NICOLA RESEARCH PROJECTS

Below is a list of research studies that have been approved by the NICOLA Data Access Committee. This list will be updated periodically to reflect new research taking place.

If you have any queries regarding any of the research that has been conducted within NICOLA please contact Mrs Amanda Coulter, NICOLA Project Manager or Dr Charlotte Neville, NICOLA Scientific Officer (Email: Nicola-research@qub.ac.uk)

NICOLA Ref	NIC2017_0001 / NIC2018_0020
Title of research proposal	Understanding disability and how it is reported in older adults in different jurisdictions, and its contribution to inequalities in health (Fellowship)
Lay summary	Accurate measurement of disability is important at both the population and individual level, and there is a need for reliable evidence to inform policy in this area. Knowledge of the frequency and occurrence of disability is essential for anticipating demand for services and for future planning. Our exploration of differences in trends in work related disability, and of the differences in the way people report disability between nations and across different welfare service contexts, through the use of NICOLA and ELSA will strengthen our ability to examine and explain differences across studies.
Subject category	Chronic illness, disability, biomarkers; socio-economic and socio-demographic health, healthcare utilisation; social environment
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0002
Title of research proposal	Assessment of the retina vitreous interface using high resolution OCT in a subset of the NICOLA Study
Lay summary	With the recent advances in retinal imaging technology a considerable amount of interest has arisen in research of the vitreomacular interface. There are no studies to date on the prevalence of vitreomacular interface pathology at a population level. The purpose of the present study is to report on the prevalence of vitreomacular interface abnormalities seen on grading retinal images using a previously defined classification.
Subject category	Vision health
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0003
Title of research proposal	Frailty and disability in Ireland North and South
Lay summary	Frailty is a risk factor for poor health requiring health service provision among older adults. Recent research has shown the rates of disability and frailty in Northern Ireland (NI) are higher than in the Republic of Ireland (RoI). However these studies had some limitations. The proposal aims to determine the prevalence of frailty, frailty-related health outcomes and service use among older adults in NI and RoI. TILDA Wave 3 and NICOLA Phase 1 data collection coincided during 2014/2015 and will provide a "snap-shot" in time to compare frailty-related health and health service use on the island of Ireland.
Subject category	Chronic illness, disability, biomarkers
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0004
Title of research proposal	Retrospective cohort study of healthcare utilisation among adults with frailty in Ireland and the United States (RADIUS)

Lay summary	Background: Despite the importance of frailty to older people and their families, little is known about the management of frailty with services used at the end of life. Aims: To develop a frailty index using longitudinal data from three countries to examine patterns in service utilisation according to differing frailty severity. Study design and setting: Retrospective cohort study using The Irish Longitudinal Study on Ageing (TILDA), The Northern Irish Cohort of Older Adults (NICOLA) and the United States' Health and Retirement Study (HRS). Participants: Older people aged 65 years or more. Predictors: We will construct a frailty measure in three databases using the cumulative deficit frailty model as our theoretical framework. The frailty index is calculated by the presence or absence of individual deficits as a proportion of the total possible. Categories of frailty severity will be defined using population quantiles. Outcomes: Outcomes of interest will be two-year mortality, GP utilisation, hospitalisation, community services utilisation and nursing home admission. Outputs: The proposed pilot study will lead to at least one paper for submission to a leading international ageing and health services research journal (target: Age and Ageing) as well as informing and strengthening an application to the 'US-Ireland R&D Programme'.
Subject category	Chronic illness, disability, biomarkers; Socio-economic and socio-demographic health, healthcare utilisation
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0005
Title of research proposal	Diet, retinal microvascular health and cognitive decline and dementia risk: the NICOLA study
Lay summary	This study will examine the association between fruit and vegetable (FV) intake, eye health and cognitive health. In a NICOLA subsample, participants will, in addition to completing the FFQ and providing a blood sample, also complete food diaries and dietary recalls at baseline and after 6 months. Eye health will be measured from retinal images. FV intakes will be compared between methods and blood samples analysed for indicators of FV intake. NICOLA cognitive and eye health data will be used to examine associations between FV intake, eye health and cognition. Pending results, analysis will then extend to the full NICOLA cohort.
Subject category	Nutrition; vision health
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0006
Title of research proposal	The impact of exposure to stressful events during The Troubles on cognitive function and orthostatic blood pressure
Lay summary	Exposure to chronic or extreme stress has been shown to have negative effects, not only on mental wellbeing, but also on physical health. Stress has been implicated as one of many factors that may contribute to a decline in brain health among older adults. This research will

	investigate whether exposure to traumatic events during The Troubles is associated with performance on tests of memory and thinking as well as blood pressure changes, in NICOLA participants. It will also investigate the relationship between post-traumatic stress disorder (PTSD) and memory performance.
Subject category	Chronic illness, disability, biomarkers; Mental Health & Health Services Research
Date Approved by NICOLA	Revision approved 29/03/2018

NICOLA Ref	NIC2017_0007
Title of research proposal	Investigation of retinal measures as an early biomarker of diabetes and chronic kidney disease in the Northern Ireland Cohort of Longitudinal Ageing
Lay summary	The eye provides an easily accessible non-invasive opportunity to assess and measure changes in the microcirculation. Such changes have been associated with a number of chronic diseases including diabetes, renal decline, cardiovascular disease, stroke and dementia. Measurement of these features may help predict such chronic diseases or at least, better stratify those at increased risk of such an event. We will measure the retinal blood vessels located at the back of the eye and consider these measurements against current disease status and future events as determined by subsequent NICOLA waves with associated healthcare data.
Subject category	Chronic illness, disability, biomarkers
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0008
Title of research proposal	Harmful and hazardous alcohol use among older adults: risk and protective factors.
Lay summary	The research will focus upon the prevalence and nature of alcohol misuse among those aged 50 and older residing in Northern Ireland. I hope to conduct an initial descriptive analysis of NICOLA respondents who consume alcohol. Subsequent analyses will focus upon the relationship between alcohol consumption for NICOLA respondents and the variables: caregiving status, mental health such as depression/anxiety, loneliness, physical health conditions and Post Traumatic Stress Disorder as a result of the Troubles. I also hope to conduct international comparisons between NICOLA and neighbouring nations England and the Republic of Ireland using their NICOLA variants ELSA and TILDA.
Subject category	Chronic illness, disability, biomarkers; Mental Health & Health Services Research; Nutrition; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0009
Title of research proposal	A baseline comparison of balance and physical activity across the UK using ELSA, TILDA and NICOLA data.

Lay summary	An analysis of the TILDA data in relation to balance and physical activity over time has been completed, and the analysis of ELSA is currently in progress. The proposal is that baseline results from TILDA, ELSA, and NICOLA studies in relation to balance and physical activity can be analysed to provide a nationwide understanding of balance and physical activity in older adults.
Subject category	Physical activity
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0010
Title of research proposal	Social determinants of cognitive functioning in older adults
Lay summary	The research has the aim of investigating social factors associated with cognitive functions like memory and attention. Social factors include social support from others, feelings of loneliness, and engagement in social activities. Additionally the research aims to see whether other factors, such as healthy behaviours or experiences in the Troubles, affect the relationship between these social factors and cognitive outcomes.
Subject category	Mental Health & Health Services Research; Social environment
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0011
Title of research proposal	Investigating financial risk taking in older adults using data from the Northern Ireland Cohort for Longitudinal ageing (NICOLA).
Lay summary	The aim of this research is to investigate financial risk taking in older adults. The research area of financial risk taking has generated substantial output; however, studies of financial risk taking in older adults often have small sample sizes. Thus, data from the NICOLA study provides a unique opportunity to investigate financial risk taking in older adults with a large representative sample of older adults. The results of the project will make a valuable contribution to the existing literature.
Subject category	Finance
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0012
Title of research proposal	Understanding the mental health and wellbeing of older adults in Northern Ireland
Lay summary	Northern Ireland has well-established higher rates of poor mental health compared to other parts of the UK and the Republic of Ireland. This may, in part be a legacy of the Troubles. However, it is important to examine a range of possible explanations for observed country-level differences. The NICOLA study's inclusion of mental health/wellbeing variables, questions on experiences of/exposure to the Troubles and PTSD symptomatology, as well as a wealth of socio-demographic, socio-economic, and individual difference variables (e.g., personality, resilience) provides the opportunity to fully examine the impact of the Troubles on the mental health/wellbeing NI's older adults.

Subject category	Chronic illness, disability, biomarkers; Mental Health & Health Services Research; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0013
Title of research proposal	Glaucoma in NICOLA Participants
Lay summary	Glaucoma is the leading cause of irreversible blindness worldwide. It is caused by damage to the optic nerve between the back of the eye and the brain leading to progressive blindness. The cause is poorly understood but ageing, increased intraocular pressure and genetics are all likely to be involved. There is no cure for glaucoma but treatments are available which slow progression. Because vision cannot be restored once lost, early detection, monitoring and early treatment are all essential to preserve vision. This study will research the epidemiology of glaucoma and diagnostic accuracy of new diagnostic tests to detect the disease.
Subject category	Chronic illness, disability, biomarkers; Mental Health & Health Services Research; Physical activity; Socio-economic and socio-demographic health, healthcare utilisation; Social environment; Vision health
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0014
Title of research proposal	Social relationships and connectedness of older adults in Northern Ireland
Lay summary	Social relationships and connectedness with other people and activities are important aspects of ageing well and avoiding loneliness. Understanding the barriers and opportunities around making people *feel* socially connected in later life is important in maintaining healthy ageing. Nevertheless, it is important to emphasise the difference between social isolation (lack of relationships), and loneliness (a subjective measure of unwelcome feelings about a lack of contact with other people). The project will explore patterns of social connectedness among different groups in Northern Ireland; the association between social connectedness, loneliness, wellbeing and mental health; and the role of religion among older adults.
Subject category	Mental Health & Health Services Research; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	2017

NICOLA Ref	NIC2017_0015
Title of research proposal	Walk score and physical activity in the NICOLA study
Lay summary	Proximity to walkable destinations or amenities is thought to influence physical activity behaviour. Previous efforts attempting to calculate neighbourhood walkability have relied on self-report or time-intensive and costly measures. Walk Score is a novel and publicly available website that estimates neighbourhood walkability based on proximity to 13 amenity categories (e.g., grocery stores, coffee shops, restaurants, bars,

	movie theatres, schools, parks, libraries, book stores, fitness centres, drug stores, hardware stores, clothing/music stores). We will match NICOLA participants' postcode with their respective Walk Scores. In doing so, we will be able to aggregate and assess physical activity levels and associated health behaviours and outcomes (e.g., sleeping patterns, cognitive health) by neighbourhood walkability. Walk Score could serve as a useful tool to public health researchers for measuring a critical component of overall neighbourhood walkability.
Subject category	Mental Health & Health Services Research; Physical activity; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	25/01/2018

NICOLA Ref	NIC2017_0016
Title of research proposal	An investigation of social factors in late adulthood and their link to genetic and epigenetic data using the Northern Ireland Cohort of Longitudinal Ageing (NICOLA) study
Lay summary	The focus of this research project is to investigate genetic and epigenetic link to time/risk preference data collected as part of the NICOLA study in older adults. We also aim to investigate mental health, socio-economic status, optimism, loneliness, resilience and deprivation, and their link to the genetic and epigenetic data as control variables. The previously collected and matched genetic (n= >500,000 genetic markers) and epigenetic (n= >850,000 sites per sample) data is available and is currently undergoing quality control in preparation for these analyses.
Subject category	Chronic illness, disability, biomarkers; finance; genomics; Mental Health & Health Services Research; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	25/01/2018

NICOLA Ref	NIC2017_0017
Title of research proposal	Presentations of PTSD and complex grief in those exposed to conflict related trauma and potential mediating role of resiliance
Lay summary	The aim of this research is to examine the associations between type of exposure (the nature and number of traumatic exposures) to "Troubles" related trauma in NI and degrees of psychological ill health. We are particularly interested in studying Indicators of post traumatic stress disorder amongst participants exposed to traumatic events and complex grief amongst those who have been traumatically bereaved and whether resilience plays a mediating role in such outcomes. A secondary goal is to explore the adverse physical health outcomes linked to trauma exposure to consider relationships between psychological and physical ill health.
Subject category	Chronic illness, disability, biomarkers; Mental Health & Health Services Research
Date Approved by NICOLA	25/01/2018

NICOLA Ref	NIC2017_0018

Title of research proposal	Understanding work disability in Northern Ireland
Lay summary	The proposed research will explore the factors which are driving the high levels of work disability in Northern Ireland. Given the large proportion of disability benefit claimants in NI with mental/behavioural conditions I will also be examining to what extent the Troubles are having a lasting problem on work disabilities.
Subject category	Chronic illness, disability, biomarkers; Socio-economic and socio-demographic health, healthcare utilisation
Date Approved by NICOLA	25/01/2018

NICOLA Ref	NIC2017_0019
Title of research proposal	Alcohol consumption and brain health in older adults across the island of Ireland
Lay summary	Alcohol is the most widely used legal drug in Northern Ireland and associated with high societal burden. Public health campaigns targeting alcohol misuse have focused on younger age groups. However, there is growing concern over alcohol misuse in older adults as research suggests that up to 1/3 of alcohol problems occur later in life. Moderate alcohol intake can have health benefits, particularly for heart health, but the impact of alcohol on brain health is currently not known. This study will investigate drinking patterns in our older population across the island of Ireland and examine associations between alcohol, cognition and memory.
Subject category	Mental Health & Health Services Research; Nutrition; Socio-economic and socio-demographic health, healthcare utilisation
Date Approved by NICOLA	25/01/2018

NICOLA Ref	NIC2018_0020 / NIC2017_0001
Title of research proposal	Understanding disability and how it is reported in older adults in different jurisdictions and its contribution to inequalities in health
Lay summary	Accurate measurement of disability is important at both the population and individual level, and there is a need for reliable evidence to inform policy in this area. Knowledge of the frequency and occurrence of disability is essential for anticipating demand for services and for future planning. Our exploration of differences in trends in work related disability, and of the differences in the way people report disability between nations and across different welfare service contexts, through the use of NICOLA and ELSA will strengthen our ability to examine and explain differences across studies.
Subject category	Chronic illness, disability, biomarkers; socio-economic and socio-demographic health, healthcare utilisation; social environment
Date Approved by NICOLA	29/03/2018

NICOLA Ref	NIC2018_0021
Title of research proposal	The long term psychological consequences of experiencing "Troubles" related trauma
Lay summary	Many tens of thousands of individuals in Northern Ireland have been exposed to significant psychological trauma as a result of the violence

of the "Troubles". The generation who were exposed to the worst years of the violence in the 1970s and 1980s are those now in the age range mid-fifties to late-seventies, that is, the age range of the NICOLA cohort. A detailed examination of the nature of the Troubles-related traumas experienced by this cohort and the impact on their mental health would add significantly to the evidence base in this area, and assist ongoing service development.

Subject category	Mental Health & Health Services Research
Date Approved by NICOLA	29/03/2018

NICOLA Ref	NIC2018_0022
Title of research proposal	The non-communicable disease risk factors collaboration (NCD-RisC): estimation of the global burden of cardio-metabolic risk factors
Lay summary	The aim of our research is to estimate country/regional trends in major cardio-metabolic risk for non-communicable diseases (NCDs), globally; these include body mass index, cholesterol, blood pressure and blood glucose/diabetes. The data will be first summarised by sex/age groups and the aggregated summaries will be used in a statistical model to estimate population mean risk factor levels and prevalence of related disease states for each country and year in the period from 1975 to date, separately for men and women.
Subject category	Chronic illness; disability; biomarkers
Date Approved by NICOLA	29/03/2018

NICOLA Ref	NIC2018_0023
Title of research proposal	Towards automatic drusen detection in ulta widefield imaging of the retina using deep learning
Lay summary	Age-related macular degeneration and Alzheimer's disease exhibit some of the same tell-tale signs, tiny deposits in the retina call drusen, which need to be measured in order to understand their association with disease. However, to do this is currently a labour-intensive manual process, especially in ultra-widefield imaging that shows a larger view of the retina in a single capture. Developing automatic detection requires access to images that have been labelled by human experts so that a computer algorithm knows what to look for. We propose investigating drusen detection using images and gradings from the NICOLA study.
Subject category	Chronic illness, disability, biomarkers; Vision health
Date Approved by NICOLA	29/03/2018

NICOLA Ref	NIC2018_0024
Title of research proposal	Food biomarkers in older adults: a metabolomics study
Lay summary	Globally, poor diet is the single biggest contributor to chronic diseases of ageing. However, diet is understudied in older populations, because it is notoriously difficult to measure accurately. Metabolomics is emerging as a potentially more robust tool for measuring diet. This technology creates a 'fingerprint' of true food intake. In recent years the Mediterranean diet (MD) has consistently been shown to be

	associated with reduced risk of age-related disease. The proposed study will use metabolomic technology to identify metabolomic profiles associated with a MD pattern and to compare these with MD scores calculated from self-reported food diaries.
Subject category	Nutrition
Date Approved by NICOLA	29/03/2018

NICOLA Ref	NIC2018_0025
Title of research proposal	Reticular pseudodrusen in age-related macular degeneration
Lay summary	It is increasingly being appreciated that reticular pseudodrusen (RPD) are an important independent risk factor for the development and progression of age-related macular degeneration. Accurate determination of RPD requires specialised retinal imaging and none of the epidemiological studies to date have been able to accurately ascertain its prevalence in the general population or what systemic or demographic factors are associated with it. Addressing these issues will help to unravel how this feature fits into our current knowledge of AMD pathogenesis, particularly the drivers for progression to late stage disease given its strong association with late stage disease.
Subject category	Genomics; Vision health
Date Approved by NICOLA	29/03/2018

NICOLA Ref	NIC2018_0026
Title of research proposal	Discovery of an integrated risk profile for chronic kidney disease and development of a clinical biomarker panel for personalising medicine
Lay summary	Chronic kidney disease (CKD) affects approximately 10% of the population and is more common in older individuals. There is a substantial burden to living with CKD, in terms of daily living and financial costs to individuals and healthcare systems. This application is part of a large-scale effort to better understand CKD. This innovative project will integrate clinical, laboratory and lifestyle data for NICOLA participants with those from many other projects worldwide. We are developing a profile to help identify individuals at high risk (or protected against) progressive kidney disease, thus enabling more personalised effective therapies and helping identify novel treatments.
Subject category	Chronic illness, disability, biomarkers; Genomics
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0028
Title of research proposal	Do carriers of hemochromatosis related genes have a higher prevalence of AMD than those without, accounting for the major AMD risk loci?
Lay summary	The genetic disorder haemochromatosis is often referred to as the 'Celtic Curse', since it has its highest incidence in the world on the island of Ireland. It is estimated that one in eight people in the country carry the gene. Haemochromatosis results in excess gastrointestinal iron absorption and a subsequent increase in iron deposition in tissues. Systemic iron overload is most frequently associated with impairment of liver function, but there is

	increasing evidence to show that excess iron locally may affect the specific area in which it is released, such as in the retina of the eyes where it may cause damage. Age Related Macular Degeneration (AMD) is a retinal condition that poses a massive problem on public health, it is known that oxidative stress has a significant role in the development of the condition. Retinas from patients with AMD have been found to have elevated levels of iron when matched to those from patients of similar age with no retinal disease therefore we wish to investigate whether carriers of haemochromatosis related genes have a higher prevalence of AMD than those without, accounting for the major AMD risk loci.
Subject category	Genomics; Nutrition; Vision Health
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0029
Title of research proposal	Investigation of the relationship between cognitive function, Quantitative Autofluorescence and Macular Pigment Optical Density in the NICOLA study
Lay summary	With recent advances in retinal imaging technology, an interest has arisen in macular pigment optical density (MPOD) and quantitative autofluorescence (qAF). The macular pigment consists of carotenoids, also found in the brain. Recent studies found MPOD to correlate with cognitive function in older people. qAF is a recently developed method of quantifying autofluorescence of the retina, which is caused by accumulation of lipofuscin, also found in the brain. The purpose of this study is to determine if this relationship between MPOD and cognitive function is present in NICOLA participants and to investigate the relationship between MPOD, qAF and cognitive function.
Subject category	Vision Health
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0030
Title of research proposal	Factors affecting dietary intake amongst older adults in Northern Ireland: The NICOLA study
Lay summary	This study will investigate the factors that affect diet in older adults in Northern Ireland. Food group and dietary pattern intake will be assessed using the food frequency questionnaire completed by participants in the NICOLA cohort. Data from the self-completion questionnaires and CAPI interview, such as demographics and information on health conditions, will also be analysed to investigate which factors have an impact on dietary intake amongst older adults.
Subject category	Nutrition
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0031
Title of research proposal	The cost of alcohol-related healthcare use in Northern Ireland among the over 50s
Lay summary	The study will seek to estimate the additional direct burden on healthcare services in Northern Ireland associated with excessive

	alcohol consumption among the over 50s. The study will use multivariate analyses to isolate the association between alcohol consumption and use of a range of healthcare services to ascertain patterns of service use. Additional service use will be monetised using standard reference costs and differences across groups with respect to alcohol-related costs explored related to age, gender and socio-economic status.
Subject category	Socio-economic and socio-demographic health, healthcare utilisation
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0032
Title of research proposal	HeLoCOG: Age-related hearing loss, cognitive function, and the moderating roles of social isolation and loneliness.
Lay summary	Age-related hearing loss, which is common in adults over the age of 60, may be a cause of cognitive problems and dementia. We want to replicate our recent findings in the Irish Longitudinal Study on Ageing (TILDA), which demonstrated that hearing problems in older adults are linked to memory problems over time, and that this relationship is due in part to loneliness and social disengagement possibly caused by hearing problems. We want to see whether this is true in wave 1 of the NICOLA dataset.
Subject category	Chronic illness, disability, biomarkers; Mental health; Health Services Research; Social Environment
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0033
Title of research proposal	Understanding how religious denomination and religiosity affect disability reporting in older adults in Northern Ireland
Lay summary	While levels of reported disability are higher in Northern Ireland than elsewhere in the UK, they are not uniform across the religious denominations. However, people report disability in different ways and these ways may be affected by religious denomination as well as by other personality and behavioural characteristics and self-reported health. Our exploration of differences in the way people report disability between the communities and the possible explanatory factors affecting this will help us understand how our welfare system should to people's need.
Subject category	Chronic illness, disability, biomarkers; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0034
Title of research proposal	Understanding disability and how it is reported in older adults in different jurisdictions, and its contribution to inequalities in health
Lay summary	Accurate measurement of disability is important at both the population and individual level, and there is a need for reliable evidence to inform policy in this area. Knowledge of the frequency and occurrence of disability is essential for anticipating demand for services and for future planning. Our exploration of differences in trends in work related

	disability, and of the differences in the way people report disability between nations and across different welfare service contexts, through the use of NICOLA and ELSA will strengthen our ability to examine and explain differences across studies.
Subject category	Chronic illness, disability, biomarkers; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0035
Title of research proposal	Determinants of uptake of screening programmes and preventive services in the NICOLA study
Lay summary	Population-level healthcare screening programmes offer opportunities to prevent poor health at a later stage by early identification of modifiable health problems. However, people often do not take up invitations to attend free screening services. It is important to gain a better understanding of the individual and social characteristics that influence health screening uptake. This will help public health professionals and organisations to tailor health screening messages in order to improve uptake of services. This study will examine age-relevant health screening uptake among a sample of adults aged 50 years and over and living in Northern Ireland.
Subject category	Chronic illness, disability, biomarkers; Mental health and health services research
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0036
Title of research proposal	Assessing the prescription rate of anticholinergic medications in Northern Ireland using data from wave 1 of the NICOLA cohort.
Lay summary	Dementia is a term used to describe a broad group of conditions that affect the brain and causes a progressive decline in the ability to think learn and remember. Patients with dementia are often taking numerous medications at any given time and it is likely that some of these medications will have anticholinergic properties.[1] Anti-cholinergic properties can be found in numerous medications such as antipsychotics and antihistamines. Research has now shown that long term use of anticholinergic drugs accelerates cognitive decline and increased the likelihood of a dementia diagnosis.[2] The aim of the proposed study is to quantify the prescription rates of anticholinergic drugs in Northern Ireland.
Subject category	Mental Health & Health Services Research
Date Approved by NICOLA	18/06/2018

NICOLA Ref	NIC2018_0037
Title of research proposal	Multi-modal retinal image analysis in the NICOLA Study.
Lay summary	To date most epidemiological studies have investigated the prevalence of retinal disease through the use of Colour fundus photography, this only captures approximately 35% of the retina and in a single two dimensional retinal plane. In the NICOLA study there is also wide-field retinal imaging capturing 85% or the retinal and Scanning Laser

	ophthalmoscopy and optical coherence tomography providing three dimensional images and imaging using specific wavelengths which target different retinal layers. These additional modalities reveal more detail and different morphological patterns that are characteristic of specific retinal diseases. This project seeks to combine this information to provide information on the prevalence of retinal disease within Northern Ireland, risk factors associated with it and the relationship with genetic and epigenetic factors. We will also explore the relationship between retinal features and systemic disease. Finally, we wish to use novel deep learning methods to investigate genotype-phenotype relationships.
Subject category	Genomics; Vision health
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0038
Title of research proposal	Improved phenotyping of microvascular changes in Diabetic Retinopathy with Multi-level data
Lay summary	The overall aim of this project is to enable earlier detection of diabetic retinopathy by identifying the earliest signs of retinal vessel change using a new non-invasive imaging modality. This will be achieved through the following specific aims: (i) To form a well-characterised cohort of patients with diabetes who have taken part in the NICOLA study. (ii) Systematically compare the characteristic retinal vascular features of DR in patients with various stages of the disease, as they appear in standard clinical imaging (Colour fundus photography, fluorescein angiography, standard OCT, Heidelberg MultiColor) and when acquired by OCT-A. (iii) To develop software to analyse a new type of retinal imaging (Optical Coherence Tomography Angiography: OCT-A) that allows the retinal vessels to be evaluated non-invasively in unprecedented detail. (iv) To quantify the change in retinal vessels in diabetes using the new software and compare this with existing methods used for colour fundus photographs and wide-field retinal images. (v) Use computer modelling to combine data from several different types of retinal imaging, patient details and lifestyle characteristics to determine the most informative factors that enable diagnosis and detection of disease progression.
Subject category	Genomics; Nutrition; Vision health
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0039
Title of research proposal	NICOLA participation in Eye-Risk Consortium

| Lay summary | Using a systems medicine approach, EYE-RISK aims at identifying risk factors, molecular mechanisms and therapeutic approaches for the complex eye disease age-related macular degeneration (AMD). AMD is the leading cause of blindness in European countries. The disease is characterized by the degeneration of the central part of the retina called macula. This part is needed for central vision and is crucial for tasks such as reading, driving, recognition of faces and color vision. The frequency of AMD in the general population increases sharply after an age of 65 years up to a prevalence of 10% after an age of 80 years. The risk to develop AMD is jointly determined by age, lifestyle and also by the individual genetic background. At the current state, AMD is an incurable disease.

The EYE-RISK project utilizes epidemiological data describing clinical phenotype, molecular genetics, lifestyle, nutrition, and in-depth retinal imaging derived from existing longitudinal European epidemiological cohorts and biobanks to provide three major insights needed for long-lasting prevention and therapy of AMD:

1. Development of robust algorithms utilizing genetic and non-genetic risk factors to identify personalized risks of developing advanced wet and dry AMD.
2. Identification of novel biomarkers for further stratification of disease risks.
   New insights from 1) and 2) will be used to elaborate preventive medical recommendations for high-risk subgroups of AMD patients.
3. Identification of molecular drivers / biological pathways relevant for onset and progression of advanced AMD that will be used to identify and validate new therapeutic targets |
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| **Subject category** | Genomics; Nutrition; Vision health |
| **Date Approved by NICOLA** | 22/08/2018 |

NICOLA Ref	NIC2018_0040
Title of research proposal	The Association between Diet and Eye Health in NICOLA
Lay summary	This research will investigate what nutritional factors modify the risk of major sight-threatening diseases (age-related macular degeneration (AMD), diabetic Retinopathy and glaucoma) and what associations can be made with underlying genetic factors. Food Frequency Questionnaires completed by NICOLA participant's data will be used to examine single nutrients e.g. dietary fat intake and overall dietary patterns. Results of serum analysis of nutritional factors will be used to validate our findings where possible Results from the grading of retinal images will be used to determine if participants have eye disease and

	also to determine the level of macular pigment optical density (MPOD) and quantitative Autofluorescence present. The relationship between these retinal outcomes and diet will be explored. Interactions between diet and known risk genes will also be investigated
Subject category	Nutrition; Vision health
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0041
Title of research proposal	A comparison of complication rates and Health Care Utilisation between diabetics in the North and South of Ireland
Lay summary	Service use and outcomes among diabetics may differ between the North and South of Ireland as a result of the financial incentives, faced by patients and practitioners, related to out of pocket costs and the operation of programmes such as the Quality Outcomes Framework (QOF). This study will seek to estimate the differences in complications rates and healthcare utilisation among people with diabetes in the North and South of Ireland using comparative multivariable analyses of NICOLA and TILDA data.
Subject category	Socio-economic and socio-demographic health, healthcare utilisation
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0042
Title of research proposal	Treatment of psychological comorbity among adults with diabetes in Northern Ireland, England and the Republic of Ireland
Lay summary	No permission given to view
Subject category	Chronic illness, disability, biomarkers; Mental health and health services research
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0043
Title of research proposal	The NICOLA Embedded Trials: Strategies to enhance recruitment, retention and questionnaire completion rates (NICOLA-RT and NICOLA-QT) (SWAT 2, 3, 4 and 5)
Lay summary	People doing research have many choices to make when picking the methods to use but there is a remarkable lack of evidence to help them decide on things such as the best way to recruit participants or to collect information from them. The Methodology Hub established the Study Within A Trial (SWAT) initiative to help fill this gap. NICOLA provided an excellent opportunity to do four SWAT and we need to analyse the impact of the tested methods to see the effects of small changes to the invitation letter and different ways of giving a lengthy self-assessment questionnaire to participants.
Subject category	Research methodology (Study Within A Trial – SWAT)
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0044
Title of research proposal	NICOLA participation in International Age-related macular degeneration Genetics Consortium

Lay summary	Age-related macular degeneration (AMD) is a typically late-onset, progressive, neurodegenerative, generally bilaterally symmetric, disease occurring in the retinal macula of individuals. It is a leading cause of visual dysfunction and blindness in developed and now developing countries. Scientists in research centers across the world have individually collected datasets of individuals with and without AMD in an effort to solve the genetic architecture of AMD using state-of-the-art genetic and genomic methods. Availability of large sample sizes provides an opportunity to test many more research hypotheses with greater power and precision. Therefore, members of the consortium (http://amdgenetics.org/) have agreed to share, when possible, biological samples and clinical, phenotype, biomarker, and genomic data.
	The overarching objective of the International Age-Related Macular Degeneration Genomics Consortium (IAMDGC) is to define and understand the complete genetic architecture of AMD. This includes both early and late-stage AMD and understanding the functional implications of AMD genetic variation. This goal will be accomplished through the cooperative and collaborative efforts of the consortium members, guided by this Statement of Principles (SOP) and its associated policies and procedures.
Subject category	Genomics; Vision health
Date Approved by NICOLA	22/08/2018

NICOLA Ref	NIC2018_0045
Title of research proposal	Health and social selection bias on consent to participation in the Northern Ireland Cohort for the Longitudinal Study of Ageing
Lay summary	This NICOLA linkage methodology aim is to link a response/ non response indicator to a series of datasets held by the Business Services Organisation and the Northern Ireland Census Office in order to determine to what extent health selection bias had had an effect on the NICOLA Wave 1 cohort.
Subject category	Socio-economic and socio-demographic health
Date Approved by NICOLA	31/10/2018

NICOLA Ref	NIC2018_0046
Title of research proposal	Profiling loneliness and chronic loneliness in NICOLA - a prospective study of prevalence and predictors
Lay summary	The aim of this research is to establish the prevalence of loneliness in adults aged 50 and over in N.Ireland and to identify important predictors of loneliness. Socio demographic variables such as age, sex, socio-economic status, education and marital status will be explored as will other key variables as per existing literature and models of loneliness including physical health, mental health, area deprivation and perceptions of ageing.
Subject category	Mental health and health services research; Socio-economic and socio-demographic health; Social environment
Date Approved by NICOLA	31/10/2018

NICOLA Ref	NIC2018_0047
Title of research proposal	The effect of personality traits on social activities in people with Mild Cognitive Impairment in Northern Ireland. Evidence from the NICOLA study for Northern Ireland
Lay summary	From previous research it has been shown that participating in social activities can reduce the prevalence of cognitive impairment in older adults while personality traits, such as elevated neuroticism and lower openness, and the marital status of older adults can also affect cognitive impairment and social participation. This study will explore the effect of personality in social participation for people with mild cognitive impairment (MCI) and a cognitively normal group. Secondary aims are to explore personality differences between the two groups, and to assess the effect of marital status on personality traits and social participation for people with MCI.
Subject category	Mental Health & Health Services Research; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	31/01/2019

NICOLA Ref	NIC2019_0049
Title of research proposal	Determinants of mortality in the Northern Ireland Cohort for the Longitudinal Study of Ageing (NICOLA) participants
Lay summary	Government statistics can provide regular estimates of mortality rates at the population level; however, it is only when mortality data is linked to in-depth socio-demographic and biopsychosocial data (population-based), such as that available in the NICOLA Study that it is possible to examine characteristics associated with mortality. Such investigation is imperative in order to gain a better understanding of factors associated with mortality (and the period leading up to death, such as care needs, health service utilisation, etc.) in Northern Ireland's older population. Therefore, the aims of this project are four-fold: (i) To establish mortality rates for Northern Ireland adults aged 50 years using the Northern Ireland Cohort for the Longitudinal Study of Ageing (the NICOLA Study), which is a nationally representative dataset of adults aged 50 years and over and living in Northern Ireland. Mortality rates will be stratified by age group, gender, region, and socioeconomic status. (ii) To describe age, cause, and place of death in NICOLA participants aged 50 years and over, stratified by gender, region, and socioeconomic status. (iii) To establish factors associated with mortality in NICOLA participants (biomedical, lifestyle, psychosocial). (iv) To examine the circumstances of the decedents prior to death (e.g., care needs and how they were being met).
Subject category	Mental Health & Health Services Research; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	31/01/2019

NICOLA Ref	NIC2019_0050

Title of research proposal	Development of diagnostic AI algorithm for detection of glaucoma with spatial modelling of optics discs in NICOLA study
Lay summary	Glaucoma is a leading cause of sight loss worldwide. Glaucoma is often slowly progressive and difficult to diagnose in the early stages, when treatment to delay progression is most effective. Automated assessment of optic nerve head in retinal images could increase diagnostic accuracy and precision – and thereby reduce healthcare system costs. We have developed a new automated method for assessing optic nerve head rim thinning, which is based on deep learning and statistical shape modelling techniques. We propose to further refine and validate our technique using retinal images and gradings from the NICOLA study.
Subject category	Chronic illness, disability, biomarkers; Mental Health and Health Services Research; Vision Health
Date Approved by NICOLA	27/02/2019

Date Approved by NICOLA	27/02/2019
NICOLA Ref	NIC2019_0052
Title of research proposal	A comparison of the prevalence and risk factors of eye disease in TILDA and NICOLA
Lay summary	NICOLA and TILDA are longitudinal studies of aging in Northern and Southern Ireland respectively. NICOLA which started later sought to replicate as much methodology from TILDA as possible to enable comparison and pooling of data. This application seeks to look at the issue of eye disease across the Island of Ireland and compare how common the major eye diseases are. We also want to identify what factors increase someone's risk of developing eye disease as they get older. The diseases we will focus on are age-related macular degeneration and cataract diabetic retinopathy.
Subject category	Nutrition; Vision Health
Date Approved by NICOLA	27/02/2019

NICOLA Ref	NIC2019_0053
Title of research proposal	Using the NICOLA Study to examine the epidemiology of mild cognitive impairment and subjective cognitive decline in Northern Ireland's older adults.
Lay summary	Because of our rapidly growing ageing population we are also seeing an increase in the rates of dementia. This is having an impact on health and social care services, and pressure on these services will increase. Having a better understanding of mild cognitive impairment (MCI), a transitional stage between normal ageing and dementia, and subjective cognitive decline (SCD) which is when a person self-reports deterioration in their memory, can help identify those who are at risk of developing dementia, as well as having a better understanding of how they can be supported if their MCI progresses to more severe impairment.

Subject category	Chronic illness, disability, biomarkers; Mental Health and Health Service Research; Socio-economic and socio demographic health, healthcare utilisation; Social environment
Date Approved by NICOLA	27/08/2019

NICOLA Ref	NIC2019_0054
Title of research proposal	Medication adherence in long term conditions
Lay summary	It is well known that about half of medicines prescribed for chronic illness are not taken as prescribed, with many medicines not taken at all by patients. This poor 'adherence' represents a missed opportunity, since patients who do not take their prescribed medicine obviously cannot benefit from it. It also causes problems when researchers use prescription records to examine the link between medicine use and patient health outcomes, since many records will be suggestive of medicine exposure when in fact that is not the case. The healthcare stream of the NICOLA study involves the collection of blood samples. This presents an ideal opportunity to measure actual exposure of patients to medicines and to evaluate adherence across different medicines and illnesses. Such data will enhance the NICOLA dataset and act as an exemplar of good practice to be incorporated into future epidemiological studies internationally.
Subject category	Chronic illness, disability, biomarkers
Date Approved by NICOLA	04/11/2019

NICOLA Ref	NIC2019_0055
Title of research proposal	The association between dietary intake and status and measures of frailty including cognitive and psychological health in older adults
Lay summary	Frailty is a common feature of aging and is associated with an increased risk of poor health outcomes, e.g. falls, disability, hospitalization, and death. While it typically presents itself in a physical way, i.e. increased falls, poor grip strength, other factors such as food intake, mental and psychological wellbeing may also play a role. This study will examine the association between diet and measures of frailty which include physical measures such as handgrip strength, walk speed and body composition, cognitive measures and measures of psychological wellbeing. Dietary intake and status will be assessed from the self-completed food frequency questionnaires and blood samples, respectively.
Subject category	Nutrition; Mental Health and Health Services Research
Date Approved by NICOLA	04/11/2019

NICOLA Ref	NIC2019_0056
Title of research proposal	Does personality modify the relationship between the Troubles, mental health and alcohol consumption?
Lay summary	Exposure to adverse experiences have been associated with negative health and social outcomes. However, there are many underlying mechanisms that may enhance or reduce vulnerability to developing these outcomes. Personality traits shape how individuals perceive and respond to negative life events which suggests personality may play a

	significant role in determining the likelihood of individuals developing poor mental health outcomes and alcohol misuse. Furthermore, previous studies have identified differential associations between personality traits and a number of psychological conditions particularly anxiety, depression and substance misuse. This research therefore will examine the association between the impact of the Troubles on psychological distress and hazardous drinking and whether this relationship is moderated by personality traits.
Subject category	Mental Health & Health Services Research
Date Approved by NICOLA	04/11/2019

NICOLA Ref	NIC2019_0057
Title of research proposal	Low level exposure to arsenic in older adults: genomic and epigenomic predictors
Lay summary	The exposure to arsenic (As) chemical species, even at low levels, has been associated with increased cancer risk and other health concerns. Our aim is to evaluate urine as a biomarker of As internal dose to relate genetics and epigenetics to As exposure. We have previously seen that diet is a relevant contributor of As exposure. The consumption of seafood and alcohol were associated with higher concentrations of As species. However, the majority of the variation in As biomarkers was not explained, suggesting the contribution of other non-predicted variables on As metabolism and elimination, such as genetics and epigenetics.
Subject category	Chronic illness, disability and biomarkers; Genomics; Nutrition
Date Approved by NICOLA	04/11/2019

NICOLA Ref	NIC2019_0058
Title of research proposal	Time discounting, risk preference, personal health behaviours and screening in older people
Lay summary	Many choices in life depend on how willing people are to take risks, or to forgo current consumption for greater future rewards. Economists estimate these preference parameters as risk aversion and time preference respectively. This research is interested in how such decision-making processes and resulting choices influence individual's health behaviours and eventually overall health over a lifetime. The NICOLA project has collected data on self-reported propensity measures to take risk and willingness to delay reward. From these measures, along with the detailed information on the individuals' circumstances, choices and outcomes, this research will consider the factors that shape choices relating to health behaviours in older people in Northern Ireland.
Subject category	Finance; Nutrition; Physical Activity; Socio-economic and socio-demographic health, healthcare utilisation
Date Approved by NICOLA	04/11/2019

NICOLA Ref	NIC2019_0059
Title of research proposal	Social circumstances and epigenomics promoting health in three countries
Lay summary	NICOLA, TILDA, and HRS are nationally representative longitudinal studies of aging in Northern Ireland, the Republic of Ireland, and the United States of America respectively. These large-scale public health studies have been designed for collaborative studies studying a range of features. We will use multiple approaches to compare patterns in biological markers associated with socioeconomic measures, poverty, and education levels, alongside childhood and adult stressors in each country. Our aim is to identify 'biological hallmarks of aging' and explore how these change over time.
Subject category	Chronic illness, disability, biomarkers; Genomics; Social environment
Date Approved by NICOLA	28/08/2019

NICOLA Ref	NIC2020_0060
Title of research proposal	NICOLA collaboration with Singapore National Eye Centre (SingHealth) – Pooled and replication data with Singapore Eye Study
Lay summary	Significant differences in the distribution and severity of age-related macular degeneration (AMD) exists between different races. There is value in comparing and contrasting findings from study participants from different countries to help us understand what drives development of the disease better. This project seeks to establish an ongoing collaboration with investigators in the Singapore Eye Study as they have measurements that are compatible with those collected in the NICOLA study. Initially we want to look at the measurements and factors related to the choroid, the vascular layer in the eye where much of the pathology in AMD originates.
Subject category	Vision
Name of Researcher	Dr Ruth Hogg, QUB
Date Approved by NICOLA	14/01/2020

NICOLA Ref	NIC2020_0061
Title of research proposal	Cross-calibration of biomarkers: biomarker cross-calibration to investigate health inequalities
Lay summary	We are working on harmonization of objectively measured biomarker data for population-based samples of adults in 19 developed and developing countries. Most of these are HS sister studies. We have already sent data to the NICOLA labs and developed cross-calibration equations based on samples that are not part of any study but are being used across studies for harmonization. We would now like to apply these equations to the data so that we produce harmonized values of Total cholesterol, HDL cholesterol, CRP, and HbA1c. This will allow for direct comparative research with other international data. With calibrated biomarkers, we will be able to do cross-national comparison studies that examine differences in relationships between

	demographic and socioeconomic characteristics and biological markers. We will provide the calibrated data and equations to NICOLA.
Subject category	Chronic illness, disability, biomarkers; Socio-economic and socio-demographic health, Healthcare utilisation
Name of Researcher	Prof Eileen Crimmins, University of California
Date Approved by NICOLA	14/01/2020

NICOLA Ref	NIC2020_0062
Title of research proposal	Investigation of retinal biomarkers with depression and cognition in NICOLA
Lay summary	The eye provides an easily accessible, non-invasive opportunity to assess and measure changes in the microvasculature. Such changes have been associated with a number of chronic diseases including diabetes, depression, renal decline, cardiovascular disease, stroke and dementia. Measurement of retinal features may represent vascular decline and help predict chronic diseases with a vascular component or at least, better stratify those at increased risk of such an event. We will assess the retinal blood vessels located at the back of the eye and consider these measures in the context of depression and cognitive outcomes in NICOLA.
Subject category	Chronic illness, disability, biomarkers
Date Approved by NICOLA	14/01/2020

NICOLA Ref	NIC2020_0063
Title of research proposal	Investigation of dietary patterns associated with renal impairment in NICOLA
Lay summary	Dietary changes are recommended to minimise the effects of the most common causes of chronic kidney disease (CKD), namely diabetes and hypertension. However, specific dietary alterations may be necessary to reduce the rate of renal decline beyond dietary recommendations for blood pressure and diabetes management alone. We will evaluate geographically and culturally relevant dietary data from the NICOLA dataset to identify dietary patterns associated with poorer renal function in a Northern Irish population, while accounting for the influence of diabetes, hypertension and other relevant health information. These findings will inform dietary-related advice for the prevention of CKD.
Subject category	Chronic illness, disability, biomarkers; Nutrition
Date Approved by NICOLA	14/01/2020

NICOLA Ref	NIC2020_0064
Title of research proposal	Evaluation of renal impairment and cognitive outcomes in a population of older adults from Northern Ireland
Lay summary	Chronic kidney disease (CKD) may contribute to the development of vascular dementia through its effects on the small blood vessels of the brain. CKD may also affect Alzheimer's disease (AD) risk by inhibiting

	the removal of harmful amyloid-β (Aβ) via the kidneys. Given the previous evidence that suggests those with CKD are at greater risk of cognitive decline, we will determine if individuals in the Northern Ireland population with poorer renal function are more likely to have a greater risk of cognitive impairment. Other known risk factors for dementia will be considered in the analysis.
Subject category	Chronic illness, disability, biomarkers
Date Approved by NICOLA	14/01/2020

NICOLA Ref	NIC2020_0065
Title of research proposal	Examining the impact of frailty on health outcomes, care needs and mortality in older adults
Lay summary	This study aims to provide an in-depth investigation of frailty in Northern Ireland (NI), including its prevalence, progression, characteristics and outcomes. This is driven not only by the negative outcomes associated with frailty but also by the lack of research into frailty in the NI population, despite preliminary reports that there is a particularly high prevalence. Data gathered from the Northern Ireland Cohort for the Longitudinal study of Ageing (NICOLA) will be utilised with frail individuals being initially identified using an existing index of deficits, further accompanied by objective measurements and an original index of frailty developed to additionally measure the sub-types of frailty.
Subject category	Chronic illness, disability, biomarkers; Socio-economic and socio-demographic health, healthcare utilisation; Social environment
Name of Researcher	Dr Sharon Cruise
Date Approved by NICOLA	14/02/2020

NICOLA Ref	NIC2020_0066
Title of research proposal	Investigation of retinal measures as an early biomarker of cardiovascular disease and chronic kidney disease in NICOL using deep learning artificial intelligence algorithms
Lay summary	The eye provides an easily accessible non-invasive opportunity to assess and measure changes in the microcirculation. Such changes have been associated with a number of chronic diseases including diabetes, cardiovascular disease (CVD) and chronic kidney disease (CKD). Measurement of these features may help predict such chronic diseases or at least, better stratify those at increased risk of such an event. We propose to validate an AI algorithm that has been developed at the National University of Singapore using deep learning approaches to measure the retinal blood vessels located at the back of the eye and evaluate these measurements against current disease status and future events of CVD and CKD as determined by subsequent NICOLA waves with associated healthcare data.
Subject category	Chronic illness, disability and biomarkers
Date Approved by NICOLA	03/03/2020

NICOLA Ref	NIC2020_0067
Title of research proposal	Patterns of food supplement intake and relationship with health in the NICOLA cohort
Lay summary	The term 'food supplements' covers a broad range of substances ranging from vitamins, minerals and fish oils to other ingredients (e.g. botanical or plant ingredients) proposed to influence health. Consumers report using an increasing number of 'natural' products, including food supplements, to strive towards a healthier lifestyle. However, intake of supplements is typically poorly characterized and relationships with markers of nutritional status and health and potential interactions with traditional medications is under explored. The proposed research will characterize intake of dietary supplements within the NICOLA cohort and examine any relationship with markers of nutritional status and health.
Subject category	Nutrition
Date Approved by NICOLA	03/03/2020

NICOLA Ref	NIC2020_0068 (via DPUK)
Title of research proposal	PRECISE4Q – Personalised treatment of stroke through predictive modelling
Lay summary	
Subject category	
Date Approved by NICOLA	03/03/2020

NICOLA Ref	NIC2020_0069
Title of research proposal	Development of a training tool for glaucoma screening by non-medical diabetic retinopathy modelling
Lay summary	This study aims to design a course for glaucoma screening during a pre-existing program to screen for diabetes by non-medical health personnel. The pre-existing diabetes screening program uses optic disc photos. At the end of the course, non-medical health personnel will be able to suspect and refer cases of glaucoma or glaucoma suspects to the hospitals for further investigations.
Subject category	Vision
Name of researcher	Prof Nathan Congdon
Date Approved by NICOLA	30/04/2020

NICOLA Ref	NIC2020_0070
Title of research proposal	
Lay summary	
Subject category	
Date Approved by NICOLA	

NICOLA Ref	NIC2020_0071 (via DPUK 0336)
Title of research proposal	DPUK/DRI Genetic Consortium
Lay summary	
Subject category	

Date Approved by NICOLA	03/06/2020

NICOLA Ref	NIC2020_0072 (via DPUK 0340)
Title of research proposal	Development and validation of an interpretable deep learning framework for dementia subtype classification
Lay summary	
Subject category	
Date Approved by NICOLA	03/06/2020

NICOLA Ref	NIC2020_0073
Title of research proposal	Prevalence of frailty: estimates using global aging data
Lay summary	Not applicable
Subject category	Chronic illness, disability, biomarkers
Date Approved by NICOLA	03/06/2020

NICOLA Ref	NIC2020_0074
Title of research proposal	The ELECTRA Study – Early Life Stress and Cognitive Ageing: an investigation of international longitudinal cohorts of ageing
Lay summary	Research shows that stressful experiences even in childhood can impact your memory and brain function in later life. One possible explanation is these experiences can cause cells to "age" more quickly making it more likely to experience problems earlier. This research will look at whether having more stressful experiences, including growing up during "the Troubles" resulted in higher "biological" age and if this is associated with doing worse in memory tests. In order to examine this relationship it is important that we take into account other factors that may affect your health and memory in later life.
Subject category	Chronic illness, disability, biomarkers
Name of researcher	Dr Claire Potter
Date Approved by NICOLA	25/08/2020

NICOLA Ref	NIC2020_0075
Title of research proposal	
Lay summary	
Subject category	
Date Approved by NICOLA	

NICOLA Ref	NIC2020_0076
Title of research proposal	Educational inequalities in longevity: a multi-cohort study of the role of epigenetic ageing
Lay summary	
Subject category	
Date Approved by NICOLA	25/08/2020

NICOLA Ref	NIC2020_0077
Title of research proposal	

Lay summary	
Subject category	
Date Approved by NICOLA	

NICOLA Ref	NIC2020_0078
Title of research proposal	
Lay summary	
Subject category	
Date Approved by NICOLA	