Supplementary Online Content


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This supplementary material has been provided by the authors to give readers additional information about their work.
eAppendix 1. Cancer Statistics by Year:
2007: https://www-ncbi-nlm-nih-gov/pubmed/17237035
2008: https://www-ncbi-nlm-nih-gov/pubmed/18287387
2009: https://www-ncbi-nlm-nih-gov/pubmed/19474385
2010: https://www-ncbi-nlm-nih-gov/pubmed/20610543

eAppendix 2. Data Sources by Malignancy:
Below are the detailed breakdowns and evidence used for each malignancy, the mutations involved in genometrically targeted and informed therapy, as well as the drugs approved for the specific targets.

Non-Small Cell Lung Cancer (NSCLC):
- Yearly Statistics from Cancer Statistics section, 2018 Lung Cancer deaths = 154,050
- NSCLC frequency = 85% Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3864624/

Mutations:
EGFR:
Frequency: 15%(10-20%), Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4346098/
Best Overall Response Rate:
2006-2012: 10.6% Gefitinib, FDA drug label
2013-2018: 65%, Osimertinib and Erlotinib, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erlotinib</td>
<td>4/16/10, 5/14/13, 10/18/16 (Originally approved in 2004)</td>
</tr>
<tr>
<td>Afatinib</td>
<td>7/12/13, 1/12/18</td>
</tr>
<tr>
<td>Gefitinib</td>
<td>7/13/15 (Originally approved in 2003)</td>
</tr>
<tr>
<td>Osimertinib</td>
<td>11/13/15, 3/31/17</td>
</tr>
</tbody>
</table>

ALK:
Frequency: 4.5%(2-7%), Source: https://www.ncbi.nlm.nih.gov/pubmed/20979469
Best Overall Response Rate:
2011-2012: 56%(50-61%) Crizotinib, FDA drug label
2013-2016: 65% Crizotinib, FDA drug label

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2017-2018: 79%, Alectinib, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crizotinib</td>
<td>8/26/11, 11/20/13</td>
</tr>
<tr>
<td>Ceritinib</td>
<td>4/29/14, 5/26/17</td>
</tr>
<tr>
<td>Alectinib</td>
<td>12/11/15, 11/6/17</td>
</tr>
<tr>
<td>Brigatinib</td>
<td>4/28/17</td>
</tr>
</tbody>
</table>

**ROS1:**
Frequency: 2%(1.7%), Source: https://www.ncbi.nlm.nih.gov/pubmed/22215748
Best Overall Response Rate 2016-2018: 66%, Crizotinib, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crizotinib</td>
<td>3/11/16</td>
</tr>
</tbody>
</table>

**BRAF:**
Frequency: 2%(1-3%), Source: https://www.ncbi.nlm.nih.gov/pubmed/29057232
Best Overall Response Rate 2017-2018: 63%, Dabrafenib and Trametinib, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dabrafenib and Trametinib</td>
<td>6/22/17</td>
</tr>
</tbody>
</table>

**Breast Cancer:**
-Yearly Statistics from Cancer Statistics section, 2018 Breast Cancer deaths = 41,400

**Mutations:**

**HER2:**
Frequency: 17%(15-20%), Source: https://www.ncbi.nlm.nih.gov/pubmed/25332249
Best Overall Response Rate:
2006-2012: 16% Trastuzumab, FDA drug label
2013-2018: 43.6%, Ado-Trastuzumab emtansine, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trastuzumab</td>
<td>11/16/06 (originally in 1998)</td>
</tr>
<tr>
<td>Lapatinib</td>
<td>3/13/07, 1/29/10</td>
</tr>
<tr>
<td>Pertuzumab</td>
<td>6/8/12, 9/30/13</td>
</tr>
<tr>
<td>Ado-Trastuzumab Emtrassine</td>
<td>2/22/13</td>
</tr>
</tbody>
</table>

**BRCA:**
Frequency: 2%, Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2408797/pdf/83-6691407a.pdf
Best Overall Response Rate 2018: 59.9%, Olaparib, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olaparib</td>
<td>1/12/18</td>
</tr>
</tbody>
</table>
Melanoma:
- Yearly Statistics from Cancer Statistics section, 2018 Melanoma deaths = 9320

Mutations:
BRAF V600E and V600K:
Frequency: 50%, Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3600117/
Best Overall Response Rate:
2011-2012: 48.4%, Vemurafenib, FDA drug label
2013-2014: 57% Dabrafenib+Trametinib, FDA drug label
2015-2018: 70%, Cobimetinib, FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vemurafenib</td>
<td>8/17/11</td>
</tr>
<tr>
<td>Dabrafenib</td>
<td>5/29/13</td>
</tr>
<tr>
<td>Trametinib</td>
<td>5/29/13</td>
</tr>
<tr>
<td>Trametinib w/</td>
<td>1/10/14, 11/20/15</td>
</tr>
<tr>
<td>Dabrafenib</td>
<td></td>
</tr>
<tr>
<td>Cobimetinib</td>
<td>11/10/15</td>
</tr>
</tbody>
</table>

Colorectal Cancer:
- Yearly Statistics from Cancer Statistics section, 2018 Colorectal Cancer deaths = 50,630

Mutations:
KRAS Wild Type:
Best Overall Response Rate:
2006-2011: 10.8% Cetuximab, FDA drug Label
2012-2018: 18%, Cetuximab, FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panitumumab</td>
<td>9/27/06</td>
</tr>
<tr>
<td>Cetuximab</td>
<td>10/2/07, 7/6/12(originally approved in 2004)</td>
</tr>
</tbody>
</table>

Ovarian Cancer:
- Yearly Statistics from Cancer Statistics section, 2018 Ovarian Cancer deaths = 14,070

Mutations:
BRCA:
Frequency: 15%, Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5524247/
Best Overall Response Rate:
2014-2015: 34%, Olaparib, FDA drug label
2016-2018: 54%, Rucaparib, FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olaparib</td>
<td>12/19/14</td>
</tr>
<tr>
<td>Rucaparib</td>
<td>12/19/16</td>
</tr>
</tbody>
</table>

**Gastroesophageal Cancer(including GIST):**
- Yearly Statistics from Cancer Statistics section, 2018 Gastric+Esophageal Cancer deaths = 26,650

**Mutations:**
**HER2:**
Frequency: 17.9%, Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4870069/
Best Overall Response Rate 2010-2018: 12%, Trastuzumab, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trastuzumab</td>
<td>10/20/10</td>
</tr>
</tbody>
</table>

**Frequency of GIST:**
GIST involves multiple organ systems but with over 60% gastric (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4880518/pdf/nihms771882.pdf) and being overall less than 1% of all gastrointestinal malignancies(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4487456/) it is a small percentage. With the low overall prevalence, the vast majority of GIST being non-metastatic (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4039646/), and 85% mutation rate for KIT (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4487456/) we felt that using 1% of gastric for an overall number was a reasonable and generous estimate of the small percentage KIT mutation positive metastatic GIST that contributes to total genomic cancer therapy.

**Frequency:** 1%(per above)
Best Overall Response Rate 2006-2018: 67.3%, Imatinib, FDA drug label from 2006

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imatinib</td>
<td>12/19/08, 1/31/12(originally approved in 2001)</td>
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</tbody>
</table>

**Chronic Myeloid Leukemia(CML):**
- Yearly Statistics from Cancer Statistics section, 2018 CML deaths = 1090

**Mutations:**
**Ph+:**
Frequency: 100%,
Best Overall Response Rate 2006-2018: 95.3%, Imatinib, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
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<tbody>
<tr>
<td>Imatinib</td>
<td>9/27/06, 1/25/13(originally approved in 2001)</td>
</tr>
<tr>
<td>Dasatinib</td>
<td>6/28/06, 10/28/10, 11/9/17</td>
</tr>
<tr>
<td>Nilotinib</td>
<td>10/29/07, 6/17/10</td>
</tr>
</tbody>
</table>
Chronic Lymphocytic Leukemia (CLL):
- Yearly Statistics from Cancer Statistics section, 2018 CML deaths = 4510

Mutations:
17p Deletion:
Frequency: 7%, Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4116834/
Best Overall Response Rate:
2014-2015: 47.6%, Ibrutinib, FDA drug label
2016-2018: 80.2%, Venetoclax, FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
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<tbody>
<tr>
<td>Ibrutinib</td>
<td>7/28/14</td>
</tr>
<tr>
<td>Venetoclax</td>
<td>4/11/16</td>
</tr>
</tbody>
</table>

Acute Myeloid Leukemia (AML):
- Yearly Statistics from Cancer Statistics section, 2018 AML deaths = 10670

Mutations:
IDH2:
Frequency: 11%, Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3145345/
Best Overall Response Rate 2017-2018: 40.3%, Enasidenib
Source: http://www.bloodjournal.org/content/early/2017/06/05/blood201704779405?ssochecked=true

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enasidenib</td>
<td>8/1/17</td>
</tr>
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</table>

Mutations:
FLT3:
Frequency: 10.8%, Source: http://www.bloodjournal.org/content/118/20/5366
Best Overall Response Rate 2017-2018: 5.4%, Midostaurin,

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midostaurin</td>
<td>4/28/17</td>
</tr>
</tbody>
</table>

Acute Lymphocytic Leukemia (ALL):
- Yearly Statistics from Cancer Statistics section, 2018 AML deaths = 1470

Mutations:
Ph+:
Frequency: 25%(20-30%), Source: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4091825/
Best Overall Response Rate 2006-2018: 19%, Imatinib, from FDA Drug Label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imatinib</td>
<td>10/19/06</td>
</tr>
</tbody>
</table>

Microsatellite Instability High (MSI):
- Yearly Statistics from Cancer Statistics section, 2018 MSI Deaths
  Breast: 41,400
  Colorectal: 50630
  Endometrial: 11,350
  Small Cell Lung: 23,107
  Thyroid Cancer: 2,060
  Adrenal Cortical: 1,020
  Esophageal: 15,850
  Cervical: 4,170
  Glioblastoma: 8,751
  Renal Cell Carcinoma (RCC): 14,970
  Pancreatic: 44,330
  Small Intestine: 1,450
  Prostate Adenocarcinoma: 29,430
  Cholangiocarcinoma: 3,790
  Sarcoma: 4,990

Mutation Frequency:

<table>
<thead>
<tr>
<th>Malignancy</th>
<th>Frequency</th>
<th>Source</th>
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<tbody>
<tr>
<td>Breast</td>
<td>1.70%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/</a></td>
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<tr>
<td>Colorectal</td>
<td>4.00%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4594190/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4594190/</a></td>
</tr>
<tr>
<td>Endometrial</td>
<td>28.3%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/</a></td>
</tr>
<tr>
<td>Small Cell Lung</td>
<td>2.00%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pubmed/28596308">https://www.ncbi.nlm.nih.gov/pubmed/28596308</a></td>
</tr>
<tr>
<td>Thyroid</td>
<td>29.7%</td>
<td><a href="http://clincancerres.aacrjournals.org/content/7/11/3444">http://clincancerres.aacrjournals.org/content/7/11/3444</a></td>
</tr>
<tr>
<td>Adrenal Cortical</td>
<td>0.054%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/</a></td>
</tr>
<tr>
<td>Esophageal</td>
<td>0.033%</td>
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</tr>
<tr>
<td>Cervical</td>
<td>0.023%</td>
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</tr>
<tr>
<td>Glioblastoma</td>
<td>0.013%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/</a></td>
</tr>
<tr>
<td>RCC</td>
<td>0.011%</td>
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</tr>
<tr>
<td>Pancreatic</td>
<td>0.011%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/</a></td>
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<td>Small Intestine</td>
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</tr>
<tr>
<td>Prostate</td>
<td>0.011%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5467167/</a></td>
</tr>
<tr>
<td>Cholangiocarcinoma</td>
<td>0.05%</td>
<td><a href="http://cco.amegroups.com/article/view/12260/12685">http://cco.amegroups.com/article/view/12260/12685</a></td>
</tr>
<tr>
<td>Sarcoma</td>
<td>0.03%</td>
<td><a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5576142/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5576142/</a></td>
</tr>
</tbody>
</table>

Best Overall Response Rate 2017-2018: 39.6%, Pembrolizumab, from FDA drug label

<table>
<thead>
<tr>
<th>Drugs</th>
<th>Approval Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pembrolizumab</td>
<td></td>
</tr>
</tbody>
</table>
eAppendix 3. Pie Charts Estimating Patients Eligible for Genomically Targeted Therapy
2010

Not Eligible 94.31%

Trastuzumab 0.79%

Gefitinib, Erlotinib 3.52%

Trastuzumab, Lapatinib 1.24%

Imatinib 0.06%

Imatinib, Dasatinib, Nilotinib 0.08%
Not Eligible
92.73%

Crizotinib
1.05%
Vemurafenib
0.61%
Trastuzumab
0.78%
Erlotinib, Gefitinib
3.50%
Trastuzumab, Lapatinib
1.22%

Imatinib
0.06%
Imatinib, Dasatinib, Nilotinib
0.05%

Not Eligible
92.59%

Crizotinib
1.06%
Vemurafenib
0.63%
Trastuzumab
0.79%
Erlotinib, Gefitinib
3.54%
Trastuzumab, Lapatinib, Pertuzumab
1.21%

Imatinib
0.06%
Imatinib, Dasatinib, Nilotinib, Ponatinib
0.11%
2013

- Trametinib 0.10%
- Crizotinib 1.05%
- Vemurafenib, Dabrafenib, Trametinib 0.65%
- Trastuzumab 0.81%
- Erlotinib, Gefitinib, Afatinib 3.50%
- Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 1.21%
- Imatinib 0.06%
- Imatinib, Dasatinib, Nilotinib, Ponatinib 0.11%
- Not Eligible 92.52%

2014

- Crizotinib, Ceritinib 1.04%
- Vemurafenib, Dabrafenib, Trametinib 0.75%
- Trastuzumab 0.81%
- Erlotinib, Gefitinib, Afatinib 3.47%
- Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 1.21%
- Imatinib 0.06%
- Imatinib, Dasatinib, Nilotinib, Ponatinib 0.14%
- Not Eligible 92.52%
Not Eligible 92.53%

Crizotinib, Ceritinib, Alectinib 1.03%

Vemurafenib, Dabrafenib, Trametinib, Cobimetinib 0.77%

Trastuzumab 0.80%

Erlotinib, Afatinib, Gefitinib, Osimertinib 3.42%

Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 1.21%

Imatinib, Dasatinib, Nilotinib, Ponatinib 0.19%
eAppendix 4. Pie Charts Estimating Patients Who Could Benefit from Genomically Targeted Therapy
Do Not Benefit
99.30%

Trastuzumab
0.20%
Imatinib
0.01%
Imatinib, Dasatinib
0.10%
Gefitinib, Erlotinib
0.39%

Do Not Benefit
99.31%

Trastuzumab, Lapatinib
0.20%
Imatinib
0.01%
Imatinib, Dasatinib
0.08%
Erlotinib
0.39%
2008

Do Not Benefit 99.32%

Trastuzumab, Lapatinib 0.20%
Imatinib 0.01%
Imatinib, Dasatinib 0.08%
Erlotinib 0.39%
2009

Do Not Benefit 99.32%

Trastuzumab, Lapatinib 0.20%

Imatinib 0.01%

Imatinib, Dasatinib 0.08%

Erlotinib 0.39%

2010

Do Not Benefit 99.25%

Trastuzumab 0.09%

Erlotinib 0.37%

Imatinib 0.01%

Trastuzumab, Lapatinib 0.20%

Imatinib, Dasatinib, Nilotinib 0.07%
Crizotinib 0.59%
Vemurafenib 0.29%
Trastuzumab 0.09%
Erlotinib 0.37%
Trastuzumab, Lapatinib 0.20%
Imatinib 0.01%
Imatinib, Dasatinib, Nilotinib 0.04%
Do Not Benefit 98.40%
2012

Do Not Benefit 98.32%

- Crizotinib 0.60%
- Vemurafenib 0.30%
- Trastuzumab 0.10%
- Gefitinib
- [CATEGORY NAME]

2013

Do Not Benefit 95.91%

- Trametinib 0.02%
- Crizotinib 0.68%
- Vemurafenib, Dabrafenib 0.37%
- Trastuzumab 0.10%
- Erlotinib, Gefitinib, Afatinib 2.28%
- Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab
- Imatinib 0.53%
- Nilotinib, Ponatinib 0.10%
Do Not Benefit 95.87%

Crizotinib, Ceritinib 0.68%

Vemurafenib, Dabrafenib, Trametinib 0.43%

Trastuzumab 0.10%

Erlotinib, Afatinib 2.25%

Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 0.53%

Imatinib 0.01%

Imatinib, Dasatinib, Nilotinib, Ponatinib 0.13%
Do Not Benefit
95.59%

Crizotinib
0.30%

Crizotinib, Ceritinib, Alectinib
0.57%

Vemurafenib, Dabrafenib, Trametinib, Cobimetinib
0.54%

Trastuzumab
0.10%

Erlotinib, Afatinib, Gefitinib, Osimertinib
2.20%

Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab
0.52%

Imatinib, Dasatinib, Nilotinib, Ponatinib
0.17%

Imatinib
0.01%
Do Not Benefit 94.97%
Enasidenib 0.08%
Dabrafenib and Trametinib 0.27%
Midostaurin 0.13%
Crizotinib 0.28%
Crizotinib, Ceritinib, Alectinib, Brigatinib 0.76%
Vemurafenib, Dabrafenib, Trametinib, Cobimetinib 0.49%
Trastuzumab 0.09%
Erlotinib, Afatinib, Gefitinib, Osimertinib 2.09%
Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 0.52%
Imatinib, Dasatinib, Nilotinib, Ponatinib, Bosutinib 0.17%

Do Not Benefit 95.10%

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eAppendix 5. Pie Charts Estimating Patients Eligible for Genomically Informed Therapy

2006

- Not Eligible: 89.50%
- Imatinib: 0.04%
- Trastuzumab: 1.25%
- Imatinib: 0.07%
- Imatinib, Dasatinib: 0.11%
- Panitumumab, Cetuximab: 5.37%
- Gefitinib, Erlotinib: 3.67%
Not Eligible: 89.75%

- Imatinib: 0.04%
- Trastuzumab, Lapatinib: 1.28%
- Imatinib: 0.06%
- Imatinib, Dasatinib: 0.09%
- Panitumumab, Cetuximab: 5.13%
- Gefitinib, Erlotinib: 3.65%
2008

Not Eligible 90.05%

Imatinib 0.04%
Trastuzumab, Lapatinib 1.27%
Imatinib 0.06%
Imatinib, Dasatinib 0.08%
Panitumumab, Cetuximab 4.86%
Gefitinib, Erlotinib 3.65%

2009

Not Eligible 90.04%

Imatinib 0.04%
Trastuzumab, Lapatinib 1.26%
Imatinib 0.06%
Imatinib, Dasatinib 0.08%
Panitumumab, Cetuximab 4.88%
Gefitinib, Erlotinib 3.63%
Olaparib
0.37%

Ibrutinib
0.05%

Crizotinib, Ceritinib
1.04%

Vemurafenib, Dabrafenib, Trametinib
0.75%

Trastuzumab
0.81%

Erlotinib, Geftinib, Afatinib
3.47%

Imatinib
0.04%

Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab
1.21%

Imatinib, Dasatinib, Nilotinib, Ponatinib
0.14%

Panitumumab, Cetuximab
4.72%

Not Eligible
87.34%

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Not Eligible 87.44%

Olaparib 0.36%
Ibrutinib 0.06%
Crizotinib, Ceritinib, Alectinib 1.03%
Vemurafenib, Dabrafenib, Trametinib, Cobimetinib 0.77%
Trastuzumab 0.80%
Erlotinib, Afatinib, Gefitinib, Osimertinib 3.42%
Imatinib 0.04%
Imatinib 0.06%
Imatinib, Dasatinib, Nilotinib, Ponatinib 0.19%
Panitumumab, Cetuximab 4.64%
eAppendix 6. Pie Charts Estimating Patients Who Could Benefit from Genomically Informed Therapy

2006

- Do Not Benefit: 98.69%
- Imatinib: 0.03%
- Trastuzumab: 0.20%
- Imatinib: 0.01%
- Imatinib, Dasatinib: 0.10%
- Cetuximab: 0.58%
- Gefitinib, Erlotinib: 0.39%
Do Not Benefit 98.73%

- Imatinib 0.03%
- Trastuzumab, Lapatinib 0.20%
- Imatinib 0.01%
- Imatinib, Dasatinib 0.08%
- Panitumumab, Cetuximab 0.55%
- Gefitinib, Erlotinib 0.39%
Crizotinib 0.60%

Vemurafenib 0.30%

Trastuzumab 0.10%

Erlotinib, Gefitinib 0.38%

Imatinib 0.02%

Trastuzumab, Lapatinib, Pertuzumab 0.19%

Imatinib 0.01%

Imatinib, Dasatinib, Nilotinib, Ponatinib 0.10%

Panitumumab, Cetuximab 0.89%

Do Not Benefit 97.41%
2015

- Olaparib 0.12%
- Ibrutinib 0.03%
- Ibrutinib 0.03%
- Crizotinib, Ceritinib, Alectinib 0.67%
- Vemurafenib, Dabrafenib, Trametinib, Cobimetinib 0.54%
- Trastuzumab 0.10%
- Erlotinib, Afatinib, Gefitinib, Osimertinib 2.22%
- Imatinib 0.02%
- Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 0.53%
- Imatinib 0.01%
- Imatinib, Dasatinib, Nilotinib, Ponatinib 0.18%

- Panitumumab, Cetuximab 0.83%

- Do Not Benefit 94.75%
Do Not Benefit 93.38%

Panitumumab, Cetuximab 0.90%

Olaparib 0.07%
Nivolumab, Pembrolizumab 0.13%
Dabrafenib and Trametinib 0.27%
Pembrolizumab 0.49%
Midostaurin 0.01%
Olaparib, rucaparib 0.19%
Ibrutinib, Venetoclax 0.04%
Crizotinib, Ceritinib, Alectinib, Brigatinib 0.76%
Vemurafenib, Dabrafenib, Trametinib, Cobimetinib 0.49%
Trastuzumab 0.09%
Erlotinib, Afatinib, Gefitinib, Osimertinib 2.09%
Imatinib 0.02%
Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab 0.52%

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eAppendix 7. Pie Charts Estimating Patients Eligible for and who could Benefit from Adjuvant and Consolidative Therapy in 2018

2018 Adjuvant Therapy Eligible

- Not Eligible 96.97%
- GIST 0.18%
- Breast 2.29%
- CML 0.42%
- AML 0.07%
- ALL 0.06%
eFigure 1. Percent of US Metastatic Cancer Patients Who May Be Eligible for and Benefit from Genomically Informed Treatment

2018 Adjuvant Therapy Benefit

- Do Not Benefit: 99.31%
- GIST: 0.03%
- Breast: 0.19%
- CML: 0.40%
- AML: 0.05%
- ALL: 0.01%

Genomically Informed Eligible in 2018

- Total Eligible: 15.44%
- Not Eligible: [84.56%]
- Panitumumab, Cetuximab: 4.98%
- Imatinib, Dasatinib,Nilotinib, Ponatinib, Bosutinib: 0.18%
- Imatinib: 0.04%
- Imatinib: 0.01%
- Erlotinib, Afatinib, Gefitinib, Osimertinib: 3.22%
- Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab: 1.19%
- Midostaurin: 0.19%
- Crizotinib: 0.43%
- Olaparib, Rucaparib: 0.35%
- Ibrutinib, Venetoclax: 0.05%
- Crizotinib, Ceritinib, Alectinib, Brigatinib: 0.97%
- Vemurafenib, Dabrafenib, Trametinib, Cobimetinib: 0.70%
- Trastuzumab, Lapatinib, Pertuzumab, Ado-Trastuzumab: 1.19%

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eFigure 2. Growth of genome targeted and informed therapy over time with fitted linear regression.