Joint Impact Analysis by Unitaid and the Global Fund

Technical Annex

16 October 2023

A modeling exercise was carried out to estimate the extent to which innovative health products are linked to the impact projected in the Global Fund Investment Case for its Seventh Replenishment. Unitaid and the Global Fund collaborated in this analysis to investigate how health innovations can accelerate progress and increase the return on investment (ROI) in the global HIV, tuberculosis (TB) and malaria response. The models and modeling groups used for these analyses are the same as those responsible for modeling the respective disease global plans and Global Fund Investment Case. That is, Avenir Health for HIV and TB, and Imperial College London for malaria. The models are population-scale dynamic transmission models, which have, over several years, been reviewed and developed in collaboration with international modelling consortia. The already-completed modeling exercise for the Global Fund's Seventh Investment Case (approach is fully described in the associated Annex) is the foundation for this new analysis focused on innovation.

To estimate the impact of innovative technologies, the Global Fund's Investment Case was re-run with a comparator scenario which simulated the absence of specific health innovations, the majority of which are prominently supported by Unitaid (see Table 1 below). The comparison between the original Global Fund Investment Case and the results of this comparator scenario was used to estimate the extent of the impact of the Investment Case linked to innovation with the primary outputs being (1) the difference in the number of HIV, TB and malaria deaths, and (2) the difference in ROI between the two scenarios. This yielded two key findings:

- Without innovative technologies, it would take more than three additional years to achieve the same reduced level of HIV, TB and malaria deaths as projected in the Investment Case.
- Innovative technologies enable a 16% higher ROI compared to the scenario without innovative technologies.

Table 1. Technologies included in the analysis

Disease	Technology
HIV	Adult dolutegravir (DTG) for HIV treatment
	Pediatric dolutegravir (DTG) for HIV treatment
	Pre-exposure prophylaxis (PrEP) for HIV prevention

	HIV self-test kits
	Point-of-care diagnostics
Tuberculosis	GeneXpert for TB diagnosis
	Childhood diagnosis and treatment
	Shortened TB preventive therapy (3HP)*
	New multidrug-resistant TB treatments
	Digital adherence tools
Malaria	Seasonal malaria chemoprevention (SMC)
	RTS,S malaria vaccine
	Next generation mosquito nets
	Intermittent preventive therapy for infants (IPTi)

*3HP is a fixed dose combination therapy that combines two antibiotics – isoniazid and rifapentine – for the treatment of latent tuberculosis infection.

For each technology included in the analysis, the following was considered: a technology was classified either as an “upgrade” or a “new category.” The representation in the counterfactual for each was constructed accordingly:

- In the case of an “upgrade” (for example, where a new treatment or diagnostic becomes available and would replace an existing one, or where we expect a scale-up in provision of a technology as a result), the counterfactual represents the use of the existing technology or the maintenance of the current coverage. We implicitly assume that the new technology costs are no more than those of the old technology.
- In the case of a “new” technology (for example, the introduction of a new vaccine), the counterfactual represents a situation where no similar product existed and the money allocated for this new technology in the simulation of the Investment Case would not have been available for funding other services.

The ROI calculation for the comparator scenario followed the same methodology as the Global Fund’s Investment Case scenario. Additional information on the Global Fund’s ROI methodology can be found in the associated Annex).

We note several limitations with regard to this analysis. First, this does not provide a quantification of the “additional” contribution of the new technologies or an impact that can be “attributed” to them, as no allowance is made for the fact that were those new technologies not available, alternative patterns of resource use and patient behavior would have been in effect. Furthermore, the distinction between a technological “upgrade” and entirely “new” technologies can be hard to make. The same ambitious assumptions are made here as in the global plans and Investment Cases, and it is difficult to determine the extent to which anticipated increases in outcome measures will rely upon individual technologies. The assumptions of effectiveness of new technology may therefore, by necessity, not all be based on substantial direct evidence.