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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Forewords & introduction

As with any system financing health care, the UK’s National Health Service and Georgia’s National Health Service have 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 finite budgets. This relies critically on high-quality clinical and economic research.

Economists at the London School of Hygiene & Tropical Medicine have been involved here, 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.

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.

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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 Coppen 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 Welcome 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.

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Forewords: from our partners

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

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

Dr Viroj Tangcharoensathien
Senior Scholar, International Health Policy Program, Thailand

Dr Tom Grubin
Founder and Executive Director, International Health Economics Association (iHEA)

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

Introduction: Health economics coming of age

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.

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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 explain 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 organisations about how to better undertake these functions.

In Tanzania, and as part of the UNITAS project, is evaluating financing and service provision reforms to enhance access to primary healthcare in Tanzania and South Africa. In the Asia-Pacific region, Vigna Wiseman and Lorna Guinness are working on the Sustainable HealthCare Financing (SHIFT) project to re-evaluate health systems equity in these countries.

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? At Oxford 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 (SHELD) 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 regressive in Tanzania and Ghana, and regressive in South Africa. Out of pocket payments and insurance contributions for the informal sector were regressive in all countries, while direct taxes were regressive in Tanzania and Ghana. 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.
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 policymakers with economic evidence on areas requiring 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 Fem Terriës-Prestholt led the economic component of the Integra project, funded by the Bill and Melinda Gates Foundation, to evaluate whether integration policy has been achieved, 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 and care in 2015 will be US$22 billion. There is a moral obligation to maintain treatment for those who need it – and some economic 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 ReTRIVaS 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 financing HIV interventions across sectors, in order to enable policymakers to expand these important elements of the HIV response.

Avahan – focus on vulnerable groups in India

Over two million people are living with HIV in India. The epidemic is concentrated and predominantly 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.

Using antiretrovirals for HIV prevention

After many unsuccessful trials of HIV prevention technologies, breakthroughs have recently been made using antiretrovirals for preventing HIV. Fem Terriës-Prestholt and colleagues at the School have been 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.

Economic evaluation to reduce early mortality in HIV

Using discrete choice experiments and survey data, Anna Vassall and colleagues have been evaluating the impact of different models for antiretroviral therapy. Using antiretrovirals for HIV prevention

Antiretrovirals continue to be expensive, despite significant price reductions. 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 and viral load. It assessed the effectiveness of immediate rather than deferred antiretroviral therapy, and its cost-effectiveness within the UK National Health Service.
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 modelers, 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.

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 overburdened 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 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.
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 Karla Hansen 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 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 values of the approach to policymakers.

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 those 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.

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 Tims-Prestholt and colleagues are working with the World Health Organization and UNAIDS 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. In early infant diagnostics, CD4 and viral load point of care tests.

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

Health Economics Assessment

ADVANCE-HTA is a European collaboration with partners from 13 countries with the aim of advancing and strengthening the methodology tools and practices related to the application and implementation of Health Technology Assessment. The work package undertaken by John Cairns and Bernadette Li is an empirical investigation of the decisions made in different countries in 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 (policy independence, who initiates the appraisal, decision level, whether economic evaluation is required, pricing decisions to product-specific, variables (age 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.

Figure 2: 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.

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 allocation of 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 availability in the public sector and the high use of private vendors – who often provide poor quality 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.

Educating 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 current 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.

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 populations 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. School researchers and colleagues are seeking to demonstrate whether the novel formulation will be more effective for controlling malaria in Muleta, Tanzania. A cost-effectiveness analysis will be conducted to estimate and compare the costs and benefits of these different tools for malaria control.

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 Gisele Fonseca 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.
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 1 in 100 people aged 15 to 59 in 2012. Early diagnosis and treatment can save lives, prevent transmission of the virus and save health care resources.

Andrea 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.

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 hypnozoites are the 8-aminoquinolines such as primaquine.

However these can cause severe haemolysis in people with Glucose-6-phosphate dehydrogenase (G6PD) deficiency, a common hereditary enzyme defect. Shunmay Young 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-aminoquinoline, 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.
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 proper 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.

Chima Onaka  
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 to have the first systematic analysis of the way Nigeria’s national health insurance scheme develops, and how a role envisaged for health maintenance organisations within the system. It examines the nature of competition, and the purchaser-provider relationship between these organisations and health 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.

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 Faculty of 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 ReBjÜD 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 policymakers, NGOs operating in the field and researchers adopting similar methods.

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 scalability 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.

Chima Onaka, Laura Anselmi, Maria Bertone, Jorn Jacobsen

The economics of global health – converses 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.

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

Health Economics and Financing  
In Low and Middle Income Countries. (Loma Guinnes and Virgínia 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.

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.

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

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 (Michelle 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’ choices. This course covers theoretical and practical issues in designing discrete choice experiments and data analysis.

The economics of global health – converses 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.

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

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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. 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 in 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 Technology 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 antimicrobial medicines and insecticide-treated nets in sub-Saharan Africa. Together with their research team, they developed new methods for studying private sector supply of antimicrobial medicines. Evidence from these studies, and the results of economic modelling by Shumay Yeung, informed the 2004 US Institute of Medicine committee on access to antimicrobials, “Saving Lives, Buying Time”; the independent evaluation of a global mechanism for subsidising antimicrobials, the Affordable Medicines Facility–Malaria (AMFm); and subsequently led to the 2012 Global Fund Board decision to call 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 Davis Oudin, Sédona Sweeten, 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.

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 Burgh’s research on pay-for-performance in Tanzania has contributed to national plans to scale up the scheme across the country, and Shumay Yeung’s work on antimicrobial 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.

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.

Support our work

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

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