Epidemiology

This Epidemiology appendix contains estimates of patient data for a number of diseases and potential indications relevant for select AstraZeneca in-market products and pipeline projects. All data are based on reliable sources generally recognised and used by AstraZeneca for planning purposes. All numbers are best available numbers as of current time and typically cover the years 2013 and 2014. Copyright© AstraZeneca Investor Relations, November 2014.
Prevalence and treated patients by severity:

**US**
- Prevalence: 18.9m
- Diagnosed: 13.9m
- Treated: 11.8m

GINA 1: 2.5m
GINA 2: 1.4m
GINA 3: 2.2m
GINA 4: 5.2m
GINA 5: 0.4m

**EU5**
- Prevalence: 29.4m
- Diagnosed: 20.4m
- Treated: 18.6m

GINA 1: 4.0m
GINA 2: 2.2m
GINA 3: 3.5m
GINA 4: 8.3m
GINA 5: 0.6m

**Japan + China**
- Prevalence: 21.9m
- Diagnosed: 16.6m
- Treated: 10.3m

GINA 1: 2.2m
GINA 2: 1.2m
GINA 3: 1.9m
GINA 4: 4.6m
GINA 5: 0.3m

Sources: Diagnosed and treated patients from internal analysis based on Decision Resources, ImS mIDAS and ImS longitudinal data; GOLD breakdown from internal analysis utilising Adelphi DSP patient record study 2012

2 - Epidemiology
COPD

US
prevalence 16.5m
diagnosed 7.6m

EU5
prevalence 21.8m
diagnosed 13.2m

Japan + China
prevalence 35.9m
diagnosed 15.2m

GOLD A
1.9-3.0m

GOLD B
1.1-2.3m

GOLD C
0.4-1.9m

GOLD D
1.9-3.0m

GOLD A
3.3-5.3m

GOLD B
2.0-4.0m

GOLD C
0.7-3.3m

GOLD D
3.3-5.3m

GOLD A
3.8-6.1m

GOLD B
2.3-4.6m

GOLD C
0.8-3.8m

GOLD D
3.8-6.1m

GOLD is a relatively recent approach to classification with some uncertainty/variation in literature over distribution of patients.

Sources: Diagnosed and treated patients from internal analysis based on Decision Resources, ImS mIDAS and ImS longitudinal data; GOLD breakdown from internal analysis of Adelphi DSP patient record study 2012/2013, Augusti et al 2013, Boland et al 2014, Han et al 2013, Johannessen et al 2013, Lange et al 2012, Leivseth et al 2013, Soriano et al 2013

3 - Epidemiology
Lesinurad
Gout

**US***
- Prevalence: 10.5m
- Diagnosed: 6.5m
- Chronic ULT treated: 4.3m

**EU5***
- Prevalence: 13.1m
- Diagnosed: 6.5m
- Chronic ULT treated: 4.1m

**Japan**
- Prevalence: ~2.9m*
- Diagnosed: 2.9m
- Chronic ULT treated: 2.1m

ULT: Urate Lowering Therapy
Due to hyperuricemia treatment, overall gout prevalence remains similar to diagnosed gout prevalence
Sources: * Decision Resources; NHANES (2009-2010); Stevens et al. Population Health Metrics 2012,10:22; http://www.ncbi.nlm.nih.gov/pubmed/22778033; AZ Internal Analysis; IMS MIDAS Volume Reconciliation
**Decision Resources; Kamatani N et. Al., 2011; Zairoric et al 2007; IMS MIDAS Volume Reconciliation; AZ Internal Analysis

4 - Epidemiology
Brodalumab
Psoriasis (PsO) and Psoriatic Arthritis (PsA)

US

- Psoriasis
  - Diagnosed: 6.5m
    - Moderate/severe patients: 1.6m
    - Drug treated: 1.0m
    - Biologic treated: 130k

- Psoriatic Arthritis
  - Diagnosed and treated: 329k
    - Biologic treated: 76k

EU5

- Psoriasis
  - Diagnosed: 5.2m
    - Moderate/severe patients: 2.4m
    - Drug treated: 2.0m
    - Biologic treated: 120k

- Psoriatic Arthritis
  - Diagnosed and treated: 390k
    - Biologic treated: 52k

Sources: Decision Resources (2013), ImS Patient Level data (2013), ImS mDART (2014), Adelphi Psoriasis DSP (2013), AZ Internal analysis
Mavrilimumab
Rheumatoid arthritis (RA)

US
- Prevalence: 2.4m
- Diagnosed: 2.1m
- Treated: 1.5m
- Moderate-severe: 1.2m
- Biologic treated: 530k

EU5
- Prevalence: 2.2m
- Diagnosed: 1.9m
- Treated: 1.3m
- Moderate-severe: 1.1m
- Biologic treated: 215k

Japan
- Prevalence: 670k
- Diagnosed: 580k
- Treated: 375k
- Moderate-severe: 350k
- Biologic treated: 140k

Sources: Decision Resources (2013), kantar Health (2014), ImS mDART (Volume, medical data), Adelphi Rheumatoid Arthritis DSP EU5 (2014), AZ internal analysis
Sifalimumab and anifrolumab

Lupus

**US**
- Diagnosed: 325k
  - SLE: 254k
    - Treated: 228k
      - Biologic treated: 15k
  - Lupus nephritis: 71k

**EU5**
- Diagnosed: 170k
  - SLE: 138k
    - Treated: 103k
      - Biologic treated: 6k
  - Lupus nephritis: 32k

**Japan**
- Diagnosed: 68k
  - SLE: 53k
    - Treated: 48k
      - Biologic treated: 2k
  - Lupus nephritis: 15k

SLE: Systemic Lupus Erythematosus
Source: Decision Resources, Datamonitor, kantar Health
Type 2 Diabetes

US
- Prevalence: 31m
- Diagnosed: 23.5m (~76%)
- Treated: 19m (~81%)

EU5
- Prevalence: 23m
- Diagnosed: 18m (~80%)
- Treated: 15m (~84%)

Japan
- Prevalence: 10.5m
- Diagnosed: 8m (~77%)
- Treated: 6m (~77%)

China
- Prevalence: 100m
- Diagnosed: 44m (~44%)
- Treated: 28m (~64%)

Source: Decision Resources Sept 2014
Brilinta
ACS, prior MI, stroke

PLATO study*

ACS prevalence
4.0m

STEMI
1.2m
P2Y12 treated
930k

NSTEMI
1.5m
P2Y12 treated
1.1m

unstable angina
1.4m
P2Y12 treated
900k

PEGASUS study*

prior MI
13-36 months
4.5m
P2Y12 treated
950k

ASAl treated / no therapy
3.6m

SOCRATES study**

ischemic stroke prevalence
2.2m
mild
1.2m
moderate / severe
990k

TIA incidence
480k
high risk
340k
other
140k

ACS: Acute Coronary Syndrome
MI: myocardial Infarction
TIA: Transient Ischemic Attack
STEMI: ST Segment Elevation myocardial Infarction
NSTEMI: Non-ST Segment Elevation myocardial Infarction
ASA: Aspirin
*: US, EU5, Australia, China, Russia, & Japan markets only
**: US, EU5, China, & Japan markets only
Source: kantar Health (2010), GRACE Registry (2007), National Health & Wellness Survey (2013), medical Literature, Internal Data

ACS prevalence
4.0m
STEMI
1.2m
NSTEMI
1.5m
unstable angina
1.4m
P2Y12 treated
930k
P2Y12 treated
1.1m
P2Y12 treated
900k
prior MI
13-36 months
4.5m
P2Y12 treated
950k
ASA treated / no therapy
3.6m
ischemic stroke prevalence
2.2m
mild
1.2m
moderate / severe
990k
TIA incidence
480k
high risk
340k
other
140k

ACS: Acute Coronary Syndrome
MI: myocardial Infarction
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STEMI: ST Segment Elevation myocardial Infarction
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ASA: Aspirin
*: US, EU5, Australia, China, Russia, & Japan markets only
**: US, EU5, China, & Japan markets only
Source: kantar Health (2010), GRACE Registry (2007), National Health & Wellness Survey (2013), medical Literature, Internal Data

ACS prevalence
4.0m
STEMI
1.2m
NSTEMI
1.5m
unstable angina
1.4m
P2Y12 treated
930k
P2Y12 treated
1.1m
P2Y12 treated
900k
prior MI
13-36 months
4.5m
P2Y12 treated
950k
ASA treated / no therapy
3.6m
ischemic stroke prevalence
2.2m
mild
1.2m
moderate / severe
990k
TIA incidence
480k
high risk
340k
other
140k

ACS: Acute Coronary Syndrome
MI: myocardial Infarction
TIA: Transient Ischemic Attack
STEMI: ST Segment Elevation myocardial Infarction
NSTEMI: Non-ST Segment Elevation myocardial Infarction
ASA: Aspirin
*: US, EU5, Australia, China, Russia, & Japan markets only
**: US, EU5, China, & Japan markets only
Source: kantar Health (2010), GRACE Registry (2007), National Health & Wellness Survey (2013), medical Literature, Internal Data
Brilinta (continued)
PAD, Type 2 Diabetes

EUCLID Study*

PAD prevalence
68m

diagnosed
17.5m

no history of ACS, stroke
(Phase 2 prevention)
13m

history of ACS, stroke
(Phase 2 prevention)
4.4m

P2Y12 treated
2m

THEMIS Study**

type 2 diabetes
prevalence
200m

diagnosed / treated
105m

no MI / stroke /
PAD history
65m

high-risk population
15m

PAD: Peripheral Artery Disease
* : US, EU5, China, & Brazil markets only
** : All global markets
Source: Decision Resources (2010 & 2013), kantar Health (2010), NHANES Database (2010), Framingham Heart Study (1997), medical Literature, Internal Data

10 - Epidemiology
## Epanova
### Hypertriglyceridemia

<table>
<thead>
<tr>
<th></th>
<th>US</th>
<th>EU5</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Prevalence</strong></td>
<td>315m</td>
<td>315m</td>
<td>128m</td>
</tr>
<tr>
<td><strong>HTG (≥150 mg/dL)</strong></td>
<td>64m</td>
<td>67m</td>
<td>31m</td>
</tr>
<tr>
<td><strong>Diagnosed &amp; Treated</strong></td>
<td>15m</td>
<td>14m</td>
<td>6.5m</td>
</tr>
<tr>
<td><strong>Patients on TG specific lowering therapy (fibrates &amp; Om3)</strong></td>
<td>6.5m</td>
<td>4m</td>
<td>4m</td>
</tr>
</tbody>
</table>

HTG: Hypertriglyceridemia  
TG: Triglycerides  
Source: Decision Resources, kantar Health  
11 - Epidemiology
## Roxadustat*
### Chronic kidney disease - NDD and DD

<table>
<thead>
<tr>
<th>Stage</th>
<th>US</th>
<th>China</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stage 3 NDD</strong></td>
<td>16.5m</td>
<td>27m</td>
</tr>
<tr>
<td>Dx with anemia</td>
<td>340k</td>
<td>650k</td>
</tr>
<tr>
<td>Treated patients</td>
<td>200k</td>
<td>375k</td>
</tr>
<tr>
<td><strong>Stage 4 NDD</strong></td>
<td>900k</td>
<td>2.5m</td>
</tr>
<tr>
<td>Dx with anemia</td>
<td>45k</td>
<td>290k</td>
</tr>
<tr>
<td>Treated patients</td>
<td>30k</td>
<td>260k</td>
</tr>
<tr>
<td><strong>Stage 5 NDD</strong></td>
<td>200k</td>
<td>800k</td>
</tr>
<tr>
<td>Dx with anemia</td>
<td>20k</td>
<td>150k</td>
</tr>
<tr>
<td>Treated patients</td>
<td>18k</td>
<td>150k</td>
</tr>
<tr>
<td><strong>Dialysis</strong></td>
<td>630k</td>
<td>200k</td>
</tr>
<tr>
<td>Dx with anemia</td>
<td>570k</td>
<td>200k</td>
</tr>
<tr>
<td>Treated patients</td>
<td>360k</td>
<td>200k</td>
</tr>
</tbody>
</table>

**Total treated patient population**

608k US / 985k China
Lynparza
Ovarian cancer

Source: Epi: kantar Health Patient metrics (2014), AZ internal data
Definitions: Drug treatable populations include incident patients with metastatic disease, plus patients who have recurred from early stage disease. Drug treated populations include only those patients who are currently treated with a systemic therapy.
Mutation: BRCA status reflects the total number of patients who are BRCAm, and does not account for diagnostic testing rates.

13 - Epidemiology
Based on 2014 patient numbers, treatment rates, and progression rates to second line
Sources: kantar, Decision Resource, internal data
Definitions: Drug treatable populations include incident patients with metastatic disease, plus patients who have recurred from early stage disease. Drug treated populations include only those patients who are currently treated with a systemic therapy.
Non-small cell lung cancer (NSCLC)

MEDI4736 / MEDI4736 + tremelimumumab

US

1L drug treatable NSCLC 150k

1L advanced drug treated 105k

PDL1+ 42k

2L PDL1+ 29k

3L+ PDL1+ 12k

3L+ PDL1- 18k

PDL1- 63k

2L PDL1- 43k

EU5

1L drug treatable NSCLC 178k

1L advanced drug treated 125k

PDL1+ 50k

2L PDL1+ 26k

3L+ PDL1+ 7k

3L+ PDL1- 11k

PDL1- 75k

2L PDL1- 39k

Japan

1L drug treatable NSCLC 94k

1L advanced drug treated 67k

PDL1+ 27k

2L PDL1+ 22k

3L+ PDL1+ 14k

3L+ PDL1- 21k

PDL1- 40k

2L PDL1- 33k

Based on 2014 patient numbers, treatment rates, and progression rates to second and third line
Sources: kantar; Decision Resource, internal data
Definitions: Drug treatable populations include incident patients with metastatic disease, plus patients who have recurred from early stage disease. Drug treated populations include only those patients who are currently treated with a systemic therapy. PDL1+ reflects the total number of patients who are PDL1+, and does not account for diagnostic testing rates. PDL1 prevalence subject to change based on evolving diagnostic science.

15 - Epidemiology
# Metastatic NSCLC

## Drug-treated patients

<table>
<thead>
<tr>
<th>Line</th>
<th>EGFR / ALk WT (240k)</th>
<th>EGFR m+ (48k)</th>
<th>ALk (9k)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>PDL1+ (≈40%)</td>
<td>PDL1- (≈60%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>96k</td>
<td>144k</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>62k</td>
<td>93k</td>
<td></td>
</tr>
</tbody>
</table>

Based on 2014 drug treated patient numbers, treatment rates, and progression rates to second line treatment. Assumes PDL1 prevalence is consistent across EGFR+, ALk+, and EGFR/ALk-; PDL1 prevalence subject to change based on evolving diagnostic science. Source: kantar/Decision Resources/market Consults, internal data. Numbers may not add up exact due to rounding.
Tremelimumab
Mesothelioma

- Prevalence: 12k
  - Pleural/peritoneal: 98%
  - Other: 2%

1L Drug Treated: 8.0k
2L Drug Treated: 4.0k

Source: SEER/IARC; market research
Based on 2014 patient numbers and treatment rates
Selumetinib
NSCLC, differentiated thyroid cancer (DTC), uveal melanoma (UM)

Based on 2014 patient numbers, treatment rates, and progression rates to second line
Sources: kantar; Decision Resource, internal data, AZ Epidemiology Group
Definitions: Drug treatable populations include incident patients with metastatic disease, plus patients who have recurred from early stage disease. Drug treated populations include only those patients who are currently treated with a systemic therapy.
Movantik / Moventig
Opioid-induced constipation (OIC)

**US**

- Total opioid patients: 95m
- Chronic non-cancer patients: 23.5m (~25%)
- OIC: 16.2m (~69%)
- Treated w/Rx or OTC laxative: 11.1m (~69%)
- Still symptomatic: 1.9m (~17%)

**EU5**

- Total opioid patients: 28.5m
- Chronic non-cancer patients: 14.2m (~50%)
- OIC: 6.3m (~44%)
- Treated w/Rx or OTC laxative: 2.8m (~44%)
- Still symptomatic: 1.7m (~62%)

Patients are based on a calculated “incidence” number of opioid users.
Note: Rounding in percentages not adjusted
Sources: US ImS APLD, SmI Alcott, Disruptyx Analogue; EU: ImS; Other: mC Inputs, medical Publications

19 - Epidemiology
CAZ AVI
Serious gram-negative bacterial infection

**EU5**
- Gram-negative hospital treated: 2.8m
- Access to Western meds: 100%
- Resistant gram-negative with access: 2.8m
  - HTI due to enterobacteriaceae: 2.4m
    - CBP-S (ESBL): 380k
    - CNS-CS: 25k
  - HTI due to pseudomonas: 475k
    - CBP-S (ESBL): 70k
    - CNS-CS: 80k

**ROW**
- Gram-negative hospital treated: 29.5m
- Access to Western meds: 32%
- Resistant gram-negative with access: 9.5m
  - HTI due to enterobacteriaceae: 7.9m
    - CBP-S (ESBL): 3.7m
    - CNS-CS: 215k
  - HTI due to pseudomonas: 1.6m
    - CBP-S (ESBL): 230k
    - CNS-CS: 430k

Patient numbers are in 000s
Sources: Decision Resources; Surveillance Data Link Network (SDLN by IHmA Inc); Internal AstraZeneca assumptions
*ROW: Uplift factor applied to Russia, China, Brazil, Mexico data to generate ROW (Excludes North America)
Epidemiology

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