Improving health worldwide

Our vision is to be a world-leading school of public and global health, working closely with partners in the UK and worldwide to address contemporary and future critical health challenges.

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LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

Forewords: from our partners

Professor Sir Michael Rawlins
President of the Royal Society of Medicine, former Chairman of the National Institute for Health and Clinical Excellence (NICE) 1999 - 2012

As with any system financing health care, the UK's National Health Service faces potentially unlimited pressure to spend on new drugs and technologies. The National Institute for Health and Care Excellence was established to assess the cost-effectiveness as well as the efficacy of treatments, and use this, together with other information, to advise the National Health Service on making best use of limited budgets. This relies critically on high-quality clinical and economic research.

Economists at the London School of Hygiene & Tropical Medicine have long been key partners in this, both in the production of the research evidence, and in the policy guidance production. The wide experience of the School's economists in the UK and worldwide has benefited the development of methods used by organisations such as the National Institute for Health and Clinical Excellence. In turn this has been critical to the development and strengthening of health systems in many countries. The last 35 years of health economics at the School have seen tremendous advances and contributions to improving health in the UK and globally, and I am confident this will only grow in decades to come.

Dr Viroj Tangcharoensathien
Senior Adviser, International Health Policy Programme, Thailand

The London School of Hygiene & Tropical Medicine has contributed enormously to the development of capacity in health economics and financing in Thailand. More than 25 Thai PhD and Master's students have been trained at the School, many (including myself) supervised by Professor Anne Mills. All of these students returned to Thailand after their studies, taking up positions in research institutes such as the International Health Policy Programme and the Health Intervention and Technology Assessment Programme, and in key government agencies such as the National Health Security Office. From these positions they have continued to generate evidence and influence policies in support of universal coverage in Thailand. I am very pleased to have seen early relationships between committed individuals develop into strong bonds between the School and a range of Thai institutions. The commitment of staff to these long-term relationships has been critical in generating and sustaining these key capacities to influence health system change.

Active web addresses, links and emails are underlined in this PDF.

Professor Di McIntyre
Director, Health Economics Unit, University of Cape Town

There is a desperate need for health economists in low and middle income countries. The London School of Hygiene & Tropical Medicine has probably made the single biggest contribution to developing health economics capacity, not only in terms of the absolute number of their Master's and PhD graduates but also because their training programmes develop applied skills that are relevant to low and middle income countries, drawing on material from their collaborative research and technical support. My longest standing research collaborations have been with colleagues at the School. These relationships involve long-term partnership, joint decision-making, shared responsibility, mutual respect, trust, and commitment to developing the capacity of less experienced team members while supporting, validating and inspiring senior team members.

Professor Tom Getzen
Founder and Executive Director, International Health Economics Association (iHEA)

The International Health Economics Association is acutely aware of the need for academic infrastructure to support research and graduate study around the world, and to bridge the gaps between developed and developing countries. The London School of Hygiene & Tropical Medicine, as a research institution and as the source of trained professionals, has played a crucial role in creating new programmes and supporting universities in Africa, Asia and elsewhere. Health economics has expanded during the last 50 years, from a handful of adventurous economists in the UK and US to cohorts of hundreds around the world, now becoming thousands in emerging giants such as China and India.

The School has been a key facilitator for this global exchange. Recognition of this within iHEA has been most high-profile in the election to President last year of Professor Anne Mills. Anne is an outstanding scholar, as evidenced by her recent election to the Royal Society, and exceptional organiser, who draws together the social and intellectual infrastructure by which health, training and economic development continues to advance, bringing energy and order to far-flung efforts to train a new generation of interdisciplinary health researchers across the world.

These characteristics have been imbued in the wider cohort of economists at the School, with an ethos of striving to contribute to the improvement of health and health equity worldwide through a solid foundation in excellent research and education, as this brochure clearly evidences. As iHEA develops in the coming decades, work within developing countries will become ever more relevant and important, and within this the School, I am sure, will continue to be a leading light.

Photographers named and credited in this publication are staff and students of the School, unless otherwise indicated.

Introduction: Health economics coming of age

Professor Anne Mills FRS, CBE
Vice-Director, Academic Affairs and Professor of Health Economics and Policy

> **"I am immensely proud of what the School has achieved in health economics over the 35 years I have been involved here"**

The London School of Hygiene & Tropical Medicine was officially established by Royal Charter in 1924 following the Ministry of Health's 'Report of the Post-graduate Medical Committee' recommendation in 1921 that "An institute of state medicine should be established by the University of London in which instruction should be given in public health, forensic medicine, industrial medicine and in medical ethics and economics."

Economics has thus featured in the School since its earliest days, but the School's engagement in the modern era of health economics began in earnest in the 1970s. Jenny Roberts' appointment focusing on the UK National Health Service was quickly followed by those of Anne Mills and George Cumper in the Evaluation and Planning Centre for Primary Health Care, funded by what is now the Department for International Development, to support multidisciplinary research to inform health care policy and practice in low and middle income countries. Economics was subsequently introduced into the curricula of the Master's in Community Health (now Public Health), and the Master's in Community Health in Developing Countries (now Public Health in Developing Countries), and, together with Brian Abel-Smith at the London School of Economics, a new master's was created jointly with the London School of Economics in Health Planning and Financing (now Health Policy, Planning and Financing). We now have more than 250 students studying health economics in their first term, representing nearly 40% of the School's London based Master's students, and almost 450 following our distance learning health economics courses, indicating just how integral health economics has become to public health training.

Since the 1970s, the School's health economics expertise has grown enormously, based on success in winning funding for research programmes and projects, with support from leading funding agencies including the National Institute for Health Research, UK Research Councils, the Wellcome Trust, government departments, the EU, and the Gates Foundation. We now have over 100 health economists, concentrated within our Faculty of Public Health and Policy, with areas of interest spanning countries at all levels of development, and in all subject areas, with specific strengths in work on health systems and services and economic evaluation. We are also at the forefront of new and emerging areas, including cross-sectoral work on social determinants of health, and techniques for macroeconomic assessment.

In all areas, however, the work of the School is characterised by our commitment to ensure that health economics is underpinned by rigorous methods, is undertaken with strong multidisciplinary links and collaborations, and is relevant to policy. This is illustrated through case studies on HIV/AIDS and malaria, for instance, in this publication. I am immensely proud of what the School has achieved in health economics over the 35 years that I have been involved here, and look forward to seeing our discipline continue to grow in scale, scope and stature over the next 35 years, making an ever more powerful impact on improving health and health equity in the UK and worldwide.

Photo courtesy Research Fellow Adam Koon

Contents:

Economics of health systems, financing and organisation

A key area of our work is health systems research, which seeks to generate knowledge about how societies organise themselves to achieve collective health goals, encompassing the key health systems components of health financing, governance, and human resources.

Purchasing health services

Purchasing is a key health financing function, transforming money raised from taxes or insurance contributions into health services. Strategic purchasing offers the opportunity to ensure that these resources are used in ways which ensure quality, access and effective financial protection. Yet little is known about how these relationships work in low and middle income settings, and how they can be strengthened to support universal health coverage policies.

Kara Hanson and colleagues are analysing purchasing arrangements in 10 countries in Africa and Asia and developing detailed case studies which explore the relationships between health service purchasers such as Ministries of Health or social insurance funds, with health care providers and citizens.

These studies are being conducted through Resilient and Responsive Health Systems (RESYST), a DFID-funded health systems research consortium managed at the School, together with the Asia Pacific Observatory on Health Systems. A comparative analysis across types of purchaser and across countries enables achievements and challenges to be identified, and provides guidance for health ministries and purchasing organisations about how to better undertake this critical function, for example actively establishing service entitlements, selecting qualified providers, strategic use of provider payment mechanisms and systems for monitoring health service outcomes.

Legal pharmacies in Pailin, Cambodia, courtesy Shunmay Yeung

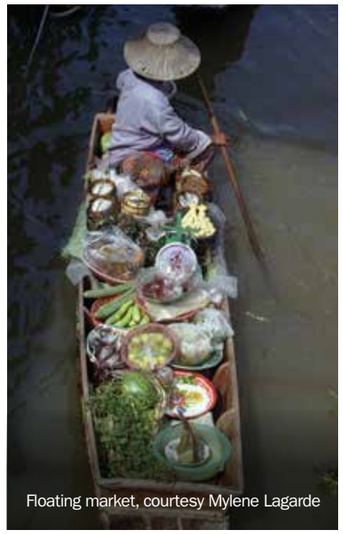
Women returning home after a Sunday mass on Atauro Island, Timor Leste. Courtesy Patti Shih

Health care financing: who pays and who benefits?

How should we pay for health care, and what are the effects of different kinds of taxation? Jo Borghi and colleagues have assessed the distribution of health sector benefits and health care financing among different socio-economic groups in several countries. The Strategies for Health Insurance for Equity in Less Developed countries (SHIELD) project has produced the first assessment of its kind in Africa. It found that direct tax was progressive in all countries, while indirect tax was progressive in Tanzania and Ghana, and regressive in South Africa. Out of pocket payments and insurance contributions for the informal sector were regressive and the overall distribution of benefits favoured the rich in all countries. Studies carried out for the Consortium for Research into Equitable Health Systems (CREHS) also found that public services are pro-poor in Nigeria and Tamil Nadu, India, and Orissa, India.

The team has also assessed the resource implications of expanding health insurance coverage in Tanzania, and as part of the UNITAS project, is evaluating financing and service provision reforms to enhance access to primary health care in Tanzania and South Africa. In the Asia-Pacific region, Virginia Wiseman and Lorna Guinness are working on the Sustainable Healthcare Financing in Fiji and Tamor Leste (SHiFT) project to re-evaluate health systems equity in these countries.

Courtesy iStock photos



Floating market, courtesy Mylene Lagarde

Impacts of removing patient fees

School researchers are making important contributions to the long-standing controversy over user fees for healthcare in Africa. Lucy Gilson and colleagues have been at the forefront of the debate, arguing that user fees are regressive and should be removed, but with careful consideration of the wider impacts on the health system. Mylene Lagarde and Natasha Palmer have revealed a surprising paucity of good quality evidence despite the policy attention given to the topic.

A new study led by Timothy Powell-Jackson has found that removing patient fees for public sector healthcare in rural Ghana did not improve health for the population as a whole, across a range of outcomes. However, there was a positive effect on the haemoglobin of children who were initially ill with anaemia. This is probably due to access to more effective antimalarial drugs in the public sector. The study identified other benefits of free healthcare: participants were more likely to seek care from primary health clinics, out-of-pocket health spending was reduced substantially, and there was no indication that families became more careless in the prevention of disease.

This is one of the first studies of a health financing intervention to report on objective measures of child health. Future studies of health financing policies will require ambitious research designs that have sufficiently large samples and long follow-up periods to capture changes in multiple dimensions of health.

What price altruism? Experimental economics, nursing and care

Economists and social scientists are increasingly using experimental economic games to provide quantitative measures of social preferences, including altruism, trust and inequality aversion, and test whether such preferences are associated with actual behaviours in real life. Complementing this, scientifically designed experiments are used to test economic theories and investigate decision-making processes under controlled 'laboratory' conditions, to define precisely the material incentives upon which subjects base their decisions.

Mylene Lagarde is collaborating with researchers from the Centre of Health Policy at the University of Witwatersrand to conduct a longitudinal study of nurses in South Africa, using economic experiments to test whether more altruistic nurses are more likely to choose challenging posts in rural areas. This showed that the nurses who scored highly for altruism – as measured by their generosity towards patients in an experimental game – are more likely to have chosen a rural job over the next three years.

This finding contributes to the literature on the role of pro-social values as an intrinsic motivation factor in labour supply decisions. It suggests that governments could select more altruistic candidates and nurture such values during their training, to address the human resource crisis in rural areas.

In another study, the team investigated the effects of various remuneration mechanisms including fee-for-service, capitation bonuses and pay-for-performance schemes, on staff performance in a controlled laboratory experiment. This experiment was the first of its kind to simulate the incentives and context surrounding the provision of health care services and understand the determinants of health providers' behaviours in a controlled environment.

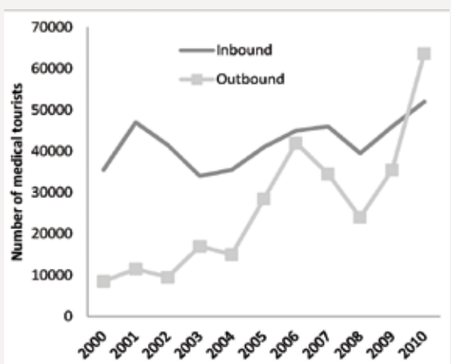
Courtesy Rashida Ferrand

Medical tourism: understanding the impacts of trade in health services

Increase in international travel, access to information through the internet and commercialisation of health care have led to an increase in patient mobility, with a greater number of patients travelling for treatment abroad. Yet understanding of effects on health systems of recipient and originating countries is limited. Johanna Hanefeld and Richard Smith, working with partners at the University of York and elsewhere, have conducted the first ever study examining the net cost or benefits of UK medical tourism.

Using an analysis of the UK's International Passenger Survey, interviews with patients who travelled, as well as estimates of income generated from international patients, the research shows that the UK is a net exporter of 'medical tourists' and that foreign patients are a lucrative source of private income for many National Health Service trusts.

This study, which was widely reported in the media, is part of a broader programme of research, which also includes health systems effects of medical tourism in Thailand and impact of medical tourism in Southern Africa.



Courtesy Anne Koerber

Economics of HIV/AIDS

Despite increasing optimism, the end of AIDS is not in sight. In 2011 an estimated 1.7 million people died of AIDS-related causes and 2.5 million were newly infected with the virus. The number of people living with HIV continues to outgrow the financial and human resources currently allocated to treat them. The global and national resourcing of the HIV response in low and middle income countries continues to be a challenge. The School's economists have an important role in providing policy makers with economic evidence on areas including health systems improvement, the introduction of new technologies, financing mechanisms and demand creation aimed at improving the lives of communities living with HIV.

Integrating HIV and sexual reproductive health services

There are strong theoretical arguments, and an emerging evidence base, which suggest that the integration of HIV and sexual reproductive health services is likely to improve both the quality and efficiency of care in low and middle income countries. Integration has therefore been a key element of both global and national health policies.

Anna Vassall and Fern Terris-Prestholt led the economic component of the Integra project, funded by the Bill and Melinda Gates Foundation, to evaluate whether integration policy has achieved its objectives, focusing on Swaziland, Kenya and Malawi. School economists, working together with the International Planned Parenthood Federation and the Population Council, assessed the degree of integration and costed services in 30 health facilities in Kenya and 10 in Swaziland over time. The results show mixed success, with efficiency improvement highly dependent on context. These have been used by policy makers at the country and global level to inform and sustain the scale up of integrated services to new populations. In rural Malawi, the project used a discrete choice experiment to explore young people's preferences for the configuration of mobile family planning and HIV services.

Rethinking HIV

Sustained financing is essential for the HIV response. UNAIDS has recently estimated that the cost of achieving universal access to HIV prevention, treatment, care and support in 2015 will be US$22 billion. There is a moral obligation to maintain treatment for those who need it – and considerable resources have been committed to lifelong HIV treatment and care. In countries such as Swaziland and Uganda, the fiscal liability this creates is substantial – currently up to three times annual Gross Domestic Product.

The ReThink HIV project, funded by the RUSH Foundation, brings together economists from the School with partners from the University of Oxford, Imperial College London and Harvard University to conduct innovative research in HIV financing and inform policy. Work focuses on the structural and systemic factors – poverty, stigma and discrimination, gender inequality and violence and health systems constraints, among others – that drive and sustain the HIV epidemic and undermine the effectiveness of a wide range of proven HIV interventions. Economists are developing innovative approaches to prioritisation and co-financing HIV interventions across sectors, in order to enable policy makers to expand these important elements of the HIV response.

Avahan project workers, courtesy Lorna Guinness

Avahan – focus on vulnerable groups in India

Over two million people are living with HIV in India. The epidemic is concentrated and predominately driven by high risk groups, particularly female sex workers and their clients, men who have sex with men, and in some contexts, injecting drug users. The Avahan programme, the India AIDS Initiative of the Bill & Melinda Gates Foundation, operates across six Indian states, making it one of the world's largest HIV prevention programmes targeted at these vulnerable groups.

Anna Vassall, Lorna Guinness and colleagues have played an important role in Avahan's rigorous evaluation programme. Focusing on the assessment of cost-effectiveness during scale-up of HIV prevention to full coverage, the team costed over one hundred non-government providers of HIV prevention across four states. The data showed that, despite its high cost, Avahan was highly cost-effective in preventing the spread of HIV in India. The team also analysed the data using econometric methods to identify the factors that drive the costs and efficiency of HIV prevention, providing useful policy insight on design for interventions for high-risk groups globally.

Truck drivers are a high-risk group in India, courtesy Lorna Guinness

Courtesy Sarah Bandali

Using antiretrovirals for HIV prevention

After many unsuccessful trials of HIV prevention technologies, breakthroughs have recently been made using antiretrovirals for preventing HIV. Fern Terris-Prestholt and colleagues at the School are using mathematical and economic modelling to inform the design of demonstration projects of pre-exposure prophylaxis in Nigeria and India among priority groups such as female sex workers. Models are built in strong collaboration with country teams to ensure they address key questions and use locally appropriate data.

Mathematical modelling has traditionally relied on expert opinion to estimate the uptake parameter in impact projections of new HIV prevention products. The team is undertaking discrete choice experiments to estimate these parameters to improve uptake, and better understand how product attributes such as efficacy affect the epidemiological impact, not only directly but also affecting demand for new products. For example, in Tanzania, a rapid discrete choice experiment has informed the design of a voluntary medical male circumcision trial, and uptake predictions are now also being incorporated into cost-effectiveness models of new HIV prevention technologies.

HIV and other sexually transmitted infections in the UK

Around 3,500 new HIV infections occur each year in the UK, and this continues to increase despite intensive prevention efforts. Effective antiretroviral therapy means that death rates are low, but HIV care is expensive – future costs of drug treatment for new infections alone are estimated at around £1.75 billion. People on antiretroviral therapy with a low viral load have markedly reduced infectiousness but the extent of this is currently uncertain.

Alec Miners is engaged in a number of UK-based projects, including economic evaluations of specific treatments and diagnostic methods, and discrete choice experiments to inform the design of NHS services. The Comprehensive Assessment of the Preventative Role of Antiretroviral therapy (CAPRA) study is funded by the National Institute for Health Research to establish the links between sexual risk behaviour and attitudes to HIV transmission. It assessed the effectiveness of immediate rather than deferred antiretroviral therapy, and its cost-effectiveness within the UK National Health Service.

Economic evaluation to reduce early mortality in HIV patients

Lorna Guinness and colleagues are conducting the economic analysis of REMSTART (Reducing Early Mortality in the HIV infected individuals Starting Anti-Retroviral Therapy) trial, aimed at reducing high mortality in patients with low CD4 cell counts starting antiretroviral therapy in Tanzania and Zambia. Intervention group patients receive accelerated initiation of antiretroviral therapy, home-based adherence counselling and drug delivery from lay workers, as well as improved diagnostic screening for opportunistic infections. Working with partners in both countries, the team is carrying out an economic and social evaluation of the intervention using patient level cost data.

Courtesy Lorna Guinness

Economic evaluation

The techniques of economic evaluation are recognised nationally and internationally as a key component of appropriate resource allocation in the health sector. Researchers at the School play a major role in methodological development and empirical applications of these techniques, both in the UK and across many low and middle income countries. Economic evaluation is central to health economics, and covered throughout this publication, for example in the areas of HIV, malaria and diagnostics.

Economic evaluation of vaccines

Working closely with mathematical modellers, health economists at the School have evaluated the cost-effectiveness of numerous vaccines and immunisation strategies. Most studies target decision makers in specific countries, but some models are also designed to estimate global impacts on disease burden and costs. As part of the Hib Initiative, research by Ulla Griffiths and Andy Clark was instrumental in speeding up evidence-based decision-making for *Haemophilus influenzae* type b (Hib) vaccine, mainly in Asia and Africa.

Courtesy Rodrigue Barry, WHO

Their regional analysis found that from the societal perspective, it is estimated that the probability of Hib vaccine being cost saving is 53% and 34% in GAVI-eligible African and Asian countries respectively. In middle-income countries, costs per discounted disability-adjusted life year averted were between US$37 and US$733, depending on local vaccine prices and risks of meningitis mortality.

Evaluating innovations in tuberculosis diagnosis

Globally, 8.8 million people were diagnosed with tuberculosis (TB) in 2010, with 5.7 million people receiving treatment. In the same year 1.4 million people died of TB, 25% of whom were co-infected with HIV. The lack of a rapid and accurate diagnostic tool for *Mycobacterium tuberculosis* has been identified as a critical obstacle to treatment in many low and middle income countries.

Xpert MTB/RIF is an automated molecular test for TB and resistance to rifampicin which has been shown to improve the accuracy of TB diagnosis. Anna Vassall and colleagues in the School have played a key role in the roll out of Xpert MTB/RIF globally. They modelled the introduction of Xpert MTB/RIF in four countries in order to inform the World Health Organization during its assessment of Xpert MTB/RIF for global programmatic recommendation.

Working closely with colleagues from the University of Cape Town and the Aurum Institute, they helped evaluate the scale up of Xpert MTB/RIF in South Africa. The data collected from these trials has also enabled them to investigate how 'real world' health systems constraints influence the cost-effectiveness of Xpert MTB/RIF and to explore different strategies for the use of Xpert MTB/RIF tests in people living with HIV. This is creating an evidence base for policy makers to identify the investments required to prevent TB in over-burdened health systems.

Analysing the cost-effectiveness of malaria rapid diagnostic tests

In many parts of Africa and Asia, it is common practice to give malaria treatment to people who actually do not have malaria, often due to limited access to testing facilities. Rapid diagnostic tests (RDTs) for malaria are a new and promising tool for targeting effective antimalarials only at those who really need them. Kristian Schultz Hansen and other members of the ACT Consortium, an international research collaboration based at the School, have conducted economic evaluation studies across a range of countries in Africa and Asia to help decide whether and under what conditions the introduction of rapid diagnostic tests may be cost-effective.

This research is also assessing the cost-effectiveness of deploying rapid diagnostic tests through different distribution channels – including private sector drug shops, community-based distributors and public sector health facilities and with different levels of training and other supportive interventions. Preliminary results of this research suggest that the introduction of rapid diagnostic tests may be a cost-effective intervention across many settings, although it depends on a number of factors. These include the prevalence of malaria, to what extent health providers comply with test results, how much the rapid diagnostic tests and drugs cost, how accurate the tests are, as well as the presence and quality of alternative testing opportunities.

Project staff using portable diagnostic appliances, photo courtesy Liz Corbett

Hospital records storage room, Kitui District Hospital, Kenya, photographed by Frida Kasteng, Research Fellow in Health Economics. Frida and a colleague spent two weeks in Kitui, collecting data from the district hospital and a nearby health centre as part of health facility costing for the Integra project, evaluating the integrated management of sexual reproductive health and HIV services in several countries (see page 4).

CHILDSPLA in action at the Bloomsbury Festival 2013, courtesy Jenny Orton

CHILDSPLA: helping children say how they feel

Economics informs healthcare decisions by assessing the health benefits produced relative to the resources used. A key question is how these health benefits can be assessed, and until now, children have been largely excluded.

The CHILDSPLA project has two main objectives: to provide a tool to enable health state information to be collected directly from children, and to provide a means of establishing the relative importance of different aspects of their health to the children themselves.

It uses an animated iPad app, developed to engage children aged between four and 14 years about their health. This enables them to describe their feelings and state of health more easily than with traditional methods.

The character and the animations have been developed by working closely with schoolchildren and children in hospital, which demonstrates the scope for bringing children into the process of choosing what care should be provided for them. Led by John Cairns, CHILDSPLA is a collaboration with Great Ormond Street Hospital and the Royal College of Art, funded by the Medical Research Council.

Cost-effectiveness of home visits for newborn survival

Each year, 3.3 million newborn babies die, even though existing interventions could prevent most of these deaths. In partnership with researchers at the Kintampo Health Research Centre and colleagues at the School, Catherine Pitt and Kara Hanson examined the costs and cost-effectiveness of a community-based strategy to connect babies with the care and interventions already proven to protect and restore their health. They studied the costs of the NEWHINTS (NEWborn Home INTerventions Study) intervention in rural Ghana, where lay volunteers visited and counselled women at home during pregnancy and the first week of their baby's life. They found that the strategy was very likely to be cost-effective for low-income countries as well as some middle-income countries.

This is the first study to provide robust evidence on the costs and cost-effectiveness of a newborn home visit strategy in Africa, and the first to look at the strategy's costs in a near real-world setting. As the newborn home visit strategy had been shown to reduce newborn deaths by a seemingly modest 5% to 18%, the cost-effectiveness findings were particularly important in highlighting the value of the approach to policymakers.

Point of care tests for diagnosis and monitoring for syphilis and HIV

Great advances have been made in the area of point of care diagnostics and monitoring technologies. New point of care diagnostics and new dual tests can identify both active syphilis and are highly specific, and dual HIV and syphilis tests within a single cartridge are being developed.

Fern Terris-Prestholt and colleagues are working with the World Health Organization and UNITAID in the various phases of diagnostic development and roll out. In early phases, cost-effectiveness modelling considers key trade-offs between diagnostic characteristics, such as sensitivity, specificity, product pricing and human resource use and patient flows, and prevalences, as well as potential for increase in coverage in the context of dual syphilis/HIV tests, HIV early infant diagnostics, CD4 and viral load point of care tests.

Statistical methods for health economic evaluation

Health economists and statisticians at the School have helped develop improved methods for cost-effectiveness analyses that use patient-level data. These include approaches to handling selection bias in economic evaluations that use observational data, tackling missing data and accommodating clustering.

Most published cost-effectiveness analyses use data from multi centre or cluster trials, but fail to recognise that costs and outcomes will be more similar among individuals recruited from the same 'centre' or 'cluster' (e.g. hospital) than for people recruited from different settings (see figure 1).

Richard Grieve and colleagues, with partners at the Universities of Cambridge, Sheffield, Aberdeen, East Anglia, funded by the Medical Research Council methodology programme, are developing improved statistical methods, including new multi-level models, that take account of these forms of bias. Many studies also face the problem that some data are missing, and Richard Grieve has pioneered and extended the use of multiple imputation approaches that provide more accurate estimates of cost-effectiveness than conventional methods.

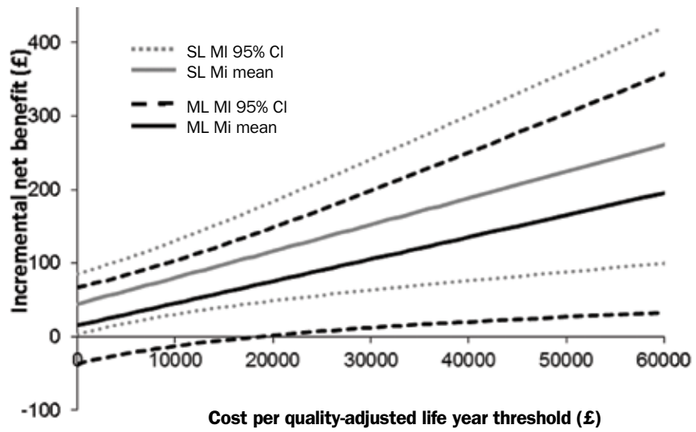


Figure 1: individual versus cluster sampling. *Estimated Incremental net benefit of a cluster-level intervention for preventing post-natal depression. Multilevel multiple imputation (ML MI) to handling missing data that accommodates clustering, versus single level multiple imputation (SL MI) approach that ignores clustering.*

Volunteer childcare counsellors, image courtesy Joanna Schellenburg

Health Technology Assessment

ADVANCE-HTA is a European collaboration with partners from 13 countries with the aim of advancing and strengthening the methodological tools and practices related to the application and implementation of Health Technology Assessment. The work package undertaken by John Cairns and Laia Maynou-Pujolràs is an empirical investigation of the decisions made in different countries on whether to adopt particular new health technologies.

An analysis of decisions with respect to 157 cancer drug-indications is being used to demonstrate the utility of the approach. They empirically determine the main variables influencing the final cancer drug decision for a set of 15 EU countries. The variables range from system-level (body independence, who initiates the appraisal, decision level, whether economic evaluation is required, pricing decision) to product-specific variables (stage of disease, expected cost-effectiveness, orphan drug status). Future work will extend the analysis to additional clinical areas, such as multiple sclerosis and hepatitis C.

How can we measure the costs of health care providers' time?

While the economic costs of paid and 'volunteer' health workers often account for more than half of the total costs of health interventions in low and middle-income countries, the methods for measuring and valuing their time have not been systematically explored.

Catherine Pitt is examining methodological issues in collecting and analysing the costs of the time that health care workers and volunteers contribute to implementing health interventions. This work builds on colleagues' extensive experience collecting and analysing data on the costs and cost-effectiveness of health interventions in low and middle-income countries.

As well as advancing the theoretical and methodological academic literature, the project will contribute to more efficient allocation of resources, especially in countries where resources – and particularly health workers – are most scarce.

Kidney allocation schemes

For most patients with end-stage renal disease, kidney transplantation results in improved survival and better quality of life at low cost. However, transplant activity is limited by a shortage of donor organs, and John Cairns and Bernadette Li are assessing whether the approach to allocating the limited number of donor kidneys can be further optimised to achieve maximal health benefit, while at the same time considering both equity and cost.

They are developing a simulation model to facilitate comparison of both costs and health outcomes, in terms of quality-adjusted life years, of alternative deceased donor kidney allocation schemes for patients with end-stage renal disease in the UK. The outputs of the model can be used to assess the potential impact of changes to the national kidney allocation scheme and to inform future policy.

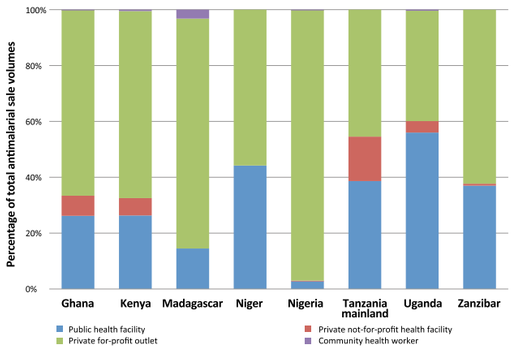
Economics of malaria

The London School of Hygiene & Tropical Medicine hosts the largest group of academics working on the economics of malaria globally, who apply a wide range of methodological approaches to the analysis of strategies to enhance malaria treatment and prevention across sub-Saharan Africa and Asia.

Markets for antimalarial treatments

Effective medicines to treat malaria exist, but access to them remains low in developing countries. As recently as 2008, only 16% of children under five showing fever received the recommended treatment of an artemisinin-based combination therapy (ACT). Low levels of ACT use reflect poor supply in the public sector and the high use of private vendors – who often provide over half of fever treatments but do not sell affordable ACTs.

Over the last 15 years, School researchers have been studying commercial markets for antimalarials in malaria-endemic countries, to identify strategies to improve access and quality of treatment. This has included analysis of the nature of the antimalarial supply chains in seven countries under the ACTwatch programme, and competition in the retail market for antimalarials in Tanzania and Cambodia. In Cambodia, Shunmay Yeung and colleagues have employed mixed method evaluations to document the impact of the national programme for socially marketed ACTs and malaria Rapid Diagnostic Tests first implemented in 2002.



Antimalarial market share by sector in 2010 – showing the dominance of the private for-profit sector (shown in green) in terms of antimalarial sales volumes in many African countries

In 2010 the Global Fund launched the Affordable Medicines Facility – malaria (AMFm), a multi-national antimalarial subsidy programme to increase access and use of ACTs. Kara Hanson, Catherine Goodman and Sarah Tougher were part of an independent evaluation team that studied the impact of AMFm in eight national scale pilots in Ghana, Kenya, Madagascar, Niger, Nigeria, Uganda, Tanzania and Zanzibar, feeding directly into Global Fund Board decisions. The evaluation found that in all except Madagascar and Niger, where impact was more limited, AMFm led to large increases in the availability and market share of ACTs, driven mainly by changes in the private for-profit sector.

School researchers are now conducting further analysis of ACTwatch and AMFm data to study the determinants of the price and availability of ACTs at outlet level, benefit incidence analysis to explore the equity implications of AMFm, and an analysis of the price elasticity and other determinants of demand for antimalarials. They are also assessing the costs of rolling out the AMFm programme, and determinants of antimalarial quality at retail outlets.

Evaluating interventions to improve malaria treatment in Nigeria and Cameroon

Governments and donors all over Africa are searching for sustainable, affordable and cost-effective ways to improve the quality of malaria case management. Widespread deficiencies have been reported in the prescribing and counselling practices of health care providers treating patients with fever in both public and private health facilities. Cameroon and Nigeria are no exception, with poor adherence to national guidelines, the frequent selection of non-recommended antimalarials and the use of incorrect dosages.

Lindsay Mangham-Jefferies and Virginia Wiseman worked with the Ministries of Health in Cameroon and Nigeria to design and implement interventions to support the introduction of malaria rapid diagnostic testing. The Research on the Economics of Artemisinin-based Combination Therapy (REACT) project has evaluated the effectiveness and cost-effectiveness of interventions to improve the care of patients with malaria symptoms.

In Cameroon, these comprised two training courses for providers from public and mission facilities. In Enugu State, Nigeria, the team supplied malaria rapid diagnostic tests to public health centres and to pharmacies and drug stores in the private sector. They also trained providers and initiated community-based activities to raise awareness on malaria testing. The intervention trials allow comparison between sites where currently microscopy testing is widely available (Cameroon) and where the use of any form of malaria diagnostic testing is extremely limited (Nigeria), and provide an important basis for comparison across different types of health care providers, delivery and financing systems, as well as different ethnic and socioeconomic groups.


Market traders selling antimalarials in Benin, courtesy researcher Sarah Tougher

Malaria in pregnancy – new approaches to prevention

Malaria in pregnancy poses risks for both the mother and for her unborn child, who is at risk of low birth weight and its lifetime consequences. Prevention has focused on intermittent preventive treatment with a safe, effective drug, sulfadoxine-pyrimethamine, which is part of national malaria control strategies in 27 countries. However, the effectiveness and appropriateness of this intervention are being challenged by changing malaria epidemiology and increasing drug resistance.

Kara Hanson and Silke Fernandes lead the economics working group of the Malaria in Pregnancy Consortium, funded by the Bill and Melinda Gates Foundation, and are conducting cost-effectiveness analyses alongside a number of clinical trials to identify new approaches to managing and preventing malaria in pregnancy. These include increasing the number of doses of preventive treatment during pregnancy, and switching from a policy of preventive treatment to one of screening all pregnant women with a rapid diagnostic test and treating only those identified as having malaria parasites. They are also collecting new data on the household and health system burden of malaria in pregnancy, and on the costs of existing and new interventions. Their evidence will be presented to the World Health Organization's technical bodies which advise on changes in malaria programme guidance.


Malaria screening in Tororo, Uganda. Picture courtesy Hellen Allwood, MCDC

Evaluation of a novel long lasting insecticidal net and indoor spray product

The massive scale-up of long lasting insecticidal nets and indoor residual spraying has led to a major reduction in malaria burden, up to 50% in many sub-Saharan African countries. However, resistance to pyrethroid insecticides used in these vector control technologies is now emerging in many areas. In some locations, this resistance appears to be so strong that vector mosquitoes survive contact and continue to transmit malaria. Manufacturers are responding by producing long-lasting non-pyrethroid insecticides that can be sprayed on walls and provide control for almost a year. Andreia Santos and colleagues are seeking to demonstrate whether the novel formulation will be more effective for controlling malaria in Muleba, Tanzania. A cost-effectiveness analysis will be conducted to estimate and compare the costs and benefits of these different tools for malaria control.


Primary Health Centre in Rufiji, Tanzania, courtesy Catherine Goodman

Diagnosis and screening

Many new diagnostic tools have recently been developed or are in the pipeline. Economic analysis of these new diagnostics focuses on the trade-offs they present – often they are more expensive than previously available approaches, but may reduce costs in terms of over- or inappropriate treatment. Moreover many new tests are more suitable for decentralised use, providing opportunities for task shifting and broadening access to screening and treatment. Diagnoses for malaria, HIV, syphilis, diabetes, TB and acute febrile illness are key areas of our economic analyses.

Cost-effectiveness of a point-of-care rapid HIV testing in London

Hackney is a high prevalence area for HIV in London, with an estimated prevalence of 7.75/1,000 for people aged 15 to 59 in 2012. Early diagnosis and treatment can save lives, prevent transmission of the virus and save health care resources.

Andreia Santos and colleagues are assessing the cost-effectiveness of determining new HIV diagnoses using an educational programme promoting HIV point-of-care testing. Effectiveness was measured using a cluster randomised controlled trial in 45 GP surgeries in the borough. These were randomised to receive a programme promoting rapid HIV testing during the registration health check or at first consultation, or to continue standard care. The results showed that the screening test using was a cost-effective intervention compared to the usual care.

Courtesy Anne Koerber

Modelling the cost-effectiveness of diagnosis and treatment of Vivax malaria

The malaria parasite *Plasmodium vivax* causes a huge burden of disease particularly in Asia. Unlike the more widespread Plasmodium falciparum, it forms hypnozoites which can cause repeated relapses. The only class of drugs which are effective against hynozoites are the 8-aminoquinolones such as primaquine.

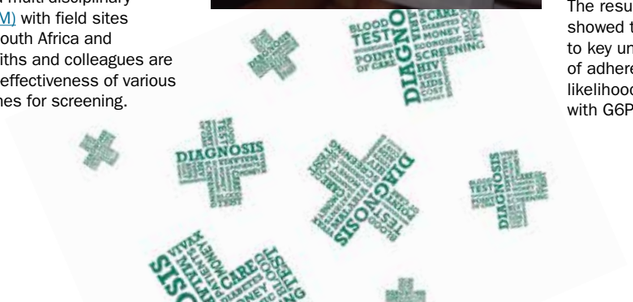
Courtesy Shunmay Yeung

However these can cause severe haemolysis in people with Glucose-6-phosphate dehydrogenase (G6PD) deficiency, a common hereditary enzyme defect. Shunmay Yeung and colleagues conducted a project to model the cost-effectiveness of different strategies for achieving radical cure of patients with symptomatic P vivax infection using a combination of a decision tree model with Markov cycle. The strategies compared included standard treatment with chloroquine or an artemisinin combination therapy, with and without an 8-aminoquinolone, and with and without prior testing for G6PD deficiency. The results of the sensitivity analysis showed that the results were very sensitive to key uncertainties such as the level of adherence to treatment and the likelihood of haemolysis in patients with G6PD deficiency.

Screening TB patients for diabetes and diabetes patients for TB

Today, there are more patients in the world with TB and diabetes than are co-infected with TB and HIV. Having diabetes triples the risk of developing tuberculosis. Consequently, the alarming growth of type 2 diabetes mellitus in TB endemic countries and among people originating from TB-endemic countries poses a serious threat to global TB control. However, there is scarce evidence on optimal strategies for screening and treating concurrent diabetes and TB. As part of a multi-disciplinary consortium (TANDEM) with field sites in Romania, Peru, South Africa and Indonesia, Ulla Griffiths and colleagues are comparing the cost-effectiveness of various diagnostic approaches for screening.

Early infant diagnosis of HIV in rural Njombe Region, Tanzania, courtesy Fern Terris-Prestholt



Macroeconomics, trade and health

An increasingly interconnected world requires greater engagement with the relationships between health and macroeconomic factors such as international trade. Our research on macroeconomics and health has pioneered the application of macroeconomic modelling to these issues, particularly the intersections of economic development and health. It also examines the implications for health of global trade, agriculture food, water and climate change.

Courtesy Ben Palafox

Macroeconomic impact of infectious disease outbreaks

Macroeconomic modelling of infectious disease has been a focus of School research for nearly a decade, with several projects focused on infectious disease outbreaks, antibiotic resistance and malaria.

One of the major findings from this research has been that indirect economic effects, such as work absence by parents caring for their children, or behavioural change in response to fear of infection, can outweigh the direct economic health impacts of a disease outbreak. They also show that provision of antivirals and vaccinations can provide an important cost-effective factor for changing behaviour during a pandemic if they reduce mortality sufficiently to avoid the tipping point at which behaviour change might occur. These models have been applied to pandemic flu and antibiotic resistance in various European and middle-income settings.

A new malaria modelling tool, funded by the UK Medical Research Council and developed by Richard Smith, Marcus Keogh-Brown, colleagues at the School and the University of Copenhagen, is now being used in Ghana and Tanzania. This captures the dynamic interactions between health, the economy and population demographics and can be used to analyse the health, economic and population effects of both health interventions and investment in vector control measures. It can also assess the disease burden imposed by malaria on an economy and the potential health and economic effects of donor fatigue. Applications of this integrated approach to modelling are also being extended to other contexts such as the impact of dietary change on agriculture, health and the economy.

Food prices, food consumption and health

Fluctuating food prices are a major concern globally, and are associated with both under- and over-nutrition. Laura Cornelsen and colleagues have systematically reviewed evidence on the relationship between food prices and food demand in countries of all income levels. A meta-analysis of food price elasticities, partly funded by the Leverhulme Centre for Integrative Research on Agriculture and Health, found that the demand for food is most sensitive to price changes in low-income countries, and least sensitive in high-income countries. The researchers also identified similar differences between low and high income earners within countries.

Work in this area is continuing through a Medical Research Council Fellowship focusing on the direct and indirect impacts of food taxes and subsidies on food consumption and population health in the UK. The potential of food and beverage taxes is increasingly recognised, with new research showing some positive health effects. This project will provide new insight through analyses of non-symmetries and non-linearities in consumers' response to price increases or decreases. Discrete choice experiments will be used to test the importance of price in consumption decisions, as well as other drivers of demand including habits, taste and convenience.

How international trade and agriculture policies affect health

International trade and agricultural policy are increasingly recognised as important drivers of population nutrition and related health. However, despite widespread calls for agricultural and trade interventions, the policy role is not well understood. Historically, policy negotiations consider food safety, but the impact of these policies is wider, affecting levels of malnutrition, obesity and non-communicable disease.

Research by Helen Walls and colleagues at the School has examined the impact of international trade on nutrition via key linkages. A comprehensive systematic review on the impact of trade policy on nutrition and related health, part funded by the Leverhulme Centre for Integrative Research on Agriculture and Health and the National Health & Medical Research Council of Australia, demonstrates the need for high-quality studies examining causal relationships. The team has also investigated the political priority given to nutrition and related health in the EU's Common Agricultural Policy.

Terraced vineyards, courtesy Rachel Irwin

Health co-benefits of greenhouse gas reduction strategies

In the absence of policies to greatly reduce greenhouse gas emissions, major climate change could take place during this century. The likelihood of a range of serious impacts is high and deep cuts in emissions are needed to avert climate change.

Many strategies to reduce emissions have collateral benefits for health. Macroeconomic modelling research conducted by Richard Smith, Marcus Keogh-Brown and colleagues at the School and the University of Copenhagen, funded by the UK Department of Health, has been used to assess the potential impact on the economy of health co-benefits and wider macroeconomic effects from strategies to meet 2030 UK emission reduction targets. These include increased active travel, home insulation and healthier eating, suggesting that health could potentially play an important role in the climate change debate and provide further evidence for the measures required to meet reduction targets.

Studying health economics at the School

The London School of Hygiene & Tropical Medicine is a world-leading centre for research and postgraduate education in public and global health. We now have more than 1,000 London-based Master's and Research students, 3,000 studying Master's by distance learning and over 1,000 on short courses and continuous professional development. The School was recently named the world's leading research-focused graduate school in the Times Higher Education World Rankings. We have a flourishing research degree programme in health economics, with more than 30 students, working across low, middle and high income countries.

Research student profiles

Laura Anselmi

Measuring and understanding equity and efficiency in health sector public financing: geographic resource allocation in Mozambique.

Despite the recognition of equity as a fundamental health policy component of universal health coverage, health care provision is still inequitable in many low and middle income countries. Greater equity in financing, particularly in the allocation of public financial resources, could help improve the distribution of benefits from health care use across populations.

To achieve this, it may not be enough to implement a-priori equitable allocation mechanisms, the effects of which may be limited by inefficiency in the management of financial resources and by constraints to service use. In my research, I analyse these constraints and simulate the effectiveness of public expenditure re-allocation across districts in Mozambique. I hope the results will contribute to the national health sector financial strategy, and to the debate on universal health coverage.

Luke Harman

Targeting and incremental coverage in agricultural and health voucher subsidy programmes.

In recent years, targeted subsidies have become extremely popular for helping increase access to public health products and agricultural inputs. My research draws on health and agricultural literatures to better understand key challenges facing such subsidies in both sectors.

Focusing on Malawi's Farm Input Subsidy Programme and Tanzania's National Voucher Scheme for mosquito nets, I am looking at how equitable targeting outcomes have been, and assessing the impact of subsidised mosquito nets on incremental net coverage, respectively.

Based in the Leverhulme Centre for Integrative Research in Agriculture and Health and supported by an innovative inter-collegiate collaboration between LSHTM and the School of Oriental and African Studies, funded through the Bloomsbury Colleges, I have enjoyed access to world-class teaching and research support, which has considerably enriched my doctoral research experience.

Chima Onoka

Economic analysis of the market for health insurance in Nigeria.

In Nigeria, social and private health insurance are currently being employed to enhance healthcare coverage. With guidance from experienced supervisors, my PhD, sponsored by the Commonwealth Scholarship Fund, has enabled me has enabled me to provide the first systematic analysis of the way Nigeria's national health insurance scheme developed, and how a role emerged for health maintenance organisations within the system. It examines the nature of competition, and the purchaser-provider relationship between these organisations and healthcare providers.

Returning to the School for PhD study after completing my MSc degree in health policy planning and financing a few years earlier provided just the right opportunity for me to further my understanding of health economics, and to provide information about the supply of health insurance in Nigeria. I hope this research contributes new insight into processes that shape universal health coverage-related reforms in a developing country setting.

Jorn Jacobsen

Cost effectiveness of prostate cancer management in Norway.

Working as a hospital manager, I needed more in-depth knowledge in health economics, which is why I am undertaking research at the London School. Being a part time student the remote access to computing facilities makes it possible for me to "be at the School" even from my home or my office. The quality, flexibility and availability of supervision are invaluable.

Non-metastatic prostate cancer is the most common cancer in men and in Norway, at least eight different treatment options are offered to this group of patients. My PhD uses decision analytic modelling to compare the cost effectiveness of the different treatment options.

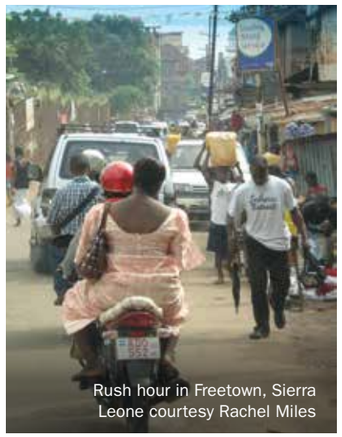
Norway, like other countries, is facing many challenges in public health, not least prioritisation and rationing of health care in a system of tax-based universal coverage, and I hope my research here will help influence decision making in cancer care.

Maria Bertone

Health workers' remuneration structure: effects on performance and accountability in Sierra Leone.

Motivation of health workers is essential to the effective functioning of health systems. While financial incentives are not the only element of motivation, they are important. In Sierra Leone, health workers earn a combination of incomes, including salary, performance-based payments, allowances, gifts from patients, per diems, as well as income from work outside the health sector. Although there are growing concerns about the effects of this 'complex remuneration', little is known about its exact composition and its consequences.

My PhD research, supported by the Fondation AEDES, explores these issues, in terms of health workers' livelihood strategies – how they earn and spend these different incomes, performance – how remunerations influence their daily work patterns, and accountability – how remunerations are linked to accountability requirements which affect service delivery. Funded by the ReBUILD Research Consortium I have collected data in health facilities in rural Sierra Leone, using a variety of innovative quantitative and qualitative methodologies. I hope my findings will be useful for policy-makers, NGOs operating in the field and researchers adopting similar methods.



Rush hour in Freetown, Sierra Leone courtesy Rachel Miles

Postgraduate taught courses

Training in health economics is a core part of our teaching in public health. The School offers an MSc Public Health with a specialisation in Health Economics which enables students to follow a stream specifically designed to provide a foundation for the understanding of health economics as applied in health services research.

The stream is aimed at anyone interested in working as a health economist in an academic or professional capacity across high, middle and low income countries – with or without previous training in economics.

The MSc Health Policy Planning and Financing – delivered in collaboration with the London School of Economics – also has a strong focus on health economics and health financing. In addition to these specialist degrees, introductory and advanced modules in Health Economics are open to all Master's and research degree students, and are offered as stand-along short courses. Health economics modules can be taken face-to-face in London or through our distance learning programme. These include:

- Introduction to health economics – course designed for non-economists, this introduces students to economic approaches used in public health and the scope and contribution of health economics.
- Economic analysis for health policy – strengthens students' understanding of health care markets, and the role of government intervention.
- Economic evaluation – develops students' understanding of and ability to apply current methods in analysing the cost-effectiveness of health-related interventions.
- Financial management – provides an introduction to financial management and gives students confidence in handling financial information.
- Health care evaluation – describes and illustrates the range of methods which can be used to evaluate health services.
- The economics of global health – introduces students to economic concepts, practice and evidence concerning the global economy and its relation to global health.
- Analytical models for decision making – introduces students to model-building as a basis for analysing health care, and to the use of methods for improving decision-making in complex and uncertain situations.

Courtesy Anne Koerber

The modules are taught alongside a diverse programme including courses in both quantitative and qualitative analytical methods.

Specialist short courses

We also offer additional short courses related to specialist areas in health economics for academics and practitioners:

Methods for addressing selection bias in health economic evaluation (Richard Grieve)

Taught by leading experts in statistical methods for economic evaluation, this course offers an in depth description and practical application of methods for addressing treatment selection bias in economic evaluation, including regression, propensity score matching and genetic matching.

Design and analysis of discrete choice experiments (Mylene Lagarde)

Discrete choice experiments have been used to assess patient preferences for different models of health care delivery or clinical therapy, and to quantify the relative importance of different factors on health workers' job choices. This course covers theoretical and practical issues in designing discrete choice experiments and data analysis.

Health Economics and Financing in Low and Middle Income Countries. (Lorna Guinness and Virginia Wiseman)

Originally developed for UNICEF, we have trained over 250 of their staff on this course on equity and efficiency in the financing and delivery of health systems. The course has now been extended to staff from the UK Department for International Development and Australian Aid.

"We are delighted to be partnering with a world class institution and outstanding faculty with the credibility necessary to deliver on UNICEF's strategic learning objectives."

Dawn Denvir, Chief, Organizational Learning and Development Section, UNICEF

Courtesy UNICEF

Health economists advising on policy

Economists at the School have a wealth of experience in advising UK and other national governments, international agencies, and organisations. Their research findings have directly influenced policy decisions, and shaped many of the debates on important issues related to health system development, health technology assessment and broader socio-economic aspects of health across a variety of country settings.

Working with NICE and other agencies in the UK

Alec Miners and John Cairns have worked closely with the National Institute for Health and Clinical Excellence (NICE) since its inception in 1999, producing briefing papers on wider societal benefit and on burden of illness, and through membership of the NICE Appraisal Committee. A number of colleagues have contributed to the development of clinical guidelines in cancers, notably prostate and breast cancer. John Cairns has advised the Joint Committee on Vaccination and Immunisation on economic evaluation methods, and provided health economic input to the Department of Health committee on the safety of blood tissues and organs. Ulla Griffiths has been a member of a NICE programme development group for public health guidance on overweight and obese adults: lifestyle weight management.

Economists from the School are also engaged with UK research funding bodies. Richard Smith is chair of one of the three grant awarding panels at the Economic and Social Research Council and has been involved as an ESRC representative on various cross-council and cross-country initiatives. John Cairns has been a member of the National Institute for Health Research Health Technologies Assessment Commissioning Board and is currently a member of the Research Methods panel.

Contributing to international debates

A number of economists were involved with the 2001 Commission for Macroeconomics and Health which set out to provide evidence to persuade health and finance ministers of the close linkages between health and economic growth. Anne Mills was a commissioner and led a research team, including Kara Hanson, which estimated the cost of expanding health services to meet the health needs of the poor in low-income countries, and explored some of the health system constraints to scaling up services. Richard Smith led a report for the Commission concerning global responses to antimicrobial resistance, as part of his work for the World Health Organization's Global Strategy on Antimicrobial Resistance. The commission's report was influential in shifting the balance of international opinion in favour of greatly increased development assistance for health.

Catherine Goodman and Kara Hanson produced early evidence about the role of the private sector as a source of antimalarial medicines and insecticide-treated nets in sub-Saharan Africa. Together with their research team, they developed new methods for studying private sector supply of antimalarial medicines. Evidence from these studies, and the results of economic modelling by Shunmay Yeung, informed the 2004 US Institute of Medicine committee on access to antimalarials, "Saving Lives, Buying Time"; the independent evaluation of a global mechanism for subsidising antimalarials, the Affordable Medicines Facility-Malaria (AMFm); and subsequently led to the 2012 Global Fund Board decision to roll the AMFm into their new funding mechanism.

School staff have provided health economics input to a number of international funding agencies, helping to guide their investments. Work by Carol Dayo Obure, Sedona Sweeney, Michelle Remme and Anna Vassall on the financing and cost-effectiveness of HIV prevention has been presented at the Economic Reference Group of UNAIDS and the World Bank. Anna Vassall has also conducted a number of cost-effectiveness studies of new TB drugs and diagnostics that have been considered as part of the WHO programmatic recommendation process. Ulla Griffiths has served on several advisory committees for the WHO, GAVI Alliance (formerly the Global Alliance for Vaccines and Immunisation) and the Gates Foundation concerning the cost-effectiveness of vaccines and immunisation strategies. She is also a member of GAVI's Independent Review Committee.

Courtesy Antonia Dingle

Providing policy advice to national governments

Engaging with national policy processes has also been a key area of focus. Anne Mills has been involved over many years in advising on the development of the Thai health financing system, and evaluating its achievements. She also advised the High Level Expert Panel which proposed a roadmap towards Universal Health Coverage for India. Jo Borghi's research on pay-for-performance in Tanzania has contributed to national plans to scale up the scheme across the country, and Shunmay Yeung's work on antimalarial resistance has contributed to national policy change in Southeast Asia. Richard Smith has been involved with a number of countries in Southeast Asia concerning the implications of expansion of trade in health services. Ulla Griffiths has advised governments in Europe and Africa on the cost-effectiveness and budget impact of introducing new vaccines.

Courtesy Anne Koerber

Support our work

The London School of Hygiene & Tropical Medicine's work around the world is only possible thanks to the generous support of funders who share our commitment to improving health worldwide.*

Gifts from individuals and institutions make all the difference in making sure good ideas become good policy and practice. We hope you will join us in contributing to a healthy future.

For more information about supporting our work, please contact:

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The School's Faculty of Public Health and Policy at Tavistock Place, London, courtesy Anne Koerber

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