



What more can be done?

Every year, the death toll due to infectious diseases is increasing. The question that remains pertinent is in spite of this awareness are we doing enough? More questions regarding the current state of R&D funding for infectious diseases keep hovering around the fraternity.

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According to *Global Report Research for Infectious Diseases of Poverty*, infectious diseases remain key agents of the debilitating poverty affecting so many of the world today. Each year these diseases kill almost 9 million people, many of them children under five years, and they also cause enormous burdens through lifelong disability. The report states that stepping up research into their causes and how to effectively treat them and prevent them from spreading could have an enormous effect on efforts to lift people out of poverty and to build a better world for future generations.

Further, the report reveals that infectious diseases are caused by pathogenic micro-organisms, such as bacteria, viruses, parasites or fungi. These diseases can be spread directly or indirectly, from one person to another. Looking at the numbers and the large spread and communicability of these diseases, R&D funding is an essential aspect. Talking in this regard, Debabrata Gupta, Director and COO, USV Ltd, says, "As the name suggests, infectious diseases are harmful and avoidable. The good news is that there is a wide spectrum of antibiotics available (especially in the developed countries) and under development to

treat a variety of these ailments." Further, the Global Report shows that infectious diseases place a substantial health and economic burden on the poor population in Africa, Asia, Latin America. For example, malaria is the leading cause of mortality in children under five years of age in Africa, constituting one-tenth of the country's overall disease burden. In areas with high malaria transmission it accounts for 40 per cent of public health expenditure, 30-50 per cent of inpatient admissions, and up to 50 per cent of outpatient visits.

R&D funding: India and global

Ensuring funds for R&D in infectious diseases is essential. Discussing the structure of R&D funding, Omkar P Herlekar, Whole Time Director, Omkar Speciality Chemicals Ltd, comments, "It is an irony that the current model of R&D investment in India and the world is flawed since there is no module to increase access to medicines for neglected diseases. This fatal imbalance needs to be de-linked from profits from medical discoveries, so that patients are able to afford medical innovations at cheaper price. Further, Indian Council of Medical Research and the federal government should evolve ways for a sustained R&D system in public interest, rather than look at profit booking." He adds that the overall funding for R&D in neglected diseases in 2010-11 was estimated to be \$ 4,063 million, according to a study conducted by the Global Funding of Innovation for Neglected Diseases: G-Finder. The year-on-year investment in R&D substantially reduced by \$ 109 million, aggregating a shortfall of 3.5 per cent.

However, the situation is not the same in developed countries. Giving a comparative view, Herlekar reiterates, "The nose-dive in investments in the R&D sector was mainly on account of the global financial conundrum, where the research sector witnessed large funding cuts, barring the pharma segment." He shares some data in order to make the point clear. He says that in 2010, the three top-tier diseases, such as HIV/



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AIDS (received \$ 1,073 million, which accounts to 35.0 per cent of the overall funding), tuberculosis (TB) (received \$ 575.4 million, which accounts to 18.8 per cent), and malaria (received \$ 547 million, which accounts to 17.9 per cent). Among the second-tier diseases, which received 1-6 per cent of the overall global funding, dengue and diarrhoea, each received over 5 per cent of the global R&D funding. Ironically, the third-tier diseases did not receive funds, barring leprosy, Buruli ulcer, trachoma and rheumatic fever, each receiving approximately \$ 10 million. Similarly, R&D funding in bacterial pneumonia and meningitis witnessed its largest share of funding in 2010-11, which accounted to \$ 31.7 million (up 52.9 per cent). However, the increase in funding was barely enough to make up for the large drops in R&D funding for kinetoplastids (down \$15.5 million, -9.6 per cent), diarrhoeal diseases (down \$ 18.3 million, -10.3 per cent) and malaria (down \$45.5 million, -7.8 per cent). Discussing the funding of R&D in infectious diseases, Gupta says, "The industry is spending a fair amount of funding towards R&D for infectious diseases. However, having said that, the industry is possibly more focussed towards more complex molecules, which are being developed for a variety of therapy areas that include infectious diseases." He adds, "Even in the global scenario, the R&D funding is increasing. The major funding comes from various international non-profit agencies and is definitely on the upswing. Estimates are that there is an improvement over the past few years."

Amendments required?

Research is an ongoing process and adequate investment in it is the dire need. Talking about the changes that are required for R&D in infectious diseases, Herlekar avers, "It is highly unfortunate that we have no model that can meet the needs for new drugs in a sustained manner. One cannot expect companies to invest in large scale and subsequently bleed. Therefore, there is a need for a sustained mechanism

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where companies can systematically invest in the R&D sector and help the consumers benefit by way of cheaper drugs." He adds that over the years, the public sector has had a substantial share of investment in the basic research in neglected diseases. It was approximately two-third during 2010-11. Globally, the pharma industry alone invested \$ 880 billion during 2010-11. But the federal Government of India has done nothing for the public sector, which puts in millions every year and constantly follows up to seek regulatory approvals for clinical trials.

Overcoming obstacles

The R&D segment of infectious diseases is continuously facing challenges. Talking about the concerns in this field, Herlekar says "The fallout of the global financial meltdown has turned the investment situation in the neglected diseases R&D sector worst. This substantially affected the flow of the public and philanthropic funding. The rub-off effect of it was that diseases relying on public and philanthropic investors were hit really hard, including HIV/AIDS, malaria, kinetoplastids and diarrhoeal diseases, while diseases with substantial industry funding (TB and dengue) were somewhat protected." Elaborating on the challenges, Gupta says, "The challenges faced in this area are that funding increasingly comes from non-profit agencies and is directed towards therapy in the less progressed economies or geographies. Industry tends to fund newer molecules and recently developed therapy areas."

Herlekar highlights, "The Product Development Partnerships (PDP) funding also took a plunge with cutbacks from a wide range of contributors, such as federal agencies. Despite the gloomy situation and unfavourable policy support from the government, several home-grown companies continue to open handedly contribute multi-billion dollar towards creating a cost-effective and innovative neglected disease products for patients in the developing world." Infectious diseases are a serious concern, and although the situation is not very grim much more needs to be done. **MPh**

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