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Interventions against major poverty related diseases to improve disease control: Human immuno-deficiency virus, tuberculosis and malaria

The challenge…

The three major killer diseases in Africa are human immuno-deficiency virus (HIV), tuberculosis (TB) and malaria. Approximately 70% of all adults and 80% of all children living with HIV/AIDS are in Africa. Tuberculosis leads to three million deaths every year, of which about 90% occur in developing countries, where drug surveillance and rapid detection to anti-TB drugs resistance is uncommon. The annual incidence of TB is 565 per 100 000 in the African population. Malaria-attributed mortality in Africa is estimated at about 1 million per year, with children less than five years of age and pregnant women especially affected. The direct and indirect costs of preventing and treating malaria can be as high as 25% of a household's annual income.

These poverty related diseases are best viewed as overlapping epidemics, which complicate individual case management and the overall effectiveness of control programmes for all three diseases. The emergence and spread of resistance to drugs is a key challenge facing the global effort to control HIV, TB and malaria. Drug resistance is an extremely serious problem that undermines effective health care for millions of people in Africa, dramatically increasing the costs of fighting TB and malaria, and weakening efforts to treat people living with HIV/AIDS effectively.

The project…

The control of HIV, TB and malaria depends on effective therapeutic intervention with drugs, while the greatest need is to develop vaccines for preventive intervention. The clinical management of HIV and TB has been based on combination drug therapy for many years, and the concept has recently been introduced in malaria. The current approach is to apply molecular techniques for improving disease control through cross-cutting approaches to optimize interventions against HIV, TB and malaria.

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An AFRA project, running since 2009, aims to extend the benefits of molecular tests for drug resistance to interventions against the three major poverty related diseases for improving health management. However, in addition to newer and more effective drugs, there is an urgent need to develop protective vaccines against HIV, TB and malaria. Although a vaccine is considered the most cost effective large scale method for prevention, no effective immunogenic vaccine is available as yet for any of these diseases. Furthermore, when all drugs fail, immunotherapy (including therapeutic vaccines) may remain the only option e.g. for late-stage HIV/AIDS and extensively drug-resistant TB. This emphasizes the need for the generation of immunological data for these diseases to help support the identification and testing of vaccine candidates and provide clues to what constitutes a functionally superior or protective immune response against each of the three diseases.

The impact…

Since drugs and vaccines are the main interventions on which control programmes hinge, the AFRA project makes an invaluable contribution in synergizing initiatives for the major three poverty related diseases in a cost-effective way. The project aims to strengthen disease control and intervention through wider dissemination and application of both molecular and immunological techniques. In addition, the project ensures the involvement of disease control programmes, patients, communities, clinicians, scientists, laboratories and academic institutions in the prevention and treatment of HIV, TB and malaria in Africa.

Technical cooperation project RAF/6/040: Applying Molecular Techniques to Interventions Against the Major Poverty Related Diseases (HIV, TB and Malaria) for Improving Disease Control