Epi slides

November 16, 2021
Solid Tumor Oncology
**NSCLC**

### Metastatic (inc. EGFR/ALK)

<table>
<thead>
<tr>
<th>Stage</th>
<th>2021 Patient Estimates (in 000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L Treated</td>
<td>106.0</td>
</tr>
<tr>
<td>2L+ Treated</td>
<td>54.5</td>
</tr>
</tbody>
</table>

#### Treatment rates:
- **EGFR/ALK**: 15-20%

#### Resection rates:
- Stage I-II resected: ~60%
- Stage IIIA resected: ~40%
- Stage IIIB resected: ~15%
- Stage IIIC resected: ~2%

### Early Stage* (Treatable population)

<table>
<thead>
<tr>
<th>Stage</th>
<th>2021 Patient Estimates (in 000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage IA</td>
<td>33.0</td>
</tr>
<tr>
<td>Stage IB</td>
<td>8.0</td>
</tr>
<tr>
<td>Stage IIA</td>
<td>5.0</td>
</tr>
<tr>
<td>Stage IIB</td>
<td>8.0</td>
</tr>
<tr>
<td>Stage IIIA</td>
<td>22.5</td>
</tr>
<tr>
<td>Stage IIIB</td>
<td>13.5</td>
</tr>
<tr>
<td>Stage IIIC</td>
<td>4.5</td>
</tr>
</tbody>
</table>

#### Treatment rates:
- Stage IB-II: 35% - 45%
- Stage III: 55% - 60%

*Figures only contain incident patients and do not include patients who recur
Source: Decision Resources Group; BMS Internal Analysis; AJCC 8th Edition Staging
SCCHN

**Metastatic**

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L Treated</td>
<td>19.0</td>
<td>21.0</td>
</tr>
<tr>
<td>2L Treated</td>
<td>11.0</td>
<td>12.0</td>
</tr>
</tbody>
</table>

**Early Stage**

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAD Treatable</td>
<td>25.0</td>
<td>32.0</td>
</tr>
</tbody>
</table>

*Source: Decision Resources Group*

• LAD txt rate: 60% - 85%
Melanoma

Metastatic

Early Stage Disease

2021 Patient Estimates (in 000’s)

1L Treated

US | EU5
---|---
9.0 | 10.0

Adjuvant Treatable

US | EU5
---|---
16.5 | 17.5

Early stage txt rate: 60 - 80%

Source: Decision Resources Group, BMS Internal Analysis
• Break out by IMDC risk category (metastatic):
  • Intermediate/Poor Risk: 75%
  • Favorable: 25%

• Break out by IMDC risk category (early stage):
  • Intermediate Risk: 25%
  • High Risk: 20%

Source: Decision Resources Group; BMS Internal Analysis
Bladder

Source: Decision Resources Group; BMS Internal Analysis

Cystectomy rates in MIBC are ~50%

Early stage treatment rates
MIBC txt rate: 70% - 85%
Prostate

Metastatic

2021 Patient Estimates (in 000’s)

- US: 28.5
- EU5: 26.5

Source: Decision Resources Group
HCC

Metastatic

Early Stage Disease

High risk ablated or resected: 10 - 20% of Early Stage
Early stage txt rate: 30-60%

Source: Decision Resources Group; BMS Internal Analysis
Gastric*

Cardia incident: 12% - 32% (avg. 25%)

Data represents adenocarcinoma only and includes GEJC
Source: Decision Resources Group

Early Stage Disease

Stage II and III GEJC: ~20-24%

Treatment rates
Localized & resectable locally advanced txt rate: 60% - 70%
Unresectable locally advanced txt rate: 70% - 80%
Esophageal*

<table>
<thead>
<tr>
<th>Metastatic</th>
<th>Early Stage Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>US</strong></td>
<td><strong>EU5</strong></td>
</tr>
<tr>
<td>11.0</td>
<td>11.5</td>
</tr>
<tr>
<td>14.5</td>
<td>15.5</td>
</tr>
</tbody>
</table>

2021 Patient Estimates (in 000's)

Eso stage II, stage III and stage IVA Resectable patients: ~70%

**Treatment Rates:**
- Localized & resectable locally advanced txt rate: 60% - 75%
- Unresectable locally advanced txt rate: 65% - 75%

*Data represents adenocarcinoma and squamous only
Source: Decision Resources Group; BMS Internal Analysis
GBM

Source: Decision Resources Group
Ovarian Cancer

### Metastatic

<table>
<thead>
<tr>
<th>Country</th>
<th>2021 Patient Estimates (in 000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>16.5</td>
</tr>
<tr>
<td>EU5</td>
<td>19.0</td>
</tr>
</tbody>
</table>

### Early Stage Disease

<table>
<thead>
<tr>
<th>Country</th>
<th>2021 Patient Estimates (in 000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>4.0</td>
</tr>
<tr>
<td>EU5</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Source: Decision Resources Group
Autoimmune Disease
We define total prevalent cases of RA according to the 1987 ACR criteria, which requires fulfillment of at least four of seven criteria:

- 1. Morning stiffness.
- 2. Arthritis of three or more joint areas.
- 3. Arthritis of hand joints.
- 4. Symmetric arthritis.
- 5. Rheumatoid nodules.
- 6. Serum rheumatoid factor.
- 7. Radiographic changes

Alternatively, a patient's symptoms are considered to be satisfying the ACR definition if they include at least criteria 2 and 3, 2 and 6, 2 and 7, 4 and 6, or 3 and 6.

We limit our analysis to persons aged 15 or older because RA that occurs prior to this age is designated as JIA, JCA, or JRA and is diagnosed according to different criteria than are used in the ACR 1987 classification system.

Source: Decision Resources Group, BMS Internal Analysis
Psoriasis

We define diagnosed prevalent cases of psoriasis based on physical examination performed by physicians. Although psoriatic lesions often exhibit a typical appearance, there are no standardized criteria in the clinical setting. Thus, we estimate only those cases of psoriasis that are physician-diagnosed, even those that may not be exhibiting symptoms at the time data were collected and are therefore in remission.

Excludes asymptomatic patients. Includes comorbid psoriatic arthritic patients. Severity is based on physician's subjective assessment.

Source: Decision Resources Group, DataMonitor, Global Data, Adelphi patient chart audits, SHS Claims data, BMS Internal Analysis
Psoriatic Arthritis

- We used published studies and opinions of thought leaders throughout the major markets to derive the proportion of patients diagnosed and treated.
- Patients included have confirmed psoriasis diagnosis. Unlike psoriasis, labels of branded therapies for psoriatic arthritis are not restricted to patients based on disease severity.

Source: Decision Resources Group; BMS Internal Analysis
We base our estimates of diagnosed prevalence of UC on studies that confirmed diagnosis of the condition at initial examination or within two to six months of initial examination based on clinical history and either (1) endoscopic examination of the colonic mucosa indicating continuous diffuse granular or friable mucosa or (2) radiological barium studies indicating continuous mucosal involvement. (Prevalence rates are based on Shivashankar et al., 2017 and Kappleman et al., 2013)

• Other companies appear to be using Kappleman et al., 2013 only, resulting in lower prevalence rates
• Treatment rate includes all conventional, targeted oral, and biologic treatments

Source: Decision Resources Group; BMS Internal Analysis
**Crohn’s Disease Patient Dynamics**

**Diagnosed Prevalent Cases**
- **US**: 0.81
- **EU5**: 0.60

**Diagnosed Mod-Severe Prevalent Cases**
- **US**: 0.57
- **EU5**: 0.33

**Drug-Treated Mod-Severe Prevalent Cases**
- **US**: 0.30
- **EU5**: 0.51

**Note:** 55-70% of Patients are Moderate-to-Severe

~90% of Mod-Sev pts are treated, of which 40-60% gets novel therapies (biologics)

- We define a diagnosed prevalent case of CD based on a physician diagnosis of clinical symptoms (abdominal pain, weight loss, malaise, diarrhea, and/or rectal bleeding) and histological, endoscopic, radiological, and/or surgical findings. (Prevalence rates are based on Shivashankar et al., 2017 and Kappleman et al., 2013)
- Other companies appear to be using Kappleman et al., 2013 only, resulting in lower prevalence rates
- Treatment rate includes all conventional, targeted oral, and biologic treatments

Source: Decision Resources Group; BMS Internal Analysis
We define MS based on the McDonald criteria (McDonald WI, 2001; Milo R, 2014) and MS diagnostic codes recorded in nationally representative health insurance, research, and long-term disability databases. In our definition, we also include cases of CIS. When using data that include diagnoses made prior to 2001, we additionally use the Poser criteria to define MS, and include clinically definite, probable, and possible MS cases in our definition. The possible cases include cases of CIS and/or suspected MS cases. We restrict our analyses to individuals aged ten or older, because MS is rarely diagnosed in children. We define subtypes of prevalent MS cases based on physician diagnosis: RR-MS, CP-MS, which is further categorized into PP-MS and SP-MS, and CIS, i.e. cases that have not yet progressed to MS at the time of diagnosis. The drug-treated estimates include patients in 2020 who were treated with DMTs—excluding corticosteroids for acute relapses. Drug-treatment rates in our model continue to be lowest in the United Kingdom owing to long-standing barriers in access to specialty MS care in that country.

Source: Decision Resources Group; BMS Internal Analysis
Systemic Lupus Erythematosus (Includes Lupus Nephritis)

- Definition of SLE is important. These numbers are based on criteria used by clinicians to diagnose SLE: the presence of four or more ACR criteria or three ACR criteria along with an SLE diagnosis by a rheumatologist, a biopsy-confirmed diagnosis of LN, or a diagnosis of SLE-related ESRD. In addition, we categorize SLE cases identified from national administrative databases under clinically defined SLE. These prevalence numbers represent patients with any organ affected. LN patients represent ~30% of all SLE cases.

Source: Decision Resources Group; BMS Internal Analysis
Eosinophilic Esophagitis (EoE)

EoE Diagnosed Prevalence

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 Patient Estimates (in 000's)</td>
<td>354</td>
<td>313</td>
</tr>
</tbody>
</table>

Source: Decision Resources Group; BMS Internal Analysis
Atopic Dermatitis

- Diagnosed Prevalent Cases includes all ages population with mild, moderate & severe AD. We categorized AD by severity in people aged 15 or older in all countries under study using the severity distribution from a population-based study conducted in the United States (Silverberg JI, 2018). To categorize pediatric patients by severity, we applied the ratio between the severity distributions in 12-month total prevalent cases (Silverberg JI, 2018) and diagnosed prevalent cases (Barbarot S, 2018) in adults to the severity distribution of diagnosed prevalence cases in children younger than nine in each of the countries under study (Barbarot S, 2018; Ben-Gashir M, 2004; Silverberg JI, 2018; Willemsen M, 2009).

- Treated population includes the percentages of all ages diagnosed population with mild, moderate & severe AD in 2018 who received drug treatment with key drug classes used to manage the disease (e.g., TCSs, TCIs, conventional oral immunosuppressants, oral corticosteroids) in each of the seven markets under study.

Source: Decision Resources Group; BMS Internal Analysis
Hematology
Lymphoma

### DLBCL

<table>
<thead>
<tr>
<th></th>
<th>1L Treated</th>
<th>2L Treated</th>
<th>3L+ Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021 US</td>
<td>31.2</td>
<td>10.0</td>
<td>7.0</td>
</tr>
<tr>
<td>2021 EU5</td>
<td>28.0</td>
<td>12.1</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Source: Decision Resources Group; BMS Internal Analysis

### FL

<table>
<thead>
<tr>
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<th>1L Treated</th>
<th>2L Treated</th>
<th>3L+ Treated</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021 US</td>
<td>11.2</td>
<td>3.9</td>
<td>5.9</td>
</tr>
<tr>
<td>2021 EU5</td>
<td>10.9</td>
<td>3.9</td>
<td>5.9</td>
</tr>
</tbody>
</table>

Source: Decision Resources Group; BMS Internal Analysis
Multiple Myeloma

Treated Population

Source: Decision Resources Group; BMS Internal Analysis
Leukemia

### CLL+SLL

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<thead>
<tr>
<th></th>
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<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1L Treated</td>
<td>19.1</td>
<td></td>
</tr>
<tr>
<td>2L Treated</td>
<td>9.9</td>
<td>8.6</td>
</tr>
<tr>
<td>3L+ Treated</td>
<td>6.2</td>
<td></td>
</tr>
</tbody>
</table>

### AML (excluding APL*)

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosed Incident</td>
<td>16.6</td>
<td>13.7</td>
</tr>
</tbody>
</table>

Source: Decision Resources Group; BMS Internal Analysis

*APL = acute promyelocytic leukemia
Lower-Risk MDS Treated Incident Population

- ~40% of lower-risk patients are RS Positive

Source: Decision Resources Group; BMS Internal Analysis

Note: ~40% RS Positive already applied to ESA R/R (2L)
Myelofibrosis

Incident Cases

2021 Patient Estimates (in 000's)

US  EU5

Diagnosed

Source: Decision Resources Group; BMS Internal Analysis
Beta Thalassemia

![Graph showing Prevalent Cases]

- NTD: 35%
- TD: 65%

Source: Decision Resources Group; BMS Internal Analysis
Cardiovascular
Secondary Stroke Prevention

Ischemic Stroke Events

2020 Patient Estimates (in Millions)

Source: Decision Resources Group; BMS Internal Analysis
Acute Coronary Syndrome

Source: Decision Resources Group; BMS Internal Analysis
Atherosclerotic Cardiovascular Disease

Source: Decision Resources Group; BMS Internal Analysis
Venous Thromboembolism

<table>
<thead>
<tr>
<th>VTE Tx</th>
<th>US</th>
<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosed incident Cases (first ever)</td>
<td>0.79</td>
<td>0.88</td>
</tr>
<tr>
<td>Diagnosed 10-year Prevalent Cases</td>
<td>5.29</td>
<td>5.75</td>
</tr>
</tbody>
</table>

Source: Decision Resources Group; BMS Internal Analysis
Atrial Fibrillation

Diagnosed Prevalence

2020 Patient Estimates (in Millions)

US
EU5

Source: Decision Resources Group; BMS Internal Analysis
# Hypertrophic Cardiomyopathy (HCM)

<table>
<thead>
<tr>
<th>2020 Patient Estimates (in 000's)</th>
<th>US</th>
<th>EU5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Prevalence</strong></td>
<td>660 (550-750)</td>
<td>635 (550-750)</td>
</tr>
<tr>
<td><strong>Diagnosed Prevalent HCM</strong></td>
<td>150 (100 - 200)</td>
<td>150 (105 - 220)</td>
</tr>
<tr>
<td><strong>Obstructive HCM</strong></td>
<td>90 (75 - 120)</td>
<td>90 (75 - 110)</td>
</tr>
<tr>
<td><strong>Non-Obstructive HCM</strong></td>
<td>60 (40 - 75)</td>
<td>60 (40 - 75)</td>
</tr>
</tbody>
</table>

- Numbers reflect base case estimates; Total HCM prevalence assumes a (~1/500) rate based on literature sources (below); Diagnosed prevalence estimates are variable due to HCM being a highly undiagnosed and misdiagnosed disease; Due to limited literature, it is recommended to utilize ranges vs. absolute point estimates.

Source: Decision Resources Group; Maron BJ, 1995, Maron BJ, 1999, Maron BJ, 2004 BMS Internal Analysis