”

CLINICAL VALIDITY: THE ONCOTYPE DX® ASSAY IS PROGNOSTIC OF DISTANT RECURRENCE (NSABP B-14 STUDY)

Distant recurrence over time

10-Year rate of recurrence = 6.8%*
95% CI: 4.0%, 9.6%

10-Year rate of recurrence = 14.3%
95% CI: 8.3%, 20.3%

10-Year rate of recurrence = 30.5%*
95% CI: 23.6%, 37.4%

Proportion without distant recurrence, %

- All Patients, n = 668
- RS <18, n = 338
- RS 18-30, n = 149
- RS ≥31, n = 181

P<0.001

RS, Recurrence Score® result

*10-Year distant recurrence comparison between low- and high-risk groups: P < 0.001

CLINICAL VALIDITY: THE ONCOTYPE DX® ASSAY IS PREDICTIVE OF CHEMOTHERAPY BENEFIT (NSABP B-20 STUDY)

Patients With High RS
28% absolute benefit from tamoxifen + chemotherapy

Interaction p-value for continuous RS = 0.038

RS, Recurrence Score® result

THE ONCOTYPE DX® ASSAY CHANGED TREATMENT DECISIONS IN OVER ONE-THIRD OF PATIENTS

Treatment Plan After Oncotype DX
Treatment Plan Prior to Oncotype DX
Women Diagnosed with Breast Cancer

- Chemotherapy recommended for 62% of patients
- Over a 37% Change in Treatment Decisions

*Based on meta-analysis of seven studies with 912 patients.

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“It is cookbook medicine. Yes, guidelines are something like a cookbook. However, all great chefs and expert pilots use cookbooks and checklists, and diners and flyers are grateful that their experiences are not created entirely from scratch. Perhaps it would help if we thought of guidelines as jazz scores. As practitioners we work from a basic chord structure and melody line (clinical science) with a great deal of latitude for improvisation (the art of medicine).”

James Reinersten, MD
Annals of Internal Medicine 138;922 2003
Relationship between Oncotype DX® Testing and the Use of Chemotherapy in High-Risk Patients

Wong W,1 Cooper J,2 Richardson S,3 Feinberg B2
1CareFirst BlueCross BlueShield
2 Cardinal Health Specialty Solutions, Dublin, OH
3 Genomic Health Inc., Redwood City, CA
Physician Resistance to Guidelines Waning

Physician Attitudes Toward Clinical Guidelines

“Guidelines reduce my autonomy as a physician”

Commonwealth Fund

2002

66%

Disagree

“Guidelines undermine my autonomy as a physician”

NEHI Physician Survey Respondents

2008

75%

Disagree


1) Survey of U.S. clinicians attitudes towards clinical guidelines.
CareFirst and Clinical Pathways Goals

• Provide high quality care while attempting to reduce cost
  – Creating rules to biologic use that will result in appropriate usage, without strict authorization tactics

• Keep community rheumatology vigorous in Mid-Atlantic
  – Moving the money away from drug reimbursement to services, while maintaining community infusion

• First program of its kind for treatment of rheumatoid arthritis
ER Positive

The 21-gene recurrence assay (or the 70-gene expression assay) should be considered for all women with node negative and ER positive breast cancer whom you would consider appropriate for adjuvant chemotherapy. Patients with extremely small primary tumors (<0.5 cm) or those with large tumors greater than 5 cm, or those that are medically unsuitable for chemotherapy may omit this test.

Oncotype DX®

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Score Range</th>
<th>Recommended Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Risk</td>
<td>&lt;18</td>
<td>Endocrine Therapy</td>
</tr>
<tr>
<td>Intermediate Risk</td>
<td>18-31</td>
<td>Endocrine Therapy +/- Chemotherapy</td>
</tr>
<tr>
<td>High Risk</td>
<td>&gt;31</td>
<td>Endocrine Therapy + Chemotherapy</td>
</tr>
</tbody>
</table>

**Low Risk: National Steering Committee Comment: “Uncomfortable with low risk cut off of 18, less than 10 may be optimal, pending results of the TAILORx trial”**.
Materials and Methods

• A total of 1,174 patients who were treated on the CFBCBS clinical care pathways program between August 2008- June 2011 and received Oncotype DX® testing were retrospectively identified using CHSS proprietary claims software.

• The number of patients with a Recurrence Score® value in the low- (<18), intermediate- (18-30), and high-risk (≥31) groups and the number of patients who subsequently received chemotherapy were descriptively analyzed by age group and by time window from when the assay was ordered.
Distribution of Recurrence Score® Results

Recurrence Score Group

- Low (<18)
- Intermediate (18-30)
- High (≥31)

Patients

Overall: 625
- Low: 410
- Intermediate: 139

Window 1 Testing:
- Low: 176
- Intermediate: 124
- High: 53

Window 2 Window:
- Low: 233
- Intermediate: 144
- High: 51

Window 3:
- Low: 216
- Intermediate: 142
- High: 35
Chemotherapy Treatment Rate by Recurrence Score® Result

<table>
<thead>
<tr>
<th>Testing Window</th>
<th>Low (&lt;18)</th>
<th>Intermediate (18-30)</th>
<th>High (≥31)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Window 1</td>
<td>n=176</td>
<td>n=124</td>
<td></td>
</tr>
<tr>
<td>Window 2</td>
<td>n=233</td>
<td>n=144</td>
<td></td>
</tr>
<tr>
<td>Window 3</td>
<td>n=216</td>
<td>n=142</td>
<td>n=35</td>
</tr>
</tbody>
</table>
As Clear as Mud

*Between the idea
And the reality
Between the motion
And the act
Falls the Shadow*

-T.S. Eliot, The Hollow Men
Evaluation of Variables that May Impact Chemotherapy (CT) Administration After Determination of Oncotype DX® Recurrence Score® Results

Bowen K,1 Gilmore J,1 Szabo S,1 Haislip S,1 Hassell R,2 Cooper J,2 Richardson S,3 Fitzgerald M,2 Feinberg B2
1Georgia Cancer Specialists, Atlanta, GA
2Cardinal Health Specialty Solutions, Dublin, OH
3Genomic Health, Inc., Redwood City, CA
Methods

Patients treated at Georgia Cancer Specialists diagnosed with ER-positive, HER2-negative, node-negative early stage breast cancer between 2009-2011 were identified through a retrospective search of electronic medical records.

Descriptive analyses included:
- **Oncotype DX®** assay utilization in all eligible patients
- Proportion of chemotherapy-treated patients with or without Oncotype DX assay testing
- Recurrence Score® groups (low <18, intermediate 18-30, high ≥31) and chemotherapy use
Stage I-II Breast Cancer Patients in EMR System from 2009 to 2010
N = 1908

Node-Negative, ER-Positive, HER2-Negative
N = 788

Patient Population

- Assay Yes
  - CT Yes: n = 86
  - CT No: n = 202

- Assay No
  - CT Yes: n = 106
  - CT No: n = 394

N = 788 Eligible Patients
## Oncotype DX® Assay Utilization

<table>
<thead>
<tr>
<th></th>
<th>Oncotype DX Assay Yes</th>
<th>Oncotype DX Assay No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age (years)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 45 (n=86)</td>
<td>29 (34%)</td>
<td>57 (66%)</td>
</tr>
<tr>
<td>46-55 (n=219)</td>
<td>108 (49%)</td>
<td>111 (51%)</td>
</tr>
<tr>
<td>56-65 (n=232)</td>
<td>85 (37%)</td>
<td>147 (63%)</td>
</tr>
<tr>
<td>66-75 (n=161)</td>
<td>54 (34%)</td>
<td>107 (66%)</td>
</tr>
<tr>
<td>≥ 76 (n=90)</td>
<td>12 (13%)</td>
<td>78 (86%)</td>
</tr>
<tr>
<td><strong>Size (cm)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 2.0 (n=602)</td>
<td>226 (38%)</td>
<td>376 (62%)</td>
</tr>
<tr>
<td>2.0-5.0 (n=162)</td>
<td>59 (36%)</td>
<td>103 (64%)</td>
</tr>
<tr>
<td>&gt; 5.0 (n=22)</td>
<td>3 (13.6%)</td>
<td>19 (86%)</td>
</tr>
<tr>
<td>n/a (n=2)</td>
<td>0 (0%)</td>
<td>2 (100%)</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (n=62)</td>
<td>28 (45%)</td>
<td>34 (55%)</td>
</tr>
<tr>
<td>2 (n=89)</td>
<td>38 (43%)</td>
<td>51 (57%)</td>
</tr>
<tr>
<td>3 (n=27)</td>
<td>18 (67%)</td>
<td>9 (33%)</td>
</tr>
<tr>
<td>n/a (n=610)</td>
<td>204 (33%)</td>
<td>406 (67%)</td>
</tr>
</tbody>
</table>
### Oncotype DX® Assay and Chemotherapy Utilization

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Oncotype DX Yes</th>
<th></th>
<th>Oncotype DX No</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>CT Yes</td>
<td>14/29 (48%)</td>
<td>15/29 (52%)</td>
<td>18/57 (32%)</td>
<td>39/57 (68%)</td>
</tr>
<tr>
<td>CT No</td>
<td>25/29 (86%)</td>
<td>42/29 (14%)</td>
<td>40/57 (70%)</td>
<td>18/57 (30%)</td>
</tr>
<tr>
<td>Age (Years)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 45 (n=86)</td>
<td>14/29 (48%)</td>
<td>15/29 (52%)</td>
<td>18/57 (32%)</td>
<td>39/57 (68%)</td>
</tr>
<tr>
<td>46-55 (n=219)</td>
<td>39/108 (36%)</td>
<td>69/108 (64%)</td>
<td>33/111 (30%)</td>
<td>78/111 (70%)</td>
</tr>
<tr>
<td>56-65 (n=232)</td>
<td>23/85 (27%)</td>
<td>62/85 (73%)</td>
<td>39/147 (27%)</td>
<td>108/147 (73%)</td>
</tr>
<tr>
<td>66-75 (n=161)</td>
<td>7/54 (13%)</td>
<td>47/54 (87%)</td>
<td>7/107 (7%)</td>
<td>100/107 (93%)</td>
</tr>
<tr>
<td>≥ 76 (n=90)</td>
<td>3/12 (25%)</td>
<td>9/12 (75%)</td>
<td>9/78 (12%)</td>
<td>69/78 (88%)</td>
</tr>
<tr>
<td>Size (cm)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 2.0 (n=602)</td>
<td>62/226 (27%)</td>
<td>164/226 (73%)</td>
<td>50/376 (13%)</td>
<td>326/376 (87%)</td>
</tr>
<tr>
<td>2.0-5.0 (n=162)</td>
<td>23/59 (39%)</td>
<td>36/59 (61%)</td>
<td>41/103 (40%)</td>
<td>62/103 (60%)</td>
</tr>
<tr>
<td>&gt; 5.0 (n=22)</td>
<td>1/3 (33%)</td>
<td>2/3 (67%)</td>
<td>15/19 (79%)</td>
<td>4/19 (21%)</td>
</tr>
<tr>
<td>n/a (n=2)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2/2 (100%)</td>
</tr>
<tr>
<td>Grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 (n=62)</td>
<td>5/28 (18%)</td>
<td>23/28 (82%)</td>
<td>6/34 (18%)</td>
<td>28/34 (82%)</td>
</tr>
<tr>
<td>2 (n=89)</td>
<td>11/38 (29%)</td>
<td>27/38 (71%)</td>
<td>19/51 (37%)</td>
<td>32/51 (63%)</td>
</tr>
<tr>
<td>3 (n=27)</td>
<td>11/18 (61%)</td>
<td>7/18 (39%)</td>
<td>3/9 (33%)</td>
<td>6/9 (66%)</td>
</tr>
<tr>
<td>n/a (n=610)</td>
<td>59/204 (29%)</td>
<td>145/204 (71%)</td>
<td>78/406 (19%)</td>
<td>328/406 (81%)</td>
</tr>
</tbody>
</table>
## Distribution of Recurrence Score® Results

<table>
<thead>
<tr>
<th></th>
<th>Low (&lt; 18)</th>
<th>Intermediate (18-30)</th>
<th>High ≥ 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall (n=288)</td>
<td>145 (50%)</td>
<td>97 (34%)</td>
<td>46 (16%)</td>
</tr>
</tbody>
</table>

### Age Group (Years)

<table>
<thead>
<tr>
<th>Age Group (Years)</th>
<th>Overall (n=288)</th>
<th>Low (&lt; 18)</th>
<th>Intermediate (18-30)</th>
<th>High ≥ 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 45 (n=29)</td>
<td>13 (45%)</td>
<td>10 (34%)</td>
<td>6 (21%)</td>
<td></td>
</tr>
<tr>
<td>46-55 (n=108)</td>
<td>55 (51%)</td>
<td>31 (29%)</td>
<td>22 (20%)</td>
<td></td>
</tr>
<tr>
<td>56-65 (n=85)</td>
<td>40 (47%)</td>
<td>31 (36%)</td>
<td>14 (16%)</td>
<td></td>
</tr>
<tr>
<td>66-75 (n=54)</td>
<td>29 (54%)</td>
<td>21 (39%)</td>
<td>4 (7%)</td>
<td></td>
</tr>
<tr>
<td>≥ 76 (n=12)</td>
<td>8 (67%)</td>
<td>4 (33%)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Tumor Size (cm)

<table>
<thead>
<tr>
<th>Tumor Size (cm)</th>
<th>Overall (n=288)</th>
<th>Low (&lt; 18)</th>
<th>Intermediate (18-30)</th>
<th>High ≥ 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 2.0 (n=226)</td>
<td>120 (53%)</td>
<td>67 (30%)</td>
<td>39 (17%)</td>
<td></td>
</tr>
<tr>
<td>2.0-5.0 (n=59)</td>
<td>23 (39%)</td>
<td>29 (49%)</td>
<td>7 (12%)</td>
<td></td>
</tr>
<tr>
<td>&gt; 5.0 (n=3)</td>
<td>2 (67%)</td>
<td>1 (33%)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Tumor Grade

<table>
<thead>
<tr>
<th>Tumor Grade</th>
<th>Overall (n=288)</th>
<th>Low (&lt; 18)</th>
<th>Intermediate (18-30)</th>
<th>High ≥ 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 1 (n=28)</td>
<td>16 (57%)</td>
<td>11 (39%)</td>
<td>1 (4%)</td>
<td></td>
</tr>
<tr>
<td>Grade 2 (n=38)</td>
<td>21 (55%)</td>
<td>12 (32%)</td>
<td>5 (13%)</td>
<td></td>
</tr>
<tr>
<td>Grade 3 (n=18)</td>
<td>2 (11%)</td>
<td>5 (28%)</td>
<td>11 (61%)</td>
<td></td>
</tr>
</tbody>
</table>
Yes, algorithms can be constructed to provide reasonable predictions about "what treatment [and how construed], by whom, is most effective for this individual with that specific problem, and under which set of circumstances?"

But, in the end it is one human being (the physician) who relates to another human being (the patient), and one cannot underestimate the power of relationship in medicine. Patient expectancies and belief in both the physician and process are extremely important in clinical effectiveness. (Paddock, 2012 in response to Paul, 1967).

Point: Medicine is an Art…but…it must be informed by and grounded in science.
Evaluation of Oncotype DX® Testing and Subsequent Patterns of Care in Patients (pts) with Early-Stage Breast Cancer (ESBC)

Fitzgerald M,1 Hassell R,1 Haislip S,2 Gilmore J,2 Richardson S,3 Cooper J,1 Szabo S,2 Feinberg B1

1Cardinal Health Specialty Solutions, Dublin, OH
2Georgia Cancer Specialists, Atlanta, GA
3Genomic Health, Inc., Redwood City, CA
Objectives

The objectives of this study were:

To determine the uptake of the Oncotype DX® assay by physicians with varying levels of experience

To assess the patterns of care that followed testing with the Recurrence Score® result
Methods

A total 788 patients treated at Georgia Cancer Specialists diagnosed with ER-positive, HER2-negative, node-negative early stage breast cancer between 2009-2011 were identified through a retrospective search of electronic medical records.

Descriptive analyses included:

- Oncotype DX® assay and chemotherapy use in all eligible patients
- Treating physician ordering and prescribing patterns

Eligible patients by physician was defined as low (<10), intermediate (10-25), and a high (>25) number of patients.

Oncotype DX assay utilization was defined as low (<15% of eligible patients), low-moderate (15-40%), moderate-high (41-60%), and high (>60%) use.
Of the 788 patients eligible for the Oncotype DX assay, 288 (37%) underwent testing. Within the tested group, 30% (86/288) received chemotherapy. Within the non-tested group, 21% (106/500) received chemotherapy.
Within the patient cohort that received the assay, use of CT decreased as physician assay utilization increased.
## Distribution of Recurrence Score® Results and Chemotherapy Use

<table>
<thead>
<tr>
<th>Assay Utilizer; % time (n=patients tested)</th>
<th>Recurrence Score Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low (RS &lt;18)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
</tr>
<tr>
<td>Low; &lt;15% (n=6)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 (50%)</td>
</tr>
<tr>
<td>Low-Moderate; 15-40% (n=58)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>27 (47%)</td>
</tr>
<tr>
<td>Moderate-High; 41-60% (n=157)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>74 (47%)</td>
</tr>
<tr>
<td>High; &gt;60% (n=67)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>41 (61%)</td>
</tr>
<tr>
<td>Total (n=288)</td>
<td>145 (50%)</td>
</tr>
</tbody>
</table>
"Data is not information, information is not knowledge, knowledge is not understanding, understanding is not wisdom."

-- Clifford Stoll
Evaluation of variables that may impact the use of Oncotype® DX testing

Gilmore J, Hassell R, Szabo S, Feinberg, B
1 Cardinal Health Specialty Solutions, Dublin, OH
2 Genomic Health Inc., Redwood City, CA
Study Results

- 1908 Early Stage BC Patients
- 788 Oncotype® DX Eligible Patients
- 288 Oncotype® DX Treated Patients
- 37% Utilization Rate

Oncotype DX Eligible Patients

- 63% Not Treated
- 37% Treated
Onco
type® DX Utilization
Patterns sorted by Physician

Percent of Eligible Patients Tested

US Average

Total Eligible Patients

Percent of Eligible Patients Tested

Doc #1  Doc #2  Doc #3  Doc #4  Doc #5  Doc #6  Doc #7  Doc #8  Doc #9  Doc #10  Doc #11

22  54  20  40  41  104  56  69  24  31  39

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Fact and truth are more complicated than one would imagine. Physicians are supposed to be scientists but they are not automatons, they are human. The wealth of information, the oft assailing of fact and truth as opinion and theory, the cognitive dissonance that allow people to listen and observe (learn) selectively, represent significant barriers for physician adherence to scientifically vetted guidelines. A new paradigm is need that embraces consensus guidelines, incents adoption and reports compliance in unobtrusive ways.
Study Background

• To better understand physician behavior as it relates to **OncoType DX** testing, CHSS examined patterns of **OncoType DX** use in a large private practice oncology group with a robust electronic medical record (EMR), Georgia Cancer Specialists (GCS). We aimed to determine the variables that most impacted the use of **OncoType® DX** testing.
Study Methods

• Using the Georgia Cancer Services EMR from 2009 to 2011, we retrospectively identified patients diagnosed with ESBC who were eligible for Oncotype DX testing (stage I-II, node-negative, estrogen receptor-positive, HER2-negative). The use of Oncotype DX testing was analyzed by patient age, tumor size, tumor grade, and physician prescribing patterns.
Oncotype® DX Utilization Patterns sorted by Patient Age

Patient Age

- < 45 yrs
- 46-55 yrs
- 56-65 yrs
- 66-75 yrs
- > 75 yrs

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Oncotype® DX Utilization Patterns sorted by Tumor Size

Tumor Size

37% 37% 37% 37% 37% 36% 36% 36% 36% 35%

<2 cm

2-5 cm
Oncotype® DX Utilization Patterns sorted by Tumor Grade

Tumor Grade

Grade 1

Grade 2

Grade 3
Study Conclusions

- Based on this analysis, eligible patients with ESBC between 46-55 years of age, with small and intermediate sized tumors (<2-5 cm), and with grade 3 tumors were most likely to undergo Oncotype DX testing. Although some trends in use were observed with specific tumor characteristics, physician behavior (choice) was the most significant variable in Oncotype DX use.