

R&D and sustainable, predictable Financing of R&D for Neglected Diseases

Introduction

There are currently three main ways in which Pharmaceutical companies are already involved in the research and development (R&D) of medicines to build new pipelines for treatment of neglected diseases through Public Private Partnerships (PPPs)

1. By allocating significant research resources to facilities dedicated exclusively to work on neglected diseases where no market currently exist e.g.

AstraZeneca: Bangalore Research Institute, (TB)

Lilly: Not-for-profit Partnership for TB early phase drug discovery, Seattle (TB)

GSK: Diseases of the Developing World Drug Discovery Centre, Tres Cantos (malaria, TB)

Novartis: Institute for Tropical Diseases, Singapore (malaria, TB, Dengue)

2. Partnerships with the Product Development Partnerships (PDPs) e.g MMV, GATB, DNDi, MMV, IAVI etc.

3. Partnership with the TDR network through compound screening, resources etc.

These activities funded partly by pharmaceutical companies, partly by charitable foundations such as the Bill&Melinda Gates Foundation, the Wellcome trust etc have generated a pipeline that had about 60 projects in 2005 (Moran et al. 2005), meanwhile there must be more despite the expected attrition. Most projects in this pipeline are in preclinical or early clinical development. However, it is apparent that all financial resources so far allocated to neglected diseases will not be sufficient to sustain the full development and registration of the compounds that will survive in this pipeline. Recent estimates of need for the current global malaria product portfolio alone are between \$668 -746 million (Moran et. al. 2007) and a conservative estimate of the sum required to finance development of 1 new drug for 8 of the neglected diseases on the WHO list is \$ US 1-2 billion. (Hopkins et. Al. 2007)

It would be tragic if several of these compounds demonstrated clinical proof of concept but could not be progressed to patients because of lack of funds for full development.

It is therefore important to discuss funding models that would be exclusively aimed at financing the development of new medicines (specifically small molecules) for disease where the market mechanisms of the more affluent countries does not function.

Below we present a proposal for discussion that in essence reflects the successful process used in pharmaceutical companies and using the same criteria to make portfolio decisions with the exception of the criterion of financial return on investment. The model assumes a global area of activity, not a national or regional one.

Possible Financing Models

Several funding models currently exist and from which we need to extract the major strengths and advantages and develop a new model for sustainable, predictable funding. One possible model is presented below for discussion.

1. **Funding Sources.** Create a major pool of funds by mechanisms similar to e.g. Global Fund, GAVI, International Finance Facility, supported by Governments, both of developed and developing world (latter must also contribute according to their possibilities as they are responsible for the health of their citizens), Foundations and Charities: Wellcome Trust, BMGF, Development Banks etc.

There could be one such pool for each neglected disease or a pool for all neglected diseases subdivided into sections with the appropriate expertise for each of them, see below.

The major problem might not be finding money but how to make it efficiently available to entities discovering and developing medicines for neglected diseases in a way that maximizes the probability that the allocated money will result in new medicines for neglected diseases.

Some immediately identifiable issues with this model are:

Funders would have to be ready to agree to pooled funding and to better coordination (already an approach being pushed by the IHP).

The PDPs would have to accept a different approach for financing full development of compounds than the one used today for early discovery and development, and they would need to coordinate with each other on funding needs.

4. **Strategic Board.** The funders will delegate members to this board to decide on strategic directions but this board should NOT interfere with the individual funding decisions of the Portfolio management Board.

3. **Portfolio Management Board.** Establish a portfolio management committee nominated by the funders but fulfilling stringent professional criteria. Their task would be to evaluate submitted projects and fund the selected ones **only to the next decision point in development (phase transitions)**, monitor the progress and make funding decisions for next phases as well decide development strategy. This is identical to the process currently used in Pharma, the same decision criteria (scientific, technical feasibility, medical need, target product profile, availability of alternatives etc.) should be used with the exception of commercial viability. These decisions must be based solely on these technical/medical/scientific criteria and political influence must be excluded at this stage.

3. **Intellectual Property.** Companies alone or in conjunction with PDP's, (including TDR) who want to access these funds would protect their IP as inventors where applicable (see why below) BUT would grant an exclusive license to the funding body for the neglected disease specifically to be addressed so that the fund can commit to

make the resulting medicine available to poor patients at cost or less and *where no markets exist* as a condition to obtain funds from the pool..

4. Commercial Exploitation .Wherever markets allowing returns for these products emerge as is eventually to be expected, WHOEVER sells the products in these markets will commit to pay royalties on those sales back into the pool for refinancing. The IP protection mentioned above is needed to allow this mechanism as it incentivises and protects the innovators' investment (including the pool entity). Equally it is possible that molecules developed for a neglected disease might have applications in another commercially viable market and the owner of the molecule should be allowed to do that but if data are used that have been paid for by the neglected diseases fund again the fund needs to be compensated out of the returns.

This mechanism might address the gray zones where the current returns are insufficient today for big Pharma to invest, but that does need big Pharma contributions.

Conclusion

This kind of model might be sufficiently attractive to Pharma companies as some of them have already shown their interest to contribute to the access to medicines problem. This model would remove a major hurdle to their investment in the R+D of neglected diseases, short term they would gain in reputation by contributing, long term (very) new markets may emerge.

This model might be combined with others such as advanced market commitments, for late stage developments e.g a vaccine /medicines in late Phase 3 clinical trials, EDCP Key problem is to generate the funds, but that should be possible by the many mechanisms already proposed.

Based on preliminary discussion we believe that this model can be developed to find support of stakeholders such as governments, MSF, Oxfam, and Pharma companies as well as donors such as the Wellcome Trust and the BMGF.

Ref: Moran M., Ropars A-L., Guzman J., Diaz J., Garrison C. The new landscape of neglected disease drug development. The Wellcome Trust and London School of Economics and Political Sciences, London (2005);

Moran. Guzman, Ropars Jorgensen, McDonald, Potter & Haile Selassie: The Malaria Product Pipeline: Planning for the Future. Global Forum for Health research / The George Institute 2007

Hopkins A., Witty,M., Nwaka, S.: Mission Possible: Nature supplement Vol. 449 September 2007.