The TRIUMPH hypertension study: Case Study

Globally, more than one billion people suffer from high blood pressure. The George Institute for Global Health (TGI) has trialled a new low-dose pill for hypertension that combines three medications in one (Triple Pill), which could change the way high blood pressure is treated around the world.

Origin

Globally, only about a third of people with hypertension have their blood pressure under control, so there is a pressing need for novel approaches to improve the management of this condition.

International studies have shown that the majority of patients with high blood pressure will need at least two drugs to control their condition. There was good evidence to suggest a triple low-dose pill would reduce blood pressure faster and more effectively, but no trial had evaluated the use of such a pill in the early management of hypertension compared to standard care. TGI was the first to test the idea.

In 2016, the Triple Pill vs Usual Care Management for Patients with Mild-to-Moderate Hypertension (TRIUMPH) study was initiated in Sri Lanka to evaluate whether a triple low-dose pill would reduce blood pressure quickly and more effectively than standard care.

Hypertension is the single leading cause of mortality globally, and the biggest risk factor for cardiovascular disease generally. Uncontrolled blood pressure can lead to heart attack, stroke and kidney disease. Multiple, effective medications are available to treat hypertension. However these are not always taken optimally.

Grants and Investments

NHMRC

In 2012, NHMRC funded the TRIUMPH study with a grant through the Global Alliance for Chronic Diseases (GACD), which supports international and interdisciplinary collaborations in research, focusing on chronic non-communicable diseases.

In 2014, the Institute was awarded an NHMRC Program Grant for the discovery and translation of evidence for new strategies to combat cardiovascular diseases.

Individual TRIUMPH study team members also supported by NHMRC Fellowships include:

- Professor Anthony Rodgers: NHMRC Principal Research Fellowship, 2014 and 2019
- Dr Ruth Webster: NHMRC Early Career Fellowship, 2017
- Professor Anushka Patel: NHMRC Senior Research Fellowship, 2010 and 2015; NHMRC Principal Research Fellowship, 2018.

Collaborations

For pragmatic reasons, including proximity to the original study drug supplier, the trial was initially proposed to be conducted in India, coordinated by TGI's regional office located there.

Due to challenges and delays with obtaining the required regulatory permissions to conduct the study in India, the study team sought out additional collaborators. Sri Lanka was chosen as the new location for the study as it was geographically close, with experienced collaborators who were available and had excellent clinical trial expertise. Partnerships were established with Professor Asita de Silva from the University of Kelaniya and RemediumOne, a Sri Lankan site management organisation, to assist with the trial.

Professor de Silva and RemediumOne assisted with identifying key opinion leaders in Colombo who were enthusiastic about collaborating with TGI and recruiting patients into the study. Obtaining relevant approvals for the study was swift and once the study drug was available in the country, recruitment proceeded rapidly. Effective recruitment procedures, and a team committed to excellent data collection and minimising loss of follow up data, were key strengths of the partnership and critical factors in the successful completion of the study.

Research and Trials

The trial was a randomised, open label trial of low-dose triple blood pressure-lowering therapy versus usual care. The study enrolled 700 patients with an average age of 56 and blood pressure of 154/90 mm Hg. Around half the participants were randomly chosen to take the Triple Pill strategy, receiving a fixed-dose combination pill containing telmisartan 20mg, amlodipine 2.5mg and chlorthalidone 12.5mg, with the option to use a double-dose version after six weeks. The remaining half of the participants were given usual care.

Results showed 70% of patients using the Triple Pill reached blood pressure targets of 140/90 or less (with lower targets of 130/80 for patients with diabetes or chronic kidney disease) compared to 50% receiving usual care.

Six months into the trial, 83% of participants in the Triple Pill group were still receiving the combination pill. In the usual-care group, the majority of patients were still receiving only one blood pressure-lowering drug, with only one third receiving two or more drugs, despite half of this group still not achieving their blood pressure target. The TRIUMPH study showed that the Triple Pill strategy provided benefits to patients even if doctors and patients did not increase drug therapy when needed, as the consequences of such 'therapeutic inertia' were bypassed.

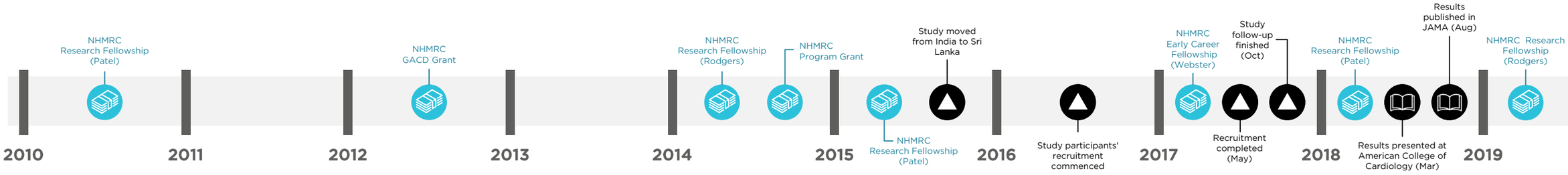
The study results were published in the Journal of the American Medical Association (JAMA) in August 2018.

Outcomes and Impact

The World Heart Federation has set an ambitious goal that by 2025 there will be a 25% reduction in high blood pressure globally. The Triple Pill could be a low cost way of helping countries around the world to meet this target. It has great potential for lowering health system costs by reducing doctor visits, achieving better blood pressure control and by making the medication more convenient for patients to take.

This study has global relevance. While the most pressing need, from the perspective of the global burden of disease, is low- and middle-income countries, it is equally relevant in a country like Australia where we are still achieving only 40%-50% control rates for high blood pressure.

The research team is evaluating whether clinicians and patients would be likely to adopt the Triple Pill concept, alongside an economic evaluation to determine its cost effectiveness, which will be important for governments and other funders to consider. Further opportunities to implement the Triple Pill in a wider setting are also being explored in Sri Lanka.



Professor Anushka Patel

Professor Patel is Chief Scientist at TGI, Professor of Medicine, UNSW Sydney and a cardiologist at Royal Prince Alfred Hospital in Sydney. She undertook her medical training at the University of Queensland, with postgraduate research degrees from Harvard University and the University of Sydney. As Chief Scientist, she has a key role in developing global strategic initiatives across TGI. Her personal research interests focus on innovative solutions for delivering affordable and effective cardiovascular care in the community and in acute care hospital settings. Professor Patel currently leads research projects in a number of countries including Australia, China and India. She is the TRIUMPH study Principal Investigator, and is supported by a Principal Research Fellowship from NHMRC.

Dr Ruth Webster

Dr Webster is the TRIUMPH study s Lead Author and Global Head of Medicine in George Health Technologies (GHT), a social enterprise of TGI. GHT aims to scale up effective digital health solutions to improve the diagnosis and management of chronic disease globally. Dr Webster is also the Head of Technical Transfer within TGI, with responsibility for ensuring smooth transfer of intellectual property generated by TGI s researchers into the social enterprise arm for scale up. As a researcher, she has a particular interest in the development of novel strategies to bridge the evidence-practice gap in cardiovascular disease prevention. Dr Webster is actively involved in trials of various types of polypill strategies, as well as improving use of technology in Australian general practice.

Professor Anthony Rodgers

Professor Rodgers is a Professorial Fellow at TGI with more than 25 years of experience in clinical trials, public-private partnerships and innovation. He was Principal Author of the 2002 World Health Report, the main annual publication of the World Health Organization. Professor Rodgers has also led developments of an affordable four-in one cardiovascular combination pill (polypill). He led a clinical trial program in economically developed and developing countries, funded by NHMRC, the Wellcome Trust, the European Union and others. Professor Rodgers also developed a world first cell phone based smoking cessation programme for youth. The service has been rolled out by numerous Departments of Health and reached over 2 million users to date. He has been an integral member of the TRIUMPH study group.

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