Innovation and the Changing Practice of Medicine

Japan Medical Innovation Symposium

David Epstein, Division Head Novartis Pharmaceuticals
Tokyo, August 18, 2015
Agenda

The Case for Innovation

How Novartis is Responding to the Innovation Challenge

The Promise of Digital Technologies

Inspired by Patients
Powerful trends are changing the healthcare landscape

Population Change

- Global: +14%
- Japan: -5.8%

Growth of Older Population

- 15% will be over 60 years old
- 30% will be over 65 years old

Longer Life-Expectancy

- 77-year life expectancy by 2025
- 85-year life expectancy by 2025

Source: Projections from UN; WHO, Japan National Institute of Population and Social Security Research
Healthcare utilization will increase across the globe

Source: Economist intelligence Unit, World Bank, Global Insights, BMI, OECD, McKinsey Strategy & Trend Analytic Center, Novartis
Innovation is essential to expand the benefits of healthcare interventions

- Improvements in health and wellbeing
- Increase in economic productivity
- Higher return on healthcare investments
- Expanded reach of healthcare
What will medicine look like in 2025?

Medicine in 2025

- Controlling Cancers
- Fixing Genes
- Microbiome interventions
- Reversing Aging
Agenda

The Case for Innovation

How Novartis is Responding to the Innovation Challenge

The Promise of Digital Technologies

Inspired by Patients
The Novartis strategy is fundamentally innovation-based

Patients

Science-based innovation

To deliver better patient outcomes

In growing areas of healthcare

Three Divisions

Alcon

a Novartis company

Novartis Pharmaceuticals

Sandoz

a Novartis company
Pharmaceuticals Division: Change the practice of medicine and make interventions more effective

Aspire to:
- Record # of approvals
- Fast growing
- Best place to work
- Track record of innovation

1. Disease area focused portfolio (from development to commercialization) with truly global footprint

2. Innovative processes & structures, incl. Digital Medicines and Real World Evidence capabilities

3. Great people and culture based on shared values

RIGHT drug

RIGHT patient

RIGHT time

RIGHT dose
Novartis invests to bring innovation to patients

Number of ongoing Clinical Trials

Source: ClinicalTrials.gov as of March 2015
Novartis is leading in developing new compounds

New chemical / molecular entity (NCE/NME) approvals for selected companies 2009 – Q1 2015

<table>
<thead>
<tr>
<th></th>
<th>EU EMA</th>
<th>Japan PMDA</th>
<th>US FDA</th>
<th>China SFDA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novartis</td>
<td>14</td>
<td>14</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Pfizer</td>
<td>5</td>
<td>7</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Merck/SGP</td>
<td>8</td>
<td>12</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>GSK</td>
<td>10</td>
<td>13</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>J&amp;J</td>
<td>11</td>
<td>8</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>BMS</td>
<td>8</td>
<td>3</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>AZ</td>
<td>6</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Roche</td>
<td>5</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Sanofi</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Eli Lilly</td>
<td>2</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Bayer</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Notes: Does not include vaccines. Includes compounds acquired through mergers and acquisitions. EU approvals for all companies include fixed-dose combinations.
Source: FDA, EMA, PMDA, CFDA websites (snapshot as of April 2, 2015)
Collaborating to change the practice of medicine
The Case for Innovation

How Novartis is Responding to the Innovation Challenge

The Promise of Digital Technologies

Inspired by Patients
Digital technologies are driving innovation
Example: Surrounding Cosentyx® with a comprehensive service offering for various stakeholders

Psoriasis / Spondyloarthritis¹

- **Japan**: approved for PsO and PsA (Dec ‘14) – 1st in the world
- **RoW**: Launches in PsO and filings for PsA and AS
- **Offers opportunities to live in clear or almost clear skin²**

Digital opportunities

- **Patient support** (incl an app in PsO and the This AS Life website)
- **Social media** (incl patient empowerment – example in Dermatology “Skinsider”)
- **Physician interface** (incl CME – example of “Skin to live in” in Dermatology)

...and an opportunity to **diagnose / monitor digitally** and remotely

---

1) Spondyloarthritis is used in this context to refer to Psoriatic Arthritis (PsA) and Ankylosing Spondylitis (AS), besides the most widely approved indication in Psoriasis (PsO)
2) Refers to Psoriasis (PsO) indication only

Note: RoW = Rest of World
Example: Improving care for CHF patients with both Entresto™ (LCZ696) and digital initiatives

Heart Failure (HF)

Japan: First LCZ696 PhIII trial started. RLX030 trial ongoing

Entresto approved in US

Entresto offers opportunities to change the course of chronic heart failure

Digital opportunities

**Social Media** (to engage around issues of the heart)

**Solutions beyond the pill** (incl diagnostics, support to transition onto appropriate therapy)

**Manage for outcomes** (incl an opportunity to detect ‘HF worsening’ ahead of a hospitalization)

---

**PARADIGM-HF cause of death data**

- All causes: Enalapril 19.8%, LCZ696 17.0%
- CV causes: Enalapril 16.5%, LCZ696 13.3%
- Sudden Death: Enalapril 7.4%, LCZ696 6.0%
- Pump Failure: Enalapril 4.4%, LCZ696 3.5%

-16% p<0.001
-20% p<0.001
-20% p=0.008
-21% p=0.034
Agenda

The Case for Innovation

How Novartis is Responding to the Innovation Challenge

The Promise of Digital Technologies

Inspired by Patients
As **patients are our focus**, it is important that they know what to expect from Novartis

- **Access to our Innovative Medicines:** We collaborate with others to help address some of the world’s greatest health challenges, and we work to find solutions to get the right treatment to the right patient at the right time as quickly as possible.

- **Patient Safety:** We are committed to making quality products that are safe and effective to meet patient needs and demands.

- **Respecting the Patient Perspective:** We believe in the active participation of patients and active citizens to improve health care services and outcomes for patients.

- **Data Transparency & Data Integrity for Innovative Medicines:** We recognize that patients need to trust products from Novartis and may want to access information on their own regarding these products. We support clinical research adhering to the principles of ethics, governance and transparency.

- **Clinical Trial Input:** We recognize that patient knowledge and experience with their disease or condition is valuable in the design of clinical trial protocols and outcomes.

---

**What Patients Can Expect from Novartis**

**We are inspired by patients**

- This inspiration motivates us to revolutionize the research, development and manufacturing of innovative, **high-quality medicines** that help people live longer, with a better quality of life, giving more time to do the things that matter to them.

- To do our best for patients, we do not accept the status quo. We work to reach more patients worldwide so that patients and society can benefit as quickly as possible.

- The depth and strength of our pipeline enables us to **change the practice of medicine**, and to bring more breakthroughs with real benefits to patients and society.

- We partner with people and organizations around the world because by working together we can make a greater difference.

- We continually challenge ourselves to the highest standards of **compliance, integrity and performance** in all that we do to ensure a sustainable future of innovation for patients, society and Novartis.
Innovation and the Changing Practice of Medicine

Thank You