Changing R&D model

PMAC 2017
ACCESS TO MEDICINES:
HOW TO FIX THE BROKEN SYSTEM

mlallemant@dndi.org
2016 MSF report: “The way it is conducted today, Research and Development (R&D)…”

- Do not deliver for diseases that are not sufficiently lucrative
  - No investment in drugs, diagnostics and vaccines for people who cannot afford them
- Do not prioritize according to public health needs
  - E.g. antibiotics, anti-tuberculosis
- Do not deliver affordable products
  - Exclusive patent rights preventing competition (e.g. Cancer drugs, DAAs)
- Does not use scientific and financial resources efficiently and effectively
  - Isolation, competition, secrecy, redundancy

MSF Access Campaign: Lives on the edge: time to align medical research and development with people’s health needs 2016

DNDi
Changing R&D model
http://www.oecd.org/health/
managing-new-technologies-in-health-care (Jan 2017)

- Adopting new technologies is major driver of growth in health spending
- Yet the high prices of new medicines do not always create high benefits
- Pharma spending makes up one-fifth of health spending on average in OECD
- Harnessing data can help improve health systems outcomes and performance
- And new regulations needed to help 21st century healthcare benefit fully from technology
Political leadership at the center of solutions

- Government must demand transparency
- Governments must change incentive mechanisms to steer and finance biomedical innovation
  - Use all the legal tools at their disposal to ensure access and resist demands for additional exclusivity rights
  - Reclaim more than the product itself for their investment
    - incentives and publicly funded basic/translational research
  - Embrace new approaches that de-link R&D costs and product price (eg. product development partnerships)
- Acting on behalf of patients, governments must set priorities and coordinate efforts

MSF Access Campaign: Lives on the edge: time to align medical research and development with people’s health needs 2016
Origins of DNDi

1999

- First meeting to describe the lack of R&D for neglected diseases
- MSF commits the Nobel Peace Prize money to the DND Working Group
- JAMA article: ‘Access to essential drugs in poor countries - A Lost Battle?’

July 2003

- Creation of DNDi
- Founding partners:
  - Institut Pasteur, France
  - Indian Council of Medical Research, India
  - Kenya Medical Research Institute, Kenya
  - Médecins Sans Frontières
  - Ministry of Health, Malaysia
  - Oswaldo Cruz Foundation/Fiocruz, Brazil
  - WHO – TDR (Special Programme for Research and Training in Tropical Diseases) as a permanent observer
DNDi approach: Address immediate patient needs & deliver innovative medicines - Short- and long-term

- **New chemical entities (NCEs)**
  - Long-term projects

- **New formulations**
  - New indications for existing drugs
  - Medium-term projects

- **Completing registration dossier**
  - Geographical extension
  - Short-term projects

---

- **Research**: > 5 years
- **Translation**: 3-5 years
- **Development**: 1-2 years
- **Implementation**:
  - Sleeping sickness
  - Chagas disease
  - Filarial diseases
  - Leishmaniasis
  - Mycetoma
  - Malaria
  - Paediatric HIV
  - Hepatitis C
DNDi’s virtual R&D organization: Success only possible through innovative partnerships

Over 160 partnerships worldwide

CRITERIA FOR SUCCESS
✓ Share the same vision
✓ Mutual understanding
✓ Involvement throughout the whole process
7 new treatments delivered, recommended, implemented

- 30 projects, 8 diseases areas
- 13 entirely new chemical entities (NCEs)
- Over 160 partnerships, most in endemic countries
- 160 staff, half in endemic countries & 700 people working on DNDi projects
- EUR 400 million raised equally from public and private sources
- 4 regional disease-specific clinical trial platforms/networks and several technology transfers
Diversification of donors: **EUR 400M secured out of EUR 650M** to deliver 16-18 treatments by 2023

- 50% public - 50% private
- max. 25% per donor

=> Delinkage between R&D funding and final product pricing
How do we do it... operationally

**Idea sourcing**
Consultation Process

**Idea translation**
Exploratory
Feasibility
Concept validation

**Selection of appropriate model**
Include in DNDi Portfolio (Full or mini)

**Implementation of disease programmes**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>Research</th>
<th>Development</th>
<th>Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FULL PORTFOLIO</td>
<td>€100 + million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MINI PORTFOLIO</td>
<td>~ €25 million</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SUPPORT**
Up to €1 million

**RANGE OF SUPPORT MODELS**

- **Light role**
  - Knowledge sharing
  - Advocacy push
  - Advisory role

- **Active role**
  - Build resource platform
  - Incubator

**Eliminate (for now)**
Publish work/Findings

**Provide Support Activity**
For each disease, a Target Product Profile is developed to guide decisions (e.g. paediatric HIV)

IDEAL CHARACTERISTICS (TPP)

- 4 ARVs in one
- Simple to open and use with water, milk, food
- Good taste
- No fridge needed
- Suitable for infants (<2 months - 3 years)
- TB-treatment compatible
- Affordable for governments
Paediatric HIV: Scaling up with the right tools, right now and bringing ‘4-in-1’s formulations for children

Today
LPV/r
Only available treatment for young children: unpalatable (42% alcohol), requires refrigeration, expensive, difficult to store and transport

2016
‘Super-boosting’ ritonavir is recommended by WHO in ARV guidelines 2016 for TB/HIV co-infected children

By 2018
To deliver:
• 2 new ‘4-in-1’s child-appropriate formulations that are safe, easy to administer, well-tolerated & heat-stable
Sleeping sickness: Two new treatments in development to support sustainable elimination

13 years ago
Melarsoprol: Toxic, resistant
Eflornithine: Not available

Since 2009
NECT
Improved therapy

2018?
Fexinidazole
Oral treatment (10 days)

Future objective
SCYX-7158
Single-dose, oral treatment

NECT = Nifurtimox-Eflornithine
Dynamic portfolio: New disease areas, new models...

- Neglected patients
  - Hepatitis C
  - Treated patients
  - Excluded patients

- Neglected models
  - Antimicrobial resistance

Public health approach

Incubation of GARD
Abundant R&D pipeline... but many drug candidates abandoned

- Massive public funding
- Lack of transparency
- Isolation, competition, secrecy, redundancy
A pan-genotypic treatment for less than $300

- DNDi, Pharco and Presidio agreement to test combination of sofosbuvir + ravidasvir
- Partnership with Malaysia and Thailand to conduct Phase II/III multicentre study (900 patients)
- Using innovative licensing agreement or TRIPS flexibilities
By 2023: Deliver 16 to 18 treatments with EUR 650 million

2016
7 treatments delivered

2023
16-18 treatments

2023
9 - 11 additional treatments delivered

Influence the R&D landscape for neglected patients
- Political leadership for needs-driven R&D
- Creation of a global fund and mechanism
- Evidence on alternative R&D models

Develop treatments for people suffering from neglected diseases
- Deliver 16-18 treatments
- 3 new chemical entities (NCEs)
- ~10 disease areas
- Focus on access and measure impact

Strengthen research capacity, led by Regional Offices
- R&D platforms in disease-endemic countries
- Regionally-driven initiatives
- Patient access to treatments
- Transfer of technology
Thank you very much for your attention
• Backup slides
The NTD Drug Discovery Booster

- Objective: speed up the process and cut the cost of finding new treatments for leishmaniasis and Chagas disease
- Booster launched in 2015
- 3 Japanese pharma companies on board since the start
- Innovation: multilateral and cross-company comparative approach + iterative search
- Already 6 seed compounds submitted to the booster and > 1,600 analogues tested
Innovation & Access on the political agenda: Influencing the R&D landscape for neglected patients

13 years of discussions at WHA, with 6 resolutions (2003-2016)

2003 CIPIH
2006 IGWG
2008 Expert Working Group on R&D
2010 CEWG
2013 Demo projects, Global R&D Obs.
2016 Priority setting role Obs., voluntary pooled fund, core principles, delinkage

Connect the dots

- R&D Blueprint for Emerging Pathogens
- July 2016: UN High-Level Panel on Access to Medicines
- September 2016: UN High-Level Meeting on AMR
Over 10-Year Discussion at World Health Assembly Level to Find a Sustainable Solution

**2003**
Resolution WHA56.27
*Intellectual property rights, innovation and public health*

Commission on Intellectual Property Rights, Innovation and Public Health

**2006**
Resolution WHA59.24
*Public Health, innovation, essential health research and intellectual property rights: towards a global strategy and plan of action*

Intergovernmental Working Group

**2008**
Resolution WHA61.21
*Global strategy and plan of action on public health, innovation and intellectual property*

Expert Working Group on Research and Development: Financing and Coordination

**2010**
Resolution WHA63.28
*Establishment of a consultative expert working group on research and development: financing and coordination*

Consultative Expert Working Group on Research and Development: Financing and Coordination

**2013**
Resolution 66.22
Governments agree to experiment demonstration projects, set up a global R&D observatory, explore the set up of pooled fund, resume in 2016 open-ended meeting

May 2016
WHO Open-ended meeting
Need to develop an overarching framework: priority-setting, sustainable funding, and principles

Global Biomedical R&D Fund and Mechanism
For innovations of Public Health importance
governed by public leadership

Global Health R&D Observatory
Priority-Setting, Monitoring, Coordination

- AMR
- Emerging Infections (incl. Ebola)
- Poverty Related / Neglected Diseases

De-linkage
Open Innovation
Licensing for Access

Funding for R&D initiatives
- NIH National Institutes of Health
- Wellcome Trust
- USAID
- Bill & Melinda Gates Foundation
- GHT Fund
- DFID
- Unitaid
- European Commission
- BDDES
- ...and others