

Collaborative approach pays off in area of neglected diseases

Drugs partnerships

There is willingness to share when the rewards are low, says *Andrew Jack*

When Bernard Pécoul from Médecins Sans Frontières, the French humanitarian charity, looked at the extent of research into new drugs at the turn of this century, he reached a bleak conclusion: neglected diseases accounted for 12 per cent of the global burden, yet over the previous 25 years they had benefited from just 1 per cent of new treatment approvals.

"The landscape on neglected diseases was quite simple to describe," he says. "It was at a standstill." The "gold standard" for treating sleeping sickness, for example, had long been melarsoprol, an archaic, highly toxic drug based on arsenic that killed 5 per cent of the patients it was intended to help.

That "fatal imbalance" between treatment needs and research efforts – so clear to MSF colleagues working in the field – sparked the creation under Mr Pécoul's leadership of a non-profit entity to fill the gap: the Drugs for Neglected Diseases Initia-

tive (DNDi), like MSF, based in Geneva. It celebrated its 10th anniversary this month.

It is a model that has been adopted or adapted by other non-profit organisations and brings potential lessons even for multinational pharmaceutical companies struggling to boost the productivity of their pipelines of experimental products.

Over the past decade, DNDi has delivered six treatments for neglected diseases and has 12 "new chemical entities" under development. At €183m spent to date, that translates into a modest price tag for each successfully launched medicine compared to the costs for drugs launched by drug companies. One reason is that the organisation operates as what it calls a low cost "conductor of a virtual orchestra", using the laboratories and expertise of partner organisations rather than maintaining its own expensive in-house operation.

Its clinical trials are run in developing countries where the costs are often lower – despite the additional logistical work, training and support needed to ensure high-quality results.

While its initial projects were undertaken without much direct involvement

from drug companies, its staff and advisers (including several with industry experience) helped DNDi take a hard-nosed approach to cost control and the selection of potential treatments.

It has also helped pioneer and exploit a growing trend for open data sharing. Drug companies provide access to their experiments and libraries of compounds as do universities and other research centres, reducing duplication caused by secrecy.

A number of DNDi's successes have been the result of tackling cheaper "low hanging fruit", seeking reformulations, new applications or clinical proof of efficacy and safety for existing drugs rather than creating medicines from scratch.

Its first success, for instance, was artesunate-amodiaquine (ASAQ) in 2007: a fixed dose combination of two effective drugs to treat malaria, reformulated into a single pill requiring fewer doses. The innovation has reduced costs and boosted patient compliance.

Nifurtimox-eflornithine (NECT), the initiative's sleeping sickness treatment, also combined two existing treatments. From 2009 it helped finally displace the toxic melarsoprol and reduced sharply the

number of injections required of eflornithine, cutting patients' time in hospital and making it more suitable for use in remote areas.

Such successes do not mean DNDi's approach can necessarily be sustained, replicated or applied by commercial drug companies. Its focus on market failures – treatments for neglected diseases – fosters co-operation where more lucrative diseases such as cancer attract large sums and fiercer competition.

Paul Herring of Novartis, a supporter of DNDi, advocates a still broader approach to funding, with donors pooling resources and using a panel of experts to distribute the money among a wide range of drug partnerships based on a technical assessment of the probability of success at the next stage in development.

Chris Hentschel, a former head of Medicines for Malaria Venture, says the product development partnership focus comes at the detriment of non-communicable diseases, increasingly a burden in poorer as well as richer countries.

But, as a survey this year co-authored by Mr Pécoul cautioned, only 4 per cent of the new approvals over the past decade have been for neglected diseases. There is still some way to go.