Executive Summary of the report on the WHO Quantitative Immunization and Vaccines Related Research (QUIVER) Advisory Committee Meeting
Geneva, 5-7 October 2010

The fourth annual meeting of the QUIVER was held on October 5-7, 2010 in Geneva. The role of the advisory committee consisting of 12 members is to provide advice to WHO with regards to burden estimates, mathematical modelling, estimates of the impact of vaccine interventions, economic evaluation and other quantitative methods. The demands on QUIVER have been growing as a result of increasing emphasis on evidence-based policy making.

Several groups within WHO (e.g. Health Statistics and Informatics (HIS), Immunisation, Vaccines and Biologicals (IVB) departments) and outside WHO (e.g. Institute of Health Metrics and Evaluation (IHME)) have methods for estimating cause-specific global childhood mortality. QUIVER recommends that these methods reflect the multi-cause nature of many deaths and the uncertainty around point estimates. QUIVER recommends that activities with CHERG need to be coordinated on childhood mortality estimates, particularly with respect to harmonising overall deaths with deaths attributed to particular conditions (when there are multiple causes of death). QUIVER recommends that a technical advisory group should review the methods used to estimate the child mortality estimates, and to explain the uncertainties around point estimates in ways that are comprehensible.

A natural history model of pertussis is being developed to estimate the burden of disease and impact of vaccination. Parameters in the model will be determined by expert elicitation because of lack of data. QUIVER endorses this method although recommends that work be conducted to collect these data directly.

A model to estimate the burden of measles deaths which can incorporate data on disease dynamics is endorsed by QUIVER.

A systematic review and modelling exercise being conducted to inform national vaccination schedules were endorsed by QUIVER with caveats. QUIVER endorsed the overall approach of the systematic review. For the modelling exercise, QUIVER recommends incorporating natural immunity and non-invasive disease endpoints into the pneumococcal model.

The literature review of malaria transmission models and cost-effectiveness analysis was a useful overview of existing work. QUIVER felt that a comparison exercise of malaria vaccine cost-effectiveness tools was premature given the current status of malaria modeling and economic tools. They recommended that QUIVER work with the Joint Technical Expert Group (JTEG) malaria vaccine committee to explore the existing malaria transmission models as a next step.

A study on the impact of measles eradication on health care systems and two cost-effectiveness analyses of measles eradication were presented. QUIVER endorsed the three studies, but suggested that further work about the measles end game was needed.

QUIVER was updated with ongoing work of interest to WHO on rotavirus burden estimates, human papillomavirus cost-effectiveness tool comparisons, modelling supply chain logistics, dengue vaccine modelling, social contact surveys in South-East Asia as well as work by the Vaccine Modelling Initiative on measles and rubella.
Due to the complexity of vaccine impact and cost-effectiveness modelling and the important policy recommendations they support, QUIVER is increasingly requesting different modelling groups to use a common data sets, model parameters and assumptions. Experiences with measles eradication, pneumococcal, rotavirus and HPV modelling have shown that tool comparison exercises provide more insight in the disease dynamics.

Working groups were recommended to work with SAGE on pertussis data collection, address the measles eradication end game, advise on methodology for updating estimates of rotavirus mortality, work with the JTEG malaria vaccine committee to develop guidance on economic models of malaria vaccination and liaise with WHO on dengue modelling.

QUIVER is interested in WHO work on the broader economic impacts of immunisation beyond cost-utility analysis.