



Chest
Heart &
Stroke

Our Research

Can we develop a lateral flow device to test for heart failure?

Funded 2022-23. Dr Chris Watson, QUB.

Heart failure (HF) is a serious condition, where the heart cannot pump blood very efficiently. Almost 20,000 people across Northern Ireland have been diagnosed with HF, but it's likely there are many more undiagnosed, as it shows no symptoms in the early stages.

CLEC3B is a chemical found in heart tissue. Dr Watson and his team have shown that it plays a role in the development of HF - research we funded. They found CLEC3B in the blood, but also in saliva. This is exciting because saliva samples are very useful for testing, using lateral flow devices (think COVID testing). We're funding Chris to confirm his earlier findings, and to develop a lateral flow device.

What difference will this research make? A reliable lateral flow test for HF would speed up diagnosis, and could even be administered at home. This would certainly be cost effective, and a minimum fuss way of detecting whether someone is at risk. This is really important, because HF usually shows no symptoms in the early stages - quite often people don't seek help until the disease has progressed to an advanced stage, and is having a serious impact on them. Whilst there isn't a cure for HF currently, identifying it early will mean getting the right treatment in place early. This will keep the symptoms under control for as long as possible, and ensure a good quality of life.

What do we know about cardiac arrests in community settings?

Funded 2022-23. Julia Wolfe, NI Ambulance Service.

A cardiac arrest is when your heart suddenly stops pumping blood around your body. It is a medical emergency, and can be fatal.

There are around 1,400 "out-of-hospital cardiac arrests" (OCHA) each year in Northern Ireland - this is having a cardiac arrest anywhere other than a hospital. Fewer than 1 in 10, probably as few as 1 in 20, people survive an OCHA. The problem is we can't be sure, because very little is known about OHCA in N.Ireland. So, we've funded a team from the NI Ambulance Service to look at the data over the last five years to get a better understanding of the picture.

What difference will this research make? Getting a clearer picture of how many people are affected by and survive OCHAs will help us understand the size of the problem, and how best to tackle it. The NHS and Ambulance Service can use the information to track and improve their services, ensuring more people survive OCHAs.

How many people have an inherited heart condition?

Funded 2022-23. Professor Amy Jayne McKnight, QUB.

Inherited cardiac conditions (ICC) are passed on through your parents' genes, and there are more than 50 of these conditions.

We don't know how many people live with an ICC in Northern Ireland, and we're the only part of the UK that doesn't have a register for these conditions. So, we've funded the team to start developing one.

What difference will this research make? Knowing how many people have ICCs will help us understand the scale of the issue, and what support people need. Medical professionals will have easy access to important information about their patients. They can then use this information to identify and treat families at risk earlier.

Why do some children develop life threatening heart conditions after a COVID infection?

Funded 2021-22. Dr Thomas Waterfield, QUB

Paediatric Inflammatory Multisystem Syndrome: Temporally Associated with SARS-CoV-2 (PIMS-TS) is a complication that some children develop after COVID 19.

Most children who catch Covid-19 have a mild illness, but some develop PIMS-TS. This can cause the body's immune response (how it fights infections) to go into over-drive, and sometimes, life threatening injury of the heart and blood vessels. There is no good way to diagnose or treat PIMS-TS, and we don't really understand why some children develop it. So we're funding Thomas and his team to study why the body reacts this way, and whether we can develop a test to reliably diagnose PIMS-TS.

What difference will this research make? Understanding why some children develop this condition, and others don't, will hopefully allow us to develop effective ways of treating and preventing serious illness and death. In the same way, developing a reliable test to diagnose it, means that children will get the treatment they need early.

Developing a heart failure resource for care homes.

Funded 2022-23. Dr Gary Mitchell, QUB

Heart Failure affects at least one in five people living in care homes, and can impact on their health, independence, and quality of life.

Residents living with heart failure (HF) will need additional support from care home staff. They will also need information about how to manage their condition. Currently, there isn't a "go-to" resource, either for nurse and care staff, or for residents. So, we've funded a team from Queen's University, to work with staff and residents, from care homes across Northern Ireland, to develop a resource.

What difference will this research make? We hope that the finished resource will give staff greater confidence to support any residents living with HF. This will mean better care, and better quality of life, for the residents.

Can Vitamin B2 be used to lower high blood pressure?

Funded 2021-22. Dr Diane Lees Murdock, Ulster University.

Certain groups of people, because of their genes, have a greater risk of developing hypertension (high blood pressure). Hypertension increases your chances of developing heart disease or having a stroke.

One such group of people have the "677TT" genotype (genotype = genetic makeup). In research we funded previously, the team of Ulster researchers showed that riboflavin (vitamin B2) reduces blood pressure in people with the 677TT makeup. They think that riboflavin increases tags (chemicals that switch genes on and off) and that this improves how their genes function. We've funded them to test their theory on a larger set of people.

What difference will this research make? Showing that riboflavin helps reduce hypertension in this high-risk group will mean that have an effective way of helping them manage their blood pressure. This in turn will reduce the risk of future heart disease and stroke. Riboflavin has the potential to be a cost-effective treatment, and is a trusted and safe supplement (it's already added to some cereals).

Can we develop a mobile app to predict risk of heart disease?

Funded 2018-19. Professor Tara Moore, Ulster University

Normally, when assessing the health of a person's heart and blood vessels, specialist staff and equipment, and sometimes surgery, are required. What if we could assess your risk without the cost of these specialists, and without having to do surgery, without having to use

special dyes and x-rays, or inserting tubes into your veins?

The "eye as a window" research is developing early warning technology that can assess a person's risk of cardiovascular disease by examining the blood vessels in the eye.

In previous research, we funded Professor Moore and her team to develop a prototype based around a mobile phone camera. They developed their tech, and have shown that it worked well. So, we've funded them to continue developing their tech. They will test the tech on people who were known to have heart disease (to show that it can identify the diseases in the first place). Then the team will test on people not known to have these diseases - this will test whether the tech can predict whether a person is at risk of developing heart disease.

What difference will this research make? Currently there is no such tech - this is a first of its kind study. The ultimate aim is to have this technology in every High Street eye testing store and as an app on mobile phones. Predicting a person's chances of developing heart disease or stroke early means that the person can get treatment and support earlier. This will hopefully reduce the number of people living with disabilities, or dying because of these diseases.

Can fenugreek be used to prevent cardiovascular disease?

Funded 2018-19. Dr Qiaozhu Su, QUB

Hyperlipidemia (high cholesterol) is an excess of lipids (fats) in your blood. Most people will have no symptoms, but it can increase your risk of heart disease and stroke because blood can't flow through your arteries easily.

Fenugreek is a herb used in cooking, and has a long history of use in medicine in India and China. In recent years, researchers have begun studying its health promoting properties. We've funded Dr Su to study whether Fenugreek seed could be used in the treatment of hyperlipidemia.

What difference will this research make? This is the first study to test fenugreek on patients with hyperlipidaemia without diabetes in Northern Ireland. We hope it will provide evidence that fenugreek seed can be used to treat hyperlipidaemia and reduce the risk of heart disease and stroke. Drugs, such as statins, have been used for treating high blood lipids, but these can have side effects, and they're relatively expensive. In contrast, because fenugreek seed has been used as a spice for thousands of years, we know it is safe to include it in the diet or as a supplement. It will also avoid the adverse side effects caused by drugs. A nutrition based treatment is likely to be cheaper than providing drugs like statins, saving the NHS money.

Can fenugreek be used to prevent cardiovascular disease?

Funded 2013-14, Prof Helen Dolk

Congenital Heart Disease (CHD) is the name given to a range of heart conditions that we are born with. Most of the time, the cause isn't known. Knowing more about what causes CHD will mean better treatment and care, and maybe even ensure that more are born free of CHD. That's why we funded the NI Baby Hearts Study.

The research team, made up of cardiologists and researchers, led by Professor Helen Dolk at the University of Ulster, explored the links between some risk factors (something that increases the likelihood of developing a disease or injury) associated with CHD.

What difference will this research make? Mothers often wonder if something they did during the pregnancy caused their child's heart condition. This research shows that for most babies, there is no obvious cause of their heart condition. CHD seems to be a mix of factors, some not under anybody's control. The key message from the research is that mums to be and women planning to have a baby should follow medical advice, and more generally, keep doing the things that maintain their physical and mental well-being.

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