



L V Prasad Eye Institute is part of first Global Research Program Devoted to Vision and Sustainable Development Goals

ENGINE comprises a four-country suite of trials examining the impact of glasses on promoting better living from childhood through to old age.

In collaboration with the Queen's University of Belfast, L V Prasad Eye Institute along with nearly 30 other partners from the USA, UK, Vietnam, Bangladesh, Zimbabwe and India, is working on a suite of studies to explore the impact of vision care on the global level to achieve Sustainable Development Goals in low and middle-income countries. The study has received funding support of £3.5 million from the Wellcome Trust and Chen Yet-Sen Family Foundation.

Poor vision is the world's largest unmet disability affecting 2.2 billion people. About 8.8 million people in India are blind, and another 47 million people are visually impaired. 70% of the blindness the world over is preventable. Led by Professor Nathan Congdon of Queen's University Belfast (QUB) in the UK and Dr Rohit Khanna of the L V Prasad Eye Institute (LVPEI), various universities, schools nongovernment organizations, public health bodies, government ministries, institutions and patient groups are part of the multi-disciplinary study team. From LVPEI, Senior Public Health Specialists – Dr Srinivas Marmamula and Ms Asha Latha Metla and Senior Retina Consultant - Dr Raja Narayanan are also part of the study. The other collaborators from India include Dr Suvarna Alladi from NIMHANS at Bangalore, Dr Pallab Maulik from The George Institute for Global Health India at New Delhi and Mr Shashidhar Komaravolu from the Alzheimer's and Related Disorders Society of India, Hyderabad Deccan Chapter.

"Termed as ENGINE (Eyecare Nurtures Good-health, Innovation, driving-safety and Education), it is a five-year project designed to leverage high-quality research results to drive lasting policy change and achieve an improved quality of life for people in low and middle-income countries. ENGINE comprises four research trials in India, Vietnam, Bangladesh and Zimbabwe, to examine the impact of glasses on promoting better living, from childhood to old age, and the impact on multiple Sustainable Development Goals (SDGs)," says Dr Rohit Khanna, Director, Gullapalli Pratibha Rao International Centre for Advancement of Rural Eye care (GPR ICARE), L V Prasad Eye Institute.

The four research projects that are part of this study are:

- CLEVER (Cognitive Level Enhancement through Vision Exams and Refraction) that supports the Indian government's strategy of finding scalable, low-cost means of preventing dementia, the management of which currently consumes 1.5% of national GDP. This project is built upon the work done in homes for aged project funded by Wellcome Trust India Alliance.
- STABLE (Slashing Two-wheeler Accidents By Leveraging Eyecare) that will assist local partners, including the Vietnamese Ministry of Transport, to combat Vietnam's twin epidemics of uncorrected short-sightedness and motorcycle crashes in the young.
- ZEAL (Zimbabwe Eyecare and Learning) that will work with local partners who currently implement the Zimbabwe government's national school vision project to explore how targeting long-sighted children with the novel, low-cost screening can add to the academic impact of the programme.

- THRIFT (Transforming Households with Refraction and Innovative Financial Technology) that will capitalise on the Bangladesh government's novel and forward-looking plan to digitise all social safety net payments to the elderly by providing free glasses and training to help them better cope with unfamiliar smartphones, thus improving financial independence.

The focus is on:

- Reducing road traffic injuries, the world's leading cause of death in children and young people
- Enhancing learning among the millions of African children with long-sightedness, present at higher rates in Africa than in any other global region
- Slowing the onset of cognitive decline and dementia among elderly persons struggling with poor sight. Proven preventive strategies for cognitive decline and dementia are desperately needed and could reduce incidence by an estimated 41%
- Improving economic independence by helping older people use online banking on smartphones, as currently two-thirds of adults in Bangladesh are excluded from financial services

"Decision-makers need high-quality evidence. Our previous trials showing that glasses enhance school performance in China and workplace productivity in India have spurred government and industry-led vision programmes around the world. ENGINE's local partners in academia, civil society and government are well-placed to ensure that this project drives similar policy action, changing lives and helping achieve the SDGs in these four countries and beyond," says Professor Nathan Congdon of Queen's University Belfast and Director of Research at Orbis International, the study's principal investigator.

"Traffic injuries are the leading cause of death globally between ages 5 and 29. While only 60% of vehicles are found in low and middle-income countries, 90% of traffic deaths occur there. The World Bank and others suggest Bangladesh's novel strategy of delivering safety net payments through e-banking to the elderly provides a model for many other countries, especially during COVID, if visual challenges for users are successfully met. The study happening in India and Vietnam are the first trials of their kind, examining how low-cost vision care can slow the pace of cognitive decline with aging and deliver safe roads in low-resource settings," added Dr Khanna.

"700 years on from the invention of glasses, poor vision is still the largest unaddressed disability in the world and is getting worse. We will never be able to complete the Sustainable Development Goals unless this hurdle is faced. This research programme represents a watershed moment in proving the importance of addressing vision correction throughout the life course and development agenda," concludes James Chen, Chairman of the Chen Yet Sen Family Foundation.

Additional Information:

About LVPEI: Established in 1987, L V Prasad Eye Institute (LVPEI), a World Health Organization Collaborating Centre for Prevention of Blindness, is a comprehensive eye health facility. The Institute has ten active arms to its areas of operations: Clinical Services, Education, Research, Vision Rehabilitation, Rural and Community Eye Health, Eye Banking, Advocacy and Policy Planning, Capacity Building, Innovation and Product Development. The LVPEI Eye Care Network has 200+ Centres spread across the states of Telangana, Andhra Pradesh, Odisha and Karnataka in India. The institute's mission is to provide equitable and quality eye care to all sections of society. The LVPEI's five-tier 'Eye Health Pyramid' model covering all sections of society right from the villages to the city, provides high quality and comprehensive - prevention, curative and rehabilitation – eye care to all. It has served over 30.64 million (3 crore 64 lakh people), over 50% of them entirely free of cost, irrespective of the complexity of care needed.

About Dr Rohit Khanna: Dr Rohit Khanna is the Director, Gullapalli Pratibha Rao International Centre for Advancement of Rural Eye Care - the Public Health Division of LVPEI. Dr Khanna completed his ophthalmology residency in India and holds a Master's degree in Community Eye Health from the London School of Hygiene and Tropical Medicine as well as from The Johns Hopkins Bloomberg School of Public Health. He is an Adjunct Associate Professor of Ophthalmology at school of Medicine and Dentistry, University of Rochester, USA, and a Conjoint Associate Professor at the University of New South Wales, Australia. He is also Regional Chair S-E Asia International Agency for Prevention of Blindness (IAPB) and an active participant in various working groups at the IAPB and WHO. Professor Khanna's research on Geriatric and Child Eye Health has been published extensively. As a Principal Investigator, he has led multiple studies, including the cohort of Andhra Pradesh Eye Disease Study (APEDS). He was a recipient of the IAPB Eye Health Leader award 2013 as well as the Asia Pacific Academy of Ophthalmology's blindness prevention award in 2020. His research has been supported by the Wellcome Trust DBT-India Alliance, Wellcome Trust UK, USAID and several NGOs like Lions International and CBM. He has over 150 peer-reviewed publications in journals such as Lancet Global Health as well as all other major ophthalmology journals.

About QUB: Queen's University Belfast in Northern Ireland is a member of the Russell Group UK research-intensive universities, providing world-class education underpinned by world-class research. Founded as Queen's College in 1845, it became a university in its own right in 1908. Today, it is an international centre of research and education, with a student-centred ethos. The University has won the Queen's Anniversary Prize for Higher and Further Education on seven occasions - the most recent being for world-class achievement in Shared Education and global cybersecurity. Queen's is ranked 21st in the world for international outlook (Times Higher Education World University Rankings 2021) and ranked ninth in the world for research collaboration. The University is globally connected and networked with strategic partnerships across the world and is ranked top in the UK for commercialising research (Octopus Venture 2019 and 2020) and for its participation in Knowledge Transfer Partnerships (KTP). Four Global Research Institutes are the University's flagships for interdisciplinary research in areas of major societal challenge, including public health and Queen's is one of only 19 holders of a prestigious Athena SWAN Gold Award, aimed at advancing women in science, technology, engineering, maths and medicine. Queen's has a large group of researchers working on vision research, from biomedical sciences to public health; hosting Europe's largest reading centre for ophthalmology trials, the Cochrane Eyes and Vision Group, and a wide portfolio of large public-funded multi-centre clinical trials and epidemiological studies. With more than 24,000 students and 4,200 staff, Queen's is a dynamic and diverse institution, a magnet for inward investment, a patron of the arts and a global player in areas ranging from biomedical and clinical studies to sustainability, and from pharmaceuticals to creative writing.

About Professor Nathan Congdon: Professor Nathan Congdon, MD, MPH, is Ulverscroft Chair of Global Eye Health at Queen's University Belfast in Northern Ireland, Director of Research for ORBIS International, and Professor of Preventive Ophthalmology at Zhongshan Ophthalmic Center (ZOC) in China, where he was based for ten years. Professor Congdon's work focuses on improving the quality of eyecare in areas of limited resources, as a tool to drive development. He received an AB degree from Princeton University and an MPhil from Cambridge, both in Oriental studies, and is fluent in Chinese. His medical and public health education and ophthalmology training were at Johns Hopkins University. He received the Asia Pacific Academy of Ophthalmology's highest recognition for blindness prevention work in 2009 and a Chinese government Thousand Man Plan award in 2011. Professor Congdon's research has been supported by the World Bank, NIH, UK MRC, WHO, Wellcome Trust,

several NGOs and the governments of China and Hong Kong. He has over 250 peer-reviewed publications in journals such as Lancet Global Health, JAMA and BMJ.

About the Wellcome Trust: Wellcome supports science to solve the urgent health challenges facing everyone. We support discovery research into life, health and wellbeing, and we're taking on three worldwide health challenges: mental health, global heating and infectious diseases.

About the Chen Yet-Sen Family Foundation: The Chen Yet-Sen Family Foundation is dedicated to enhancing access to learning and development opportunities for all. In all their areas of focus, they want to provide every single person with the fundamental building blocks to reach their full potential. They invest in projects in two primary areas: early childhood literacy, and vision correction. Their belief is that effective philanthropy is built on acquired knowledge and experience, and they have dedicated the last 15 years to testing and learning in these areas. This approach also means that they are willing to take calculated risks. As a philanthropic foundation, they are in the unique position to be able to privatise failure and socialise success. They can invest in unconventional ideas around a societal challenge with loss absorbing capital, where institutional investors like governments and corporates cannot.

About NIMHANS: The National Institute of Mental Health and Neuro Sciences (NIMHANS) is a premier institute in India for multidisciplinary patient care, academics and research in the field of mental health and neurosciences. NIMHANS had its beginnings in the 19th century and grew from being a Mental Hospital to becoming "Deemed University" and a centre for excellence in mental health and neuroscience in the country. In 2012, NIMHANS was conferred the status of an 'Institute of National Importance'. NIMHANS hosts disciplines of psychiatry, neurology, psychology, social work, public health alongside genomics, computational neuroscience, neuroimaging, molecular biology among others. The Institute provides inputs to the Central and State Governments in areas of mental health and neurosciences and has had a pivotal role in strategizing a national programme for mental health. The Institute has also emerged as the nodal centre for evolving national policies in the field of mental health, neurosciences and injury.

About Dr Suvarna Alladi: Suvarna Alladi is Professor of Neurology, National Institute of Mental Health and Neurosciences, Bangalore, India. Dr Alladi trained in Cognitive Neurology in Cambridge UK and Cognitive Epidemiology in Edinburgh UK. She coordinates a multidisciplinary specialist service that provides comprehensive diagnostic services, treatment and support to individuals with dementia. To address dementia diagnosis in diverse linguistic, cultural and educational contexts, Dr Alladi harmonised cognitive assessment across different Indian languages with support of ICMR. As Principal investigator of several projects, she focuses on investigating influence of protective life-course experiences that include bilingualism and education on cognitive resilience. Dr Alladi is Senior Career Researcher on the GCRF funded project Strengthening Responses to Dementia in Developing countries (STRiDE), that aims to support research in dementia care in LMICs. She is Chair of World Federation of Neurology, Special interest group on Aphasia, Dementia and Cognitive disorders and Advisory Council member of ISTAART, Alzheimer's Association.

About the George Institute for Global Health: The George Institute is a leading independent global medical research institute established and headquartered in Sydney, with additional major centres in China, India and the UK and an international network of experts and collaborators. The institute is on a mission to improve the health of millions of people worldwide, particularly those living in disadvantaged circumstances, by challenging the status quo and using innovative approaches to prevent and treat non-communicable diseases and injury. Their work aims to generate effective, evidence-based, and affordable solutions to the world's biggest health challenges. They research the

chronic and critical conditions that cause the greatest loss of life and quality of life, and the most substantial economic burden, particularly in resource-poor settings. The George Institute for Global Health is focused on generating robust evidence to create better treatments, better care, and healthier societies. Paramount to their work is finding new ways to fund healthcare so health systems can become more sustainable, as well as operate more equitably.

About Dr Pallab K Maulik: Dr Maulik is the Deputy Director of George institute India and also the Director of Research at the institute. He is an Associate Professor at University of New South Wales, Sydney. He trained as a psychiatrist at All India Institute of Medical Sciences, New Delhi, received training in public health at the London School of Hygiene and Tropical Medicine, as well as Johns Hopkins School of Public Health where he pursued his Masters and Doctoral training, respectively. He has worked with the World Health Organisation (WHO), Geneva on Project Atlas and other mental health programs, and clinically as a psychiatrist in India and Australia. He is currently leading a number of community-based mental health programs including two large cRCTS spanning 3 states with a focus on enhancing mental health services delivery for disadvantaged communities and using technology-enabled solutions.