

ONLINE ANNEXE B

Summary of R&D reference document

The full R&D reference document is lengthy (25 pages) and detailed, therefore a summary is presented here. Please also refer to the R&D matrix (Table 1 in the main report) which outlines the diseases and products included in the G-FINDER survey.

1 BASIC RESEARCH

Studies that increase scientific knowledge and understanding about the disease, disease processes, pathogen or vector, but which are not yet directed towards a specific product:

- Natural history and epidemiology
- Immunology of disease
- Biology of disease
- Biochemistry of the pathogen
- Genetics of the pathogen
- Bioinformatics and proteomics
- Pathophysiology and disease symptoms
- Vector biology, biochemistry and genetics.

2 DRUGS

Research activities and processes necessary to develop and improve new compounds specifically designed to cure or treat neglected diseases; including drug discovery or design, preclinical and clinical development and other activities essential for successful drug development and uptake:

- Discovery and preclinical
- Clinical development
- Phase IV/ pharmacovigilance studies associated with newly approved drugs only
- Baseline epidemiology directly linked to trials of products in development.

3 PREVENTIVE VACCINES

Research activities and processes necessary to develop and improve investigational vaccines specifically intended to prevent infection; including vaccine design, preclinical and clinical development and other activities essential for successful vaccine development and uptake:

- Discovery and preclinical
- Clinical development
- Phase IV/ pharmacovigilance studies associated with newly approved vaccines only
- Baseline epidemiology directly linked to trials of products in development.

4 DIAGNOSTICS

Research activities and processes necessary to develop, optimise, and validate diagnostic tests for use in resource-limited settings (cheaper, faster, more reliable, ease of use in the field); including discovery and design, preclinical and clinical evaluation, and other activities essential for successful deployment for public health use:

- Discovery and preclinical
- Clinical evaluation
- Operational research necessary to support WHO recommendation for global public health use.

5 MICROBICIDES

Research activities and processes necessary to develop and improve topical microbicides specifically intended to prevent HIV transmission; including microbicide discovery or design, preclinical and clinical development, and other activities essential for successful microbicide development and uptake:

- Discovery and preclinical
- Clinical development
- Phase IV/ pharmacovigilance studies associated with newly approved microbicides only
- Baseline epidemiology directly linked to trials of products in development.

6 THERAPEUTIC VACCINES

Research activities and processes necessary to develop and improve investigational vaccines specifically intended to treat infection; including vaccine design, preclinical and clinical development, and other activities essential for successful vaccine development and uptake:

- Discovery and preclinical
- Clinical development
- Phase IV/ pharmacovigilance studies associated with newly approved vaccines only
- Baseline epidemiology directly linked to trials of products in development.

7 VECTOR CONTROL PRODUCTS

A) PESTICIDES

ONLY includes chemical pesticides intended for global public health use and which specifically aim to inhibit and kill vectors associated with transmitting poverty-related diseases, including:

- Primary screening and optimisation
- Secondary screening and optimisation
- Development
- WHO Pesticide Evaluation Scheme (WHOPES).

B) BIOLOGICAL CONTROL PRODUCTS

ONLY includes research and development of innovative biological control interventions that specifically aim to kill or control vectors associated with transmitting poverty-related diseases, including:

- Microbial/ bacteriological larvicides
- Sterilisation techniques
- Genetic modification measures.

C) VACCINES TARGETING ANIMAL RESERVOIRS

ONLY includes research and development of veterinary vaccines specifically designed to prevent animal-to-human transmission of neglected diseases.

8 CANNOT BE ALLOCATED TO ONE DISEASE

A) CORE FUNDING OF A MULTI-DISEASE R&D ORGANISATION

B) PLATFORM TECHNOLOGIES

- Adjuvants and immunomodulators
- Delivery technologies and devices
- General diagnostic platforms.

This category has **strict limitations**. It **ONLY** includes funding for R&D for the above, which also meets the following conditions:

- It is conducted by **public, philanthropic or not-for-profit entities**
- It is **basic research** i.e. it is not yet directed towards a specific disease or product area
- It is aimed at developing safer, cheaper, more effective products suitable for use in developing countries
- The resulting research findings or leads **MUST** be accessible to organisations developing pharmaceutical or biological products for neglected diseases.

c) UNSPECIFIED R&D

Funding that cannot be apportioned to any specific disease categories.

9 OUT OF SCOPE (EXCLUDED FROM THE SURVEY)

A) GENERAL EXCLUSIONS

- Non-pharmaceutical tools including: Adult male circumcision, cervical barriers, HSV-2 prevention, bednets, traps, water sanitation tools
- General supportive, nutritional and symptomatic therapies, including: Oral rehydration therapy, micronutrient supplementation, vitamins and painkillers
- Products developed and used for veterinary purposes
- In-kind contributions
- Additional exclusions for private sector investment include: Industry overhead costs, capital costs and opportunity costs due to the difficulty of quantifying these and allocating them to the neglected disease investment.

B) NON-PRODUCT R&D

Our intention is to capture investments into **neglected disease product development** as accurately as possible. Therefore, the following R&D activities are excluded from the survey:

- Clinical studies that are not linked to development of a NEW product
- Health services and access research
- Operational programme assessment
- Capacity building activities (human & infrastructure) are excluded except those that are **DIRECTLY** linked to development of a new neglected disease product.

C) SELECTED DISEASE AND PRODUCT RESTRICTIONS

Commercial diseases where incentives for R&D already exist; or product R&D already occurs in response to the existing Western markets, are **EXCLUDED** from this survey.

Basic research

Basic research is **RESTRICTED** for the following diseases:

- HIV/AIDS: **ONLY** includes basic research related to preventative vaccines and microbicides (e.g. immunology responses to potential antigens, mechanism of mucosal transmission).

Drugs

R&D for drugs is **RESTRICTED** for the following diseases:

- HIV/AIDS: **ONLY** includes label extensions and reformulations for developing country use (e.g. paediatric or slow-release formulations; fixed dose combinations)
- Diarrhoea caused by cholera, *Shigella* or *Cryptosporidium*: **ONLY** includes pharmacological interventions that target the pathogen, not supportive therapies.

- Hepatitis C (genotypes 4, 5 & 6): ONLY includes developing country specific research and/or research that has been specifically designed for genotypes 4, 5, or 6 (e.g. a clinical trial that includes developing country cohorts).

Preventive Vaccines

R&D for preventive vaccines is RESTRICTED for the following diseases:

- Bacterial pneumonia caused by *S. pneumoniae*: ONLY includes R&D on vaccines specifically for developing-country registration. Such a vaccine must at a minimum: a) be designed for use in infants less than two years of age; b) provide broad coverage across all *S. pneumoniae* serotypes, or focused protection against strains prevalent in the developing world (at minimum serotypes 1, 5, and 14); and c) involve low-cost whole cell, non-conjugate, or combination conjugate-non-conjugate technologies.

For multi-valent vaccines covering Western and developing country strains, only developing country-specific costs should be entered; including for trials, registration and Phase IV/ pharmacovigilance studies

- Bacterial pneumonia or meningitis caused by *N. meningitidis*: ONLY includes R&D on vaccines specifically for developing-country registration. Such a vaccine must, at a minimum: a) provide coverage against *N. meningitidis* serotype A; b) be a conjugate vaccine; c) be designed for use in infants less than two years of age; and d) be designed to cost less than a dollar per dose

For multi-valent vaccines covering Western and developing country strains, only developing country-specific costs should be entered; for example, for trials, registration and Phase IV/ pharmacovigilance studies in the target developing countries

- Diarrhoea caused by rotavirus: ONLY includes developing country-specific R&D, including clinical trials, registration and Phase IV/pharmacovigilance studies in the target developing countries.

Diagnostics

R&D for leptospirosis is RESTRICTED to the development of diagnostics suited to resource-limited settings. Such diagnostics must at a minimum: a) detect the disease during the septicaemic or early acute phase of disease; b) be accurate, easy to interpret, with little or no processing and give the results within 1-2 hours; and c) be cheap, stable and easy-to-use in basic infrastructure settings by staff with minimal training.

Microbicides

Applications that may have Western markets or be useful for other STDs (e.g. mucosal delivery technology, adjuvants) are EXCLUDED.

Vector control products

Baits, traps, predation measures, biological larvicides, habitat control and infrastructure measures are excluded from this product category. Vaccines developed and used solely for veterinary purposes are excluded from this product category.

Cannot be allocated to one disease

- Adjuvants and immunomodulators
- General diagnostic platforms
- Delivery devices and technologies.

This category has strict limitations (see above).