

# The economics of vaccination in low- and middle-income countries

J.A. Fox-Rushby,<sup>1</sup> Miloud Kaddar,<sup>2</sup> R. Levine,<sup>3</sup> & L. Brenzel<sup>4</sup>

Economic principles and tools have aided policy-making on the allocation of resources for health and have been applied convincingly to vaccination. In the late 1970s cost-effectiveness studies of immunization programmes in low- and middle-income countries led to a better understanding of the resources required to reduce morbidity and mortality (1). The push for increased coverage under Universal Childhood Immunization in the 1980s led to cost-effectiveness studies of alternative delivery strategies and interest in sustainability and affordability at country level (2). New vaccines, which cost more per child immunized, present financing challenges for countries — a concern that the Global Alliance for Vaccines and Immunization is responding to by planning for financial sustainability.

What can economists bring to the question of how to finance services? Because vaccination of one child confers health benefits for others, in free markets vaccinations will be undersupplied, as the true marginal costs will not be recouped by providers. Families also have disincentives to bear the time and money costs of vaccination: those choosing not to vaccinate reap the benefit of protection created by those who do, but the greater the numbers of unimmunized children the greater the chances of disease transmission. Public financing and provision help to overcome these problems and to ensure an optimal level of service delivery.

What can economics bring to the current policy and programmatic questions facing immunization services and the broader global health community? This issue of the *Bulletin* draws on an international meeting (3), and shows

how innovative work can inform contemporary decisions. We highlight below questions for a global research agenda to allow policy-makers to incorporate economics more fully into research and policy-making.

What are the most economical ways of expanding immunization programmes? While immunization is a key strategy to reduce child mortality and reach the Millennium Development Goals, little is known about how unit costs change with coverage, or what accounts for variation across strategies, levels of the health system, and countries. Thus, true resource requirements are difficult to estimate. Other questions of interest include: What is the optimal mix of strategies at different coverage levels, given a budget constraint? At what point should a government focus on disease control or eradication? What strategies help achieve equitable coverage gains?

What are the most effective approaches for organizing, sustaining and financing national immunization programmes? The context of decentralization, reform and financing of health services has a major impact on performance. Little is known about these relationships. What is the optimal mix of government and external resources for programme financing, and sustainability? What should the role, scope and behaviour of private providers be? Given sectorwide approaches, what is the fiscal impact of preventing one disease compared with others?

What are the full benefits of immunization programmes? More attention needs to be paid to evaluating health benefits as well as economic growth and

welfare. This would facilitate comparison with other health interventions and discussions about the size of government and donor investment.

When is it best to introduce new vaccines? What are the impacts of new vaccines on cost, financing and delivery? Is equity enhanced or diminished as new vaccines are introduced?

How can the limitations of data and methodological techniques be overcome? How can models become more policy-relevant and less data-intensive? Do cost-effectiveness studies need to be repeated for every country or context, or can estimated relationships be validated for application across countries? In evaluating the marginal costs of scaling-up, what are the alternatives to treating health facilities as “firms” that minimize costs?

Health policy is influenced by more than the results of economic analysis; nevertheless, the cause of outcomes is strengthened by relevant economic research and application of results to decision-making. We hope the special focus of this issue moves us further along this path. ■

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<sup>1</sup> Senior Lecturer, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, England. Correspondence should be sent to this author (email: [julia.fox-rushby@lshtm.ac.uk](mailto:julia.fox-rushby@lshtm.ac.uk)).

<sup>2</sup> Health Economist, Immunization, Vaccine and Biologicals, World Health Organization, Geneva, Switzerland.

<sup>3</sup> Senior Fellow, Center for Global Development, Washington DC, USA.

<sup>4</sup> Senior Health Specialist, Human Development Network, World Bank, Washington DC, USA.

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