

Alzheimer Scotland Dementia Research Centre



*providing a high quality environment
for dementia research*



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Welcome



Dr Tom Russ

Director, Alzheimer Scotland Dementia Research Centre

It is a great pleasure to welcome you to this annual report for 2021 of the Alzheimer Scotland Dementia Research Centre (ASDRC), in partnership with the University of Edinburgh. In fact, May 2021 marks the tenth anniversary of the Centre and this offers an opportunity to offer our sincere thanks to Alzheimer Scotland for their generous funding over the last decade. We are very grateful to them and proud of our connection with such a wonderful charity. Thinking back to the opening of the ASDRC on World Alzheimer Day 2011 by the then Deputy First Minister Nicola Sturgeon (see right), we have all come a long way since then!

As a Centre we continue to grow and we look forward to welcoming three new PhD students in the Autumn. Following the success of the links we have formed with NHS trainees in old age psychiatry locally — many of whom have now completed their training and taken up NHS Consultant Psychiatrist posts in Scotland and northern England — we are exploring how to expand this programme to the whole of Scotland.



[From Alzheimer Scotland's Annual Review 2011-12](#)

In April of this year I took on the additional role of the Network Champion of the [NRS Neuroprogressive and Dementia Research Network \(NDN\)](#). I look forward to the ASDRC and the NDN working more closely and we are already working on exciting plans to make it easier and more rewarding for people living with dementia to become involved in research and to influence the direction of clinical dementia research in Scotland.

Tom Russ

Members and Staff

Director

Dr Tom Russ

Clinical Lecturer

Dr Lucy Stirland (Chief Scientist Office)

PhD Students

ASDRC unless stated

Ms Helen Corby (ESRC)

Dr Sahan Mendis

Dr Donncha Mullin (Psychiatry)

Mr Jure Mur (Lothian Birth Cohorts)

Mrs Luisa Parkinson

Dr Martha Pollard

Ms Stina Saunders (EPAD)

Ms Rose Vincent (ECRED)

Dr Katherine Walesby

Mr Miles Welstead (Lothian Birth Cohorts)

Prospective PhD Students

(Starting Autumn 2021)

Ms Anna Bryan (ACRC)

Mr Jonny Flint (ACRC)

Mr Otto-Emil Jutila (MRC)

Alzheimer Scotland Research Affiliates

NHS trainee doctors

in old age psychiatry

Dr Cinzia Giuntoli

Dr Anna Szalek

Dr Georgina Weatherdon

Associate Post-Doctoral Fellows

Dr Jenni Burton (Glasgow)

Dr Lucy Hiscox (Delaware, USA)

Dr Harriet Ingle (Glasgow Caledonian)

Dr Lewis Killin (NHS/UoE)

Dr Sarah McGrory (UoE)

A/Prof Mario Parra-Rodriguez (Strathclyde)

Dr Ratko Radakovic (East Anglia)

Dr Keith Smith (UoE)

Other members

Professor David Batty (UCL)

Administrative Secretary

Ms Denise Munro


Brain Tissue Bank Technician

Post absent and to be filled

Research Members' Activities



Lucy Stirland

 [@stirlandia](https://twitter.com/stirlandia)

Clinical Lecturer (Chief Scientist Office)

Higher Trainee in Old Age Psychiatry (NHS)

August 2020—Present



Research Summary

I am a psychiatrist doing specialist training in the care of older people. I was awarded my PhD in June 2020 for research on the links between having several physical conditions and mental health or dementia (my thesis is entitled "[Epidemiology of multimorbidity and polypharmacy in ageing: a complementary analysis of mental and brain health in three datasets](#)").

In August 2020 I started a new post as a Postdoctoral Clinical Lecturer, funded by the Chief Scientist Office and NHS Education for Scotland. This job allows me to finish my NHS training part-time alongside research. I'll continue my research by looking at NHS prescription records (for everyone in Scotland over the age of 50 years) to see if certain medicines are linked with dementia. The NHS has a very large amount of information but doesn't hold much detail. I'll also study the Lothian Birth Cohort 1936 which is smaller but contains the results of detailed memory and depression tests. I'm helping to coordinate dementia ascertainment work in the Lothian Birth Cohort.

Research highlight

I won the 2020 European Federation of Psychiatric Trainees' Porto Research Award and presented my work to an online forum of over 50 psychiatric trainees from across Europe.

New publications

Glasmacher SA, Brown FS, **Stirland L**, Wilkinson T, Holloway G, Pal S. Understanding the risk of incidental findings: A qualitative study of people with cognitive symptoms. *Journal of the Neurological Sciences*. 2020 Oct 23;419:117203. doi: 10.1016/j.jns.2020.117203

Stirland LE, Gregory S, Russ TC, Ritchie CW, Muniz-Terrera G. Associations between midlife chronic conditions and medication use with anxiety and depression: A cross-sectional analysis of the PREVENT Dementia study. *Journal of Comorbidity*. 2020 May 1. doi: 10.1177/2235042X20920443

Helen Corby

PhD Student (ESRC-funded)

September 2017—Present

Supervisors:

Dr Tom Russ

Dr Chris Dibben (GeoSciences)

Dr Matthew Iveson (Psychology)



Research Summary

I am researching what people who need social care in later-life have in common. I aim to identify groups who are most likely to need social care in old age, identifying why this might be and how we might help these people maintain their independence longer. I am particularly interested in the introduction of the free personal and nursing care policy in 2002 in Scotland; and how this might have impacted these groups at higher risk of needing social care in later-life.

I am also interested in how living with other people might help older people maintain their independence. With an increasing number of older people living alone, this might increase the need for social care provision in the future. Previous research has showed that living with a partner is protective – couples are less likely to enter a care home. However, this seems more true for men than women. So I will look at whether gender is important, and consider whether this ‘protection’ might reflect unreasonable burden on women, who provide the majority of unpaid care.

I’m currently in the final year of my PhD, so this means I’m writing up my thesis and undertaking my final analyses. It can be a challenging writing up such a big piece of work, so I’m grateful to have my colleagues in the centre for support and encouragement. Even if all of our meetings are virtual at the moment due to the pandemic. Hopefully we might be able to meet in-person before I finish!

Research Highlight

This year my research highlight has been getting access to my data again. The data I use for my research is classed as sensitive – so to make sure it is extra secure, I can only analyse it in a safe-haven. When everything was closed during lockdown, so was the National Safe Haven. Thankfully I’ve been able to use the safe-haven again during the less restricted periods, allowing me to make progress.

Publications

Later this year a report from my internship research will be published by Scottish Government, currently it has been delayed by the COVID-19 pandemic.



Sahan Mendis
Clinical Research Fellow
February 2019—Present

Supervisors:
Dr Tom Russ
Dr Graciela Muniz (Centre for Clinical Brain Sciences)



Research Summary

I am a 3rd year PhD student investigating the relationship between life course measures of socioeconomic status and structural neuroimaging changes in older life. I am excited by this topic because there is established evidence indicating that lower socioeconomic status is associated with adverse cognitive outcomes in older age, yet there is limited evidence showing these links with structural brain changes or examining socioeconomic status over the life course.

My PhD thesis is titled ‘*The life course analysis of the neuroscience of socioeconomic status*’. I am completing a systematic review which explores studies studying the relationship between life course measures of socioeconomic status and structural neuroimaging changes in adults. I am analysing the Lothian Birth Cohort 1936 to explore the relationship between life course measures of socioeconomic status and brain volume and white matter hyperintensity volume amongst older adult participants. The Lothian Birth Cohort 1936 is a Scottish dataset which was designed to explore cognitive ageing in individuals who were aged 70 at the point of recruitment. In my data analysis I will be investigating the role of critical time points, social mobility, and the impact of sustained low socioeconomic status to further investigate the life course approach in my research.

Research Highlight

- One of my major accomplishments is getting my PhD research accepted for an oral presentation at The Royal College of Psychiatrists’ International Congress 2021. The title of this session is “*Life course psychiatric research: New horizons, new perspectives, and new directions*” My talk is entitled “*The life course analysis of the neuroscience of socioeconomic status- From theoretical perspectives to practical analysis.*”
- I also enjoyed participating in the virtual staff away day in December 2020. This day provided an invaluable opportunity for me to present my research to colleagues and get constructive feedback on my progress thus far.

Publications:

Mendis SB, Raymont V and Tabet N (2021) Bilingualism: A Global Public Health Strategy for Healthy Cognitive Aging. *Front. Neurol.* 12:628368. doi:10.3389/fneur.2021.628368

Donncha Mullin

 [@doctormullin](https://twitter.com/doctormullin)

Clinical Research Fellow (funded by the Royal College of Psychiatrists and the Masonic Charitable Foundation)

July 2020—Present

Supervisors:

Dr Graciela Muniz (Centre for Clinical Brain Sciences)

Dr Tom Russ

Dr Michelle Luciano (Psychology)



Masonic
Charitable Foundation



I am a doctor and physiotherapist taking time out of my Psychiatry training to undertake a PhD examining the role that walking speed and subjective cognitive complaint (key components of a syndrome called ‘motoric cognitive risk (MCR)’ have in predicting dementia later in life. I work clinically as an Honorary Specialty Registrar in Psychiatry in NHS Lothian.

I am almost one year into my three-year clinical fellowship. My proposed dissertation title is:

Development of a polygenic risk score of motoric cognitive risk syndrome for early identification of individuals at high risk of dementia

Since the November 2020 interim report, I have been busily working on a systematic review and meta-analysis of MCR as a prognostic tool for adverse health outcomes such as cognitive impairment, dementia, falls and mortality. The protocol is freely available to explore on the pre-registration website PROSPERO. I was lucky to have a great collaborating team for this review, so progress was rapid, and I am now at the enjoyable write up stage. I plan to publish this review later in the year and I will be presenting a poster of this work at the Alzheimer’s Association International Conference in the summer. I am also excited about an upcoming talk I have been selected to deliver, along with ASDRC colleagues, at the Royal College of Psychiatrists International Congress in June titled *Life course psychiatric research: New horizons, new perspectives and new directions*.

I have a number of data access applications at varying stages of acceptance, so once my systematic review is completed, I will focus my attention on the analysis of these datasets to explore the prevalence of MCR along with risk factors for the syndrome. Ultimately, I aim to perform a polygenic risk score (PRS) analysis for MCR syndrome in UK Biobank and validate this in the independent Lothian Birth Cohort 1936 dataset.

Research Highlight

Attending the Data Platform UK (DPUK) Datathon, in November 2020. I was selected to attend this week-long interdisciplinary research collaboration following a competitive application process. I experimented with multi-modal methods including classical statistics and machine learning to predict dementia risk and likelihood of conversion from mild cognitive impairment to dementia. Following this Datathon, I am leading a collaboration with researchers from the United States, Public Health England and the Universities of Oxford and Manchester. We have acquired five datasets – National Survey of Health and Development (NSHD), Cognitive Function and Ageing Study II (CFAS II), Whitehall II, English Longitudinal Study of Ageing (ELSA) and Memento – to carry out the following study: “Slow gait speed as a predictor of cognitive impairment: a multi-cohort study utilising Dementia Platforms UK infrastructure”. I proposed this project to our group, and it is closely linked to my PhD topic so I will aim to incorporate any publication into my PhD thesis.

Public engagement activities

- Podcast – I was interviewed by DPUK staff at University of Oxford to discuss what a Datathon involves, Dec 2020. <https://www.dementiasplatform.uk/news-and-blogs/blog/whats-it-like-to-take-part-in-a-dpuk-datathon>
- I was lead editor of a textbook titled “*Malawi Quick Guide to Mental Health*”, in the weeks prior to commencing my PhD. This was discussed on national radio in Malawi, reported on in the South African Psychiatry Journal and recently reviewed in the BJPsych Bulletin.
- I am in the final stages of working with a tech company to develop a mobile app version of the “*Malawi Quick Guide to Mental Health*”. This app will be free to download from the Apple and Play stores thanks to Scottish Government funding.
- I have an active Twitter profile (@doctormullin) that I keep for research purposes.



Jure Mur
PhD Student, Lothian Birth Cohorts
August 2019—Present (*Wellcome Trust-funded*)

Supervisors:
Dr Tom Russ
Dr Simon Cox
Dr Riccardo Marioni
Dr Graciela Muniz (Centre for Clinical Brain Sciences)



Research Summary

My main research interests are environmental risk factors in health and disease, especially in relation to cognitive decline and dementia. My current focus lies in studying the prevalence and consequences of the use of anticholinergic drugs. The latter are a group of prescription- and over-the-counter medicines that are commonly prescribed for many different conditions. Anticholinergic drugs block the activity of the receptor for acetylcholine, a prominent neurotransmitter that cells in the brain and other parts of the nervous system use to communicate with one another. Past studies have demonstrated links between the use of anticholinergic drugs and various adverse outcomes, including poorer physical- and cognitive performance, and an increased risk of dementia. Moreover, these drugs often have many side effects that are especially prominent in the elderly. It is currently unclear what the long-term prevalence of anticholinergic prescribing is in the UK, nor do we understand the biological underpinnings of the drugs' effects. In my research I utilize databases that survey in-depth information on sociodemographic- and biological characteristics of large numbers of people. I use that data to explore patterns in prescribing of anticholinergics drugs and how it relates to people's health.

Research Highlights

- A study on whether blood methylation – a type of epigenetic modification – is associated with dementia or with risk factors for cardiovascular disease.
- A study showing an association between the VKORC1 gene and vascular dementia.
- Exploring changes in the prevalence of anticholinergic prescribing in the UK from 1990-2015.
- Exploring different ways of measuring anticholinergic burden and links with dementia.

Publications:

- **Mur, J.**, et al. (2020). DNA methylation in APOE: The relationship with Alzheimer's and with cardiovascular health. *Alzheimer's and Dementia TRCI*, 6(1), e12026.
- **Mur, J.**, McCartney, D. L., Chasman, D. I., Visscher, P. M., Muniz-Terrera, G., Cox, S. R., Russ, T. C., & Marioni, R. E. (2020). Variation in VKORC1 is associated with vascular dementia. *Journal of Alzheimer's Disease*, 80(3), 1329-1337. DOI:10.3233/JAD-201256
- **Mur, J.**, Cox, S. R., Marioni, R. E., Muniz-Terrera, G., & Russ, T. C. (2020). Increase in anticholinergic burden in the UK from 1990 to 2015: a UK Biobank study. [Under review].

Luisa Parkinson

PhD Student

November 2018—Present

Supervisors:

Dr Tom Russ

Dr Finn Lindgren (Maths)



Research Summary

I am researching how the environment we experience during our lives can affect our risk of developing dementia. This might suggest ways to change our environment to reduce the risk of developing dementia for future generations.

We know that where you live can affect your risk of developing dementia and that living in areas with high air pollution or with certain things in the drinking water can increase your risk of developing dementia. However, most of this work is based on the environment people are exposed to around the time of their diagnosis. The environment we are exposed to changes throughout our lives either due to us moving or due to areas changing around us. The brain changes that progress to dementia start many years before the onset of signs of dementia. I am interested in understanding when exposure to a poor environment has greatest effect on our risk of developing dementia. Does it have greatest effect from a certain period of life, such as childhood, mid-life or later life, or are effects from across a whole life course important.

I am continuing to work with data on deaths with dementia in Scotland looking at differences based on the area of Scotland and year when the death occurred. So far we have found that there is an increase in the risk of dying with dementia across Scotland since 2000. In a similar way, there is also an increase in the chance of people with a dementia diagnosis having dementia recorded on their death certificate. These increases may be due to better recording of dementia on death certificates. However they could also be showing that more people are progressing to advanced dementia before dying. Looking across Scotland you are more likely to have dementia on your death certificate in the central belt region of Scotland. However for those with a diagnosis of dementia, location has little effect on the chance of having dementia recorded on their death certificate. Could the regional differences seen be due to differences in the environment between industrial and rural areas causing varying levels of dementia prevalence, differences in access to or need for a dementia diagnosis, or a combination of both? I hope that improving our understanding of this data source will allow us to use it better in future studies, as well as giving us insights into dementia in Scotland.

Research Highlights

- Receiving approval for a project looking at how where a group of people lived during their lives and the environment they were exposed to, has affected their chances of developing dementia. The group of people all took part in the Scottish Mental Survey in 1947 at approximately age 11 and are also part of the Scottish Longitudinal Study.
- Being invited to talk about my research on deaths with dementia in Scotland at the Alzheimer's Association International Conference and the Nordic Congress of Gerontology



Martha Pollard
@slantinglight

PhD Student

December 2018—Present

Supervisors:

Dr Tom Russ

Prof. Heather Wilkinson (Health in Social Science)

Revd Dr Harriet Harris (Chaplaincy)



Research Summary

Carer perspectives on freedom and restriction in pandemic-affected dementia care

A substantial and expanding body of research, policy and practice initiatives to improve the experience of care for people with dementia has shown the importance of person-centred care in supporting well-being (e.g., Kim and Park, 2017). Especially complex medical, social and ethical issues have arisen in both clinical and community settings during the COVID-19 pandemic, where multiple issues have affected life in ways that have been very distressing for carers and people living with dementia (e.g., Alzheimer Scotland, 2020). It is vital to continue to explore in depth individuals' direct experiences around restriction and freedom, and to apply this learning to support and enhance responsive tertiary clinical and community prevention with this population, as both the short and longer-term impacts of the pandemic and its effects on carers and people living with dementia emerge over time.

Using the in-depth qualitative approach of grounded theory, my research will explore both unpaid and paid carer perspectives on freedom and restriction in pandemic-affected dementia care. Grounded theory focusses on the lived experience of participants, building from the identified themes progressively into substantive and grounded formal theory (Glaser and Strauss, 2017) specific to dementia care needs in light of the pandemic, applicable across contexts. A major strength of grounded theory is that it is based within the detailed actualities of lived experience, systematically analysed, to develop applicable theory.

My research also comes from my background as a qualified counsellor, from the perspective of person-centred and compassion-focused therapy. In a qualitative research context, listening within the research interviews in this exploratory person-centred way encourages participants to share their unique perspectives in their own way. This process may reveal unexpected insights both for the individual participant and, when systematically analysed with others' unique perspectives, result in grounded theory with important implications for tertiary prevention in dementia care and support for the coming years.

Research and knowledge exchange highlights

- Invitation to speak about my PhD research at the Medicine of the Person conference which will be held in Doorn, Netherlands, in July 2022. The society's interest is in treatment of the whole person. The society notes [on their website](#) that: "Medicine of the Person is not just another branch of medicine. It is an attitude towards contact, an approach to patient-care, applicable in all areas. It puts the emphasis on awareness of patients as whole persons, with places in their community and society. Both the organic and the psychological approach are integral parts of Medicine of the Person."
- Wholly reconfiguring my research on freedom and dementia, which was initially designed (before COVID-19) to explore experiences of freedom and restriction in specialist dementia units. My research has now been redeveloped to respond to the altered situation of the pandemic and its widespread impact on freedom and restriction for carers and people living with dementia in both clinical and community settings.
- With the Royal Lyceum Theatre Edinburgh, and with fellow ASDRC researcher Katherine Walesby, participation in a post-performance discussion panel about the themes of the deeply moving radio play '[Angela](#),' written by playwright Mark Ravenhill about his mother, who had dementia and who died in 2019. The actor who played Angela, Pam Ferris, who had been involved with the Princess Trust for carers for 7 years, and who had cared for a family member with dementia, was a third member of the panel that evening (28/03/2021), with the Artistic Director of the Lyceum Theatre, David Greig, also with family experience of dementia, hosting the discussion.
- Participation in a published podcast as part of the University of Edinburgh's series mental health. I was in conversation with the Rev Dr Harriet Harris, who was the editor of the set of podcasts on 'Life in Lockdown.' We discussed the challenges of lockdown for people living with dementia and for their carers, especially how they were affected by not having the company and respite of meeting in groups, or of receiving specialist care in their homes. We also talked about the interruption that lockdown had brought to my initially planned research in specialist dementia units, because of the needed research restriction to these contexts in light of the risk of COVID-19. We also discussed how there have also been discoveries of new/innovative ways of working in lockdown, which can in some instances bring a new kind of freedom. The link to the podcast is here:
<https://open.spotify.com/episode/3PISipwtwuA8ah8QWdlNVm>


References

Alzheimer Scotland. *COVID-19: the hidden impact A report on the impact of the COVID-19 pandemic on people with dementia and carers living at home*. December 2020.

Glaser, B.G., and Strauss, A.L. (2017). *Discovery of Grounded Theory: Strategies for Qualitative Research*. New York: Taylor and Francis (first published 1967)

Kim, S.K., and Park, M. (2017). Effectiveness of person-centered care on people with dementia: a systematic review and meta-analysis. *Clin Interv Aging* 12:381-397. doi:10.2147/CIA.S117637

Stina Saunders

 [@stina_saunders](https://twitter.com/stina_saunders)

PhD Student, EPAD

April 2017—Present

Supervisors:

Prof. Craig Ritchie (Edinburgh Dementia Prevention)

Dr Graciela Muniz (Centre for Clinical Brain Sciences)

Dr Tom Russ



[EPAD stands for the **E**uropean **P**revention of **A**lzheimer's **D**ementia project]

Research Summary

I am an Early Career Researcher at the Edinburgh Dementia Prevention Research Group (within the Centre for Clinical Brain Sciences) and a Fellow of the European Prevention of Alzheimer's Dementia (EPAD) programme. My PhD project is part of the EPAD Ethical, Legal and Societal Impacts work on risk disclosure. The core of my PhD is a longitudinal cohort study looking at risk disclosure in the mild cognitive impairment population. The aim is to understand the short- and longer-term impact of how diagnostic test results are communicated to patients in Memory Clinics who are at the early stages of the neurodegenerative disease continuum. Aside from my doctoral studies, I have since 2015, been working in clinical trials for Alzheimer's disease in both research and community settings.

Before my PhD, I completed postgraduate studies in Clinical Psychology at the University of Tartu in Estonia, focusing on adjustment disorders and stress reactions. I subsequently moved to Scotland for further postgraduate studies at the University of Edinburgh, researching the role of attachment in people recently diagnosed with dementia.

In parallel to my PhD and trial delivery work, I am involved with the European Medicines Agency initiated work on patient preferences and patient reported outcome measures in Alzheimer's disease clinical trials. I coordinate the Edinburgh Dementia Prevention Research Group's electronic Person Specific Outcome Measure (ePSOM) development programme.



Rose Vincent

 [@roseevincen](https://twitter.com/roseevincen)

PhD Student, ECRED

(Alzheimer's Society-funded)

February 2020—Present

Supervisors:

Professor Heather Wilkinson (ECRED)

Dr Tom Russ



[ECRED stands for the **E**dinburgh **C**entre for **R**esearch on the **E**xperience of **D**ementia]

Research Summary

My PhD research is exploring volunteering in the context of young onset dementia. Prioritizing the perspectives of people living with dementia, the project will consider both being supported by volunteers and volunteering with young onset dementia.

People living with young onset dementia face a unique set of challenges. Loss of employment, mortgage repayments, raising children, and a lack of understanding by others (including professionals) can mean they are at risk of becoming socially isolated. Social support in the dementia field is increasingly provided by volunteers, and volunteering when living with dementia can also provide many psychosocial benefits. However, there is little known about how people living with dementia experience volunteer support, and even less about how they engage in volunteering themselves.

I now have ethical approval to start my project and I am currently recruiting a team of people living with young onset dementia as co-researchers. I have chosen to involve people living with young onset dementia in the data collection, analysis, and dissemination stages of the work as I feel it is important that their voices are heard in research. I am actively working to apply the key principles of co-production to guide the work and disrupt the traditional power dynamics of research.

Working together as a team we will sample and analyse a set of secondary data taken from the Dementia Diaries project (<https://dementiadiaries.org/>). We will apply a thematic approach to the analysis, as we explore definitions and experiences of volunteering, identify access issues and barriers, and finally to develop a volunteering model which prioritises inclusivity. The approach to analysis has been adapted to be accessible to lay researchers and people living with dementia. The team will be paid for their time and contribution with the funding I was awarded from the Scottish Dementia Research Consortium.

Outside of my PhD, I recently joined the PhD women in Scotland team as their blog coordinator. This group is co-founded and run solely by PhD students, and is a space for female/nonbinary students to share their stories in a safe, supportive community. I continue to volunteer with Alzheimer Scotland young onset service, helping to organise a range of interesting events for the dementia café groups online meetings. Finally, the journal club continues to grow and keep people connected; we have discussed a huge variety of research this past year and even had several presenters discussing their own work.

Research Highlight

I have recently begun an internship on a research project with Dr Tom Russ and Professor Heather Wilkinson. The project is exploring the experiences of people who have shared or received a dementia diagnosis remotely post Covid-19. A Patient and Public Involvement advisory group will be recruited who will inform the research process. This is a great opportunity for me to develop my skills as a researcher, specifically in the field of involvement and engagement in dementia research.

Katherine Walesby

 [@kewdoc](https://twitter.com/@kewdoc)

Clinical Research Fellow

August 2015—Present

Supervisors:

Dr Tom Russ

Dr Susan Shenkin (Geriatric Medicine)



Research Summary

My PhD looks at the geographical variation of dementia analysing data in Scotland and New Zealand. Last year I published my research work undertaken in New Zealand looking at their nationally collected data (the Integrated Data Infrastructure) and geographical variation of dementia. This was the first published work looking at national (whole of New Zealand) dementia epidemiology using New Zealand's data (rather than previous national estimates which are based on predictions using data from other countries). This work was a collaboration with other New Zealand researchers in and hopefully this will lead to future collaborative work looking at dementia in New Zealand. The work will form a chapter of my PhD.

I am currently working on structuring my PhD thesis and completing the remaining work. This includes finishing my large systematic review investigating the geographical variation of dementia. This is important work to help us understand the variation in dementia in different areas. I am specifically looking at the variation between rural and urban areas in different countries worldwide. There have been many articles published since 2012 in this area so it is involving a lot of work reviewing approximately 15,000 research papers.

My final section of my PhD involves analysing the Scottish Mental Survey (SMS) 1947 data which has been linked to health records, mortality records and prescribing records within the secure safe haven at eDRIS (the University of Edinburgh big data storage safe haven. This work is all anonymised and de-identified. The aim is to a) ascertain how many of the cohort had dementia recorded in their digital health records, b) look at the geographical variation of dementia ascertainment across Scotland, and c) compare this with previous work published by Russ et al showing a geographical variation of dementia within Scotland in the older SMS 1932 cohort. I recently attended the Scottish Centre for Administrative Data Research (SCADR) course and completed my ONS Safe Research Training and examination to allow me to access the securely held data.

Research Highlight

- Last year, publishing the first paper on New Zealand's national dementia epidemiology estimates using New Zealand's own data.
- I continue to be part of was part of the UK Big Data Geriatric Medicine Interest Group aligned to the British Geriatric Society. It is called the "[Ageing Data Research Collaborative](#)' (@geridata) We published a paper last year in the journal *Age and Ageing* highlighting the role of big data research in geriatric medicine and additionally now have a section within the British Geriatrics Society Autumn Conference specifically for Big Data research. For upcoming British Geriatric Society Autumn conference, I will sit on the expert panel (with others also undertaking big data research) to discuss the presentations and key issues related to Big Data research in geriatric medicine including dementia.
- I have been a peer-reviewer on several international journals

Public Engagement

- Along with another researcher at ASDRC, the Royal Lyceum Theatre Edinburgh asked me to be involved in a post-play discussion on dementia. The play was called 'Angela' by Mark Ravenhill. It was an autobiographical play about the author's mother life with dementia and looking back on her life. It was a deeply moving play and an honour to be involved with the post-play discussion, which included the lead actor who had personal experience with family members with dementia. We discussed key themes from the play, took questions from the audience and signposted the audience to helpful resources including Alzheimer Scotland. There was positive feedback from the event.
- As part of a small group within Alzheimer Scotland Dementia Research Centre, I assisted in preparing a conference abstract on research undertaken in the centre on dementia for the International Congress on Psychiatry June 2021. Our abstract was successful and I will be chairing our dementia research workshop in June 2021.

Publications

Walesby KE, Exeter DJ, Gibb S, Wood PC, Starr JM, Russ TC. (2020) Prevalence and geographical variation of dementia in New Zealand from 2012 to 2015: Brief report utilising routinely collected data within the Integrated Data Infrastructure. *Australas J Ageing*. May 11. doi:10.1111/ajag.12790. Epub ahead of print. PMID: 32394527

Todd OM, Burton JK, Dodds RM, Hollinghurst J, Lyons RA, Quinn TJ, Schneider A, **Walesby KE**, Wilkinson C, Conroy S, Gale CP, Hall M, Walters K, Clegg AP. (2020) New Horizons in the use of routine data for ageing research. *Age Ageing*. Aug 24;49(5):716-722. doi: 10.1093/ageing/afaa018. PMID: 32043136; PMCID: PMC7444666.

Welch C, Geriatric Medicine Research Collaborative. (2020) Growing research in geriatric medicine: a trainee perspective. *Age Ageing*. Aug 24;49(5):733-737. doi: 10.1093/ageing/afaa052. (I was a collaborator as part of the Geriatric Medicine Research Collaborative)

Caulfield L, Heslop P, **Walesby KE**, Sumukadas D, Sayer AA, Witham MD. (2020) Effect of Angiotensin System Inhibitors on Physical Performance in Older People – A Systematic Review and Meta-Analysis. *J Am Med Dir Assoc*. Aug 25;S1525-8610(20)30623-X. doi: 10.1016/j.jamda.2020.07.012. Epub ahead of print. PMID: 32859513.



Miles Welstead

 [@welsteadmiles](https://twitter.com/welsteadmiles)

PhD Student, Lothian Birth Cohorts (Age UK-funded)

April 2019—Present

Supervisors:

Dr Michelle Luciano (Psychology)

Dr Tom Russ

Dr Graciela Muniz (Centre for Clinical Brain Sciences)



Research Summary

I am now in the third year of my PhD, working with the Lothian Birth Cohort 1936. I have spent my time exploring the prevalence of both frailty and mild cognitive impairment in the cohort. I first published a systematic review into frailty trajectories, finding that the field is rather muddled with researchers using differing measures of frailty and assessing different covariates. However, I was able to conclude that there are several factors associated with these increases including socioeconomic status, gender, location, immigration status, diet, and level of physical activity. I then derived and implemented two widely used frailty measures into the Lothian Birth Cohort 1936 and explored how inflammation markers are associated with frailty change. I found that inflammation is associated with frailty over time when measured by a Frailty Index but not when measured by the Fried phenotype. This suggested that not only does inflammation have a role in frailty change, but also that the way in which frailty is quantified is an important consideration to take into account. This led into paper currently under review which aimed to assess the extent to which frailty trajectories are heterogeneous. Using a mixed model approach I was able to identify three subpopulations of frailty trajectories, meaning that some latent groups of individuals on the cohort tend to follow similar trajectories. Membership of each higher frailty classes was associated with lower social class, less education, and lower childhood cognitive ability, indicating the potential for future interventions to target individuals who are at the greatest risk of belonging to a high frailty trajectory. The other focus of the PhD has been on deriving a measure of Mild Cognitive Impairment (MCI) in the cohort and assessing how cognitive status changes over time. I found rates of MCI in the cohort to be largely consistent with previous literature. I also found that higher baseline depressive symptoms increase the likelihood of reverting from MCI to healthy cognition over time suggesting that there may be an important role for the treatment of depression for those with MCI. I concluded that further research is required to identify prevention strategies for those at high risk of MCI and inform effective interventions that increase the likelihood of reversion to, and maintenance of healthy cognition.

My other focus over the past year has been contributing to several Covid-19 papers with the Lothian Birth Cohort 1936. I helped create and send out a paper questionnaire to all of our participants and used the results to publish three papers. The first study was cross-sectional and concluded that factors such as cognitive function, occupational class, self-rated health, anxiety, and emotional stability, may be related to risk of poorer lockdown-related psychosocial and physical outcomes. This was followed by a longitudinal paper which found that the UK lockdown had various consequences for participant's psychosocial and behavioural status. Finally, a paper was published which found that spending more time in a home garden was associated with greater subjective wellbeing during the UK lockdown.

Research Highlight

Publishing my first first author paper

Public Engagement

I spoke at an invited talk for Scottish academic old age psychiatry meeting - 28/10/2020 - 'the shape of frailty and the factors associated with change'

I was accepted onto a three month internship with the Scottish Government beginning in mid May. The project will explore the effect of Covid-19 on the Scottish Islanders

Publications

Welstead, M., Muniz-Terrera, G., Russ, T. C., Corley, J., Taylor, A. M., Gale, C. R., & Luciano, M. (2020). Inflammation as a risk factor for the development of frailty in the Lothian Birth Cohort 1936. *Experimental gerontology*, 139, 111055.

Welstead, M., Jenkins, N. D., Russ, T., Luciano, M., & Muniz-Terrera, G. (2020). A systematic review of frailty trajectories: their shape and influencing factors. *The Gerontologist*.

Welstead, M., Luciano, M., Muniz-Terrera, G., Taylor, A. M., & Russ, T. C. (2020). Prevalence of Mild Cognitive Impairment in the Lothian Birth Cohort 1936. medRxiv.

Welstead, M., Luciano, M., Muniz-Terrera, G., Saunders, S., Mullin, D. S., & Russ, T. C. (2021). Predictors of Mild Cognitive Impairment Stability, Progression, or Reversion in the Lothian Birth Cohort 1936. *Journal of Alzheimer's Disease*, (Preprint), 1-8.

Russ, T. C., & **Welstead, M.** (2020). A pragmatic tool to identify aspects of frailty. *International Psychogeriatrics*, 32(9), 1019-1021.

Corley, J., Okely, J. A., Taylor, A. M., Page, D., **Welstead, M.**, Skarabela, B., ... & Russ, T. C. (2021). Home garden use during COVID-19: Associations with physical and mental wellbeing in older adults. *Journal of Environmental Psychology*, 73, 101545.

Okely, J. A., Corley, J., **Welstead, M.**, Taylor, A. M., Page, D., Skarabela, B., ... & Russ, T. C. (2021). Change in Physical Activity, Sleep Quality, and Psychosocial Variables during COVID-19 Lockdown: Evidence from the Lothian Birth Cohort 1936. *International journal of environmental research and public health*, 18(1), 210.

Cinzia Giuntoli

Higher Trainee in Old Age Psychiatry (NHS)

Alzheimer Scotland Research Affiliate

August 2020—Present



Research Summary

I am now more than halfway through my first year of specialty training in Old Age Psychiatry working at the Royal Edinburgh Hospital. I have now had more time to settle in Edinburgh, having only recently moved from Glasgow. During this time, I have become involved in the Lothian Birth Cohort study as part of a team examining electronic health records to ascertain dementia diagnoses in this cohort. I am also currently developing a research protocol in order to apply for ethical approval for a qualitative study looking into the patient experience of transitioning from General Adult to Old Age Psychiatric services.

My previous research experience includes looking at the incidence of Dementia in a community-based incident Parkinson's Disease cohort and comparing this to age and gender matched controls (<https://jnp.bmj.com/content/85/10/e4.131>). I also have an interest in the Neuroscience, having completed an intercalated degree in Neuroscience with Psychology during my undergraduate training at the University of Aberdeen. This involved an extensive literature review of the pathophysiology of neuropathic pain. Since 2019, I have had a role within the Royal College of Psychiatrists as a local "Neuroscience Champion". This has brought a wealth of opportunity, including leading a Scotland-wide survey around Neuroscience engagement amongst Psychiatrists. The results of this survey were presented at the RCPsych Medical Education Conference in 2019 and published in the RCPsych's "Psynapse" newsletter. This role has also enabled me to keep up to date with the latest in Neuroscience in Psychiatry research by receiving a bursary to attend the annual RCPsych Neuroscience Spring Conference.

In the future, I hope to be able to pursue further protected research time by completing a PhD.

Anna Szalek

Higher Trainee in Old Age Psychiatry (NHS)

Alzheimer Scotland Research Affiliate

August 2020—Present



Research Summary

I am working as a ST4 higher trainee in old age psychiatry in Edinburgh (NHS Lothian) from August 2020. I am contributing to the Lothian Birth Cohort 1936 Study by screening participants for a diagnosis of dementia by looking through their electronic patient records. I have not yet started my systematic review and am currently narrowing down topics of interest in dementia. I hope to gain more formal experience in research through the aforementioned old age psychiatry research projects.



Georgina Weatherdon
Higher Trainee in Old Age Psychiatry (NHS)
Alzheimer Scotland Research Affiliate
August 2019—Present



Research Summary

As part of my Old Age Psychiatry clinical training, I continue to enhance my research skills by contributing to two key research projects. I am currently conducting a systematic review looking into cardiac complications of patients over the age of 65 on antipsychotic medication with my colleague, Dr Meroe Grove. This is a review of the scientific literature looking at the rate of heart problems associated with the use of antipsychotic medications in older adults. We hope this will inform future clinical guidelines regarding heart monitoring for older adults on antipsychotic medication for which there are no current specific guidelines. We have had our systematic review accepted by PROSPERO (www.crd.york.ac.uk/prospero/, an international database for registered systematic reviews,) and completed our database searches. We are now at the stage of completing data collection by going through all the records returned from these searches and selecting relevant studies.

I am also assisting with Wave 6 of the 1936 Lothian Birth Cohort study as part of the dementia ascertainment team. This is a follow up study of the Scottish Mental Survey of 1947 looking at childhood intelligence. The aim is to examine the distribution and causes of cognitive ageing in this population. I am screening electronic medical records for all participants to establish diagnoses of dementia/cognitive impairment along with my colleagues Dr Anna Szalek and Dr Cinzia Giuntoli. We are using a standardised protocol to collect data regarding dementia diagnosis, subtype, cognitive assessment score, capacity assessment, cognitive enhancer medication and pathology results for all participants who have given their consent. This essential work is being done in advance of Wave 6 of the study which has been delayed due to the COVID-19 pandemic.

Collaborations and External Funding

We are now recognised as a Centre with substantial expertise in clinical dementia research, particularly epidemiology, and close links with NHS clinical services and the [NHS Research Scotland Neuroprogressive and Dementia Research Network](#) (formerly the Scottish Dementia Clinical Research Network). Thus, we are occasionally approached by other academics within the University and elsewhere to support or join their applications for grants and fellowships relating to dementia. In the last year we have supported applications from:

- We are delighted to be working with a team at the Alzheimer Scotland Centre for Policy and Practice at the University of the West of Scotland on a project funded by the Dunhill Medical Trust entitled “Improving the health and well-being of older people with cognitive frailty and dementia in prison.” This is a really exciting project focused on an important, ageing, and under-researched population. This is currently in the set-up phase and ethical approval for the project is being applied for.
- Our work on air pollution and dementia – in particular our paper in *Current Opinion in Psychiatry* entitled “[Air pollution and brain health: defining the research agenda](#)” — which previously informed an [Alzheimer’s Society report](#) — and our more recent [analysis using the Lothian Birth Cohort 1936](#) has been further recognised by an invitation to join a collaborative project entitled “InSPIREd ... Its purpose is to help establish the public health policy-research agenda on how PM_{2.5} and other priority air pollutants impact cognitive health across the lifespan.” This £5.2 million grant is currently being reviewed by the MRC. We had very positive reviews and a positive panel interview so we are hopeful this project will be funded.

Finally, it is wonderful that we have been able to include a number of externally-funded PhD students in the life of the Centre, including studentships funded by the Advanced Care Research Centre, Age UK, Alzheimer’s Society, MRC, the Economic and Social Research Council, the Royal College of Psychiatrists and the Masonic Charitable Foundation, and Wellcome Trust.

Sharing the diagnosis of dementia in the post-Covid clinic

We were delighted to be awarded £216k by UK Research & Innovation for this project which will explore the experiences of people living with dementia of being given a diagnosis of dementia by phone or videocall as well as speaking with clinicians for their views.

With the COVID-19 pandemic, most memory clinics switched to remote consultations to continue to meet the needs of patients while attending to infection control concerns. However, there is a significant lack of clarity around how remote diagnoses are to be delivered and how the person with dementia experiences this process. The aim of this research is to understand experiences of delivering and receiving a dementia diagnosis during COVID-19 through the exploration of emotional impact, practical impact, and ethical considerations. Drawing on co-production principles, a PPI group of people living with dementia and care partners (n=5-8) will be consulted at each stage of the research. Interviews (n=30) will be conducted with people who have recently been patients at memory clinics since services shifted to remote (March 2020) and with professionals who have been delivering diagnoses (n=30). These interviews will be thematically analysed in consultation with PPI group and used to inform an online national forum. Findings from this online discussion will be synthesised with interview findings and used to develop a policy brief and clinician guidelines for delivering a remote dementia diagnosis. Additional outputs will include one or more additional podcasts to engage the public and academic papers in open access, peer-reviewed journals.

This is a very exciting project, not least because it will be co-produced with a group of people living with dementia. We have assembled an excellent team:

- Katie Gambier-Ross (postdoctoral researcher at the ACRC)
- Lindsay Kinnaird (research fellow)
- Denise Munro (public and patient involvement co-ordinator)
- Tom Russ (investigator - clinical)
- Rosie Vincent (PhD intern)
- Heather Wilkinson (investigator – co-production)



**Economic
and Social
Research Council**

Welcome to three new PhD students

Anna Bryan



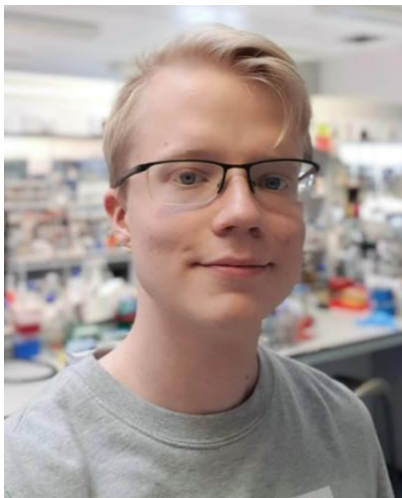
I recently completed my MSc by Research degree in the Reid School of Music. In September 2021, I will begin my PhD studies at the [Advanced Care Research Centre \(ACRC\)](#) with a project titled “Music and the ageing brain: can personalised music provision support communication skills and quality of life?” I hope that my research on this topic will produce useful results that can help improve the lives of those living in care homes, particularly those living with dementia. I am currently working on online singing sessions for people with dementia and their carers. These ‘Sing it Back’ sessions are part of the “Unlock and Revive” heritage research project which seeks to discover what makes online cultural events beneficial and effective for the dementia community.

Jonny Flint

I recently completed an MSc at the Social, Genetic and Developmental Psychiatry Centre at King’s College London. I am particularly interested in identifying environmental outcomes, such as exercise and socialisation, that may protect or worsen genetic risk of poor ageing outcomes and am looking forward to starting my PhD at the [ACRC](#) in September 2021. My project will integrate genetic and environmental predictors to test whether positive aspects of the environment can lower a person’s genetic risk of adverse ageing-related diseases. I am very interested in public engagement and am keen to explore how older adults view personalised genomics and, ultimately, help them to understand my research findings.



Otto-Emil Jutila



After completing a Master’s degree in Global Health Science and Epidemiology at the University of Oxford I am looking forward to starting on the [MRC Precision Medicine Doctoral Training Programme](#). I am interested in the use of modifiable risk factors in the prevention of dementia and cardiovascular disease. In addition, the impact of the environment on health. Thus, I am very excited about starting work on the project “Air pollution and Dementia: Exploring genetic, cardiovascular, and epigenetic moderators and mechanisms.”

Lothian Birth Cohorts

We continue to work very closely with the [Lothian Birth Cohorts](#) team and the ASDRC is coordinating the important dementia ascertainment work within the Lothian Birth Cohort 1936. This work is led by Lucy Stirland who is joined by three of our Alzheimer Scotland Research Affiliates in the NHS. This work is ongoing, both in relation to the delayed sixth wave of follow up which had been scheduled to start last Spring, but also looking back to examine the medical records (where participants have given their consent; this is almost everyone) of all participants in this study, including those who have died or who have not returned for follow up. This will allow us to identify the majority of people who developed dementia from their recruitment aged approximately 70 years to now. Once the next wave begins, our clinical team will also be involved in reviewing a small number of people face-to-face to clarify whether or not these people have developed dementia. This is particularly important since participants in this study are now in their mid-80s and, therefore, at high risk of developing dementia.

An additional plan is to apply this approach to identifying other important syndromes which are complicated to identify but very important in older adults — such as falls, frailty, incontinence — to add an additional dimension to this already important research study.

The hope is that the next wave of LBC1936 follow up will begin during 2021, However, in the meantime, the LBC team have been working hard on a number of papers resulting from an online survey of the LBC1936 participants about their experiences of the national lockdown in response to the Covid-19 pandemic. One example of these is Adele Taylor's and Danielle Page's manuscript (they are joint first authors), available at medRxiv, entitled "[Impact of COVID-19 lockdown on psychosocial factors, health, and lifestyle in Scottish octogenarians: the Lothian Birth Cohort 1936 Study.](#)"

Scottish Dementia Brain Tissue Bank

The Brain Tissue Bank continues to grow: we now have 120 donors, 53 of whom have provided brain tissue. Given that the Brain Tissue Bank has now been in place for a number of years, procedures are working smoothly and we continue to see its value with a fair proportion of findings arising that were not suspected clinically during the donor's life. This highlights the importance of future research into ways of defining diagnoses more carefully. Informal feedback from families has been that the process of donation has often gone well. We remain, as always, very grateful for all the support this invaluable resource receives.

We have been working closely with the [Neuroprogressive and Dementia Network](#), the [Edinburgh Brain and Tissue Bank](#), and the [Health Informatics Centre at the University of Dundee](#) to explore how to optimise the work of the Brain Tissue Bank (BTB). Speaking with the main researchers who use the samples in the BTB, we have streamlined the clinical data which will be collected at the time of recruitment and harmonised these data with those collected by [Brains for Dementia Research](#) in England and Wales which will allow the tissue and data to be used more widely in other UK, European, and international projects.

In addition to basic demographic data, medical history, lifestyle questions (alcohol use, smoking, etc.), and a request for permission to access their medical records to seek further information as necessary, we will ask participants to complete a new short cognitive screening test developed by Professor Alistair Burns at the University of Manchester (the [Free-Cog](#)), two measures of activities of daily living (the Instrumental Activities of Daily Living and the Personal Self Maintenance scales), and the Neuropsychiatric Inventory.

Furthermore, we plan to increase the role of the ASDRC in the brain tissue bank by our staff and students contacting donors annually to complete a further cognitive test over the telephone (the tele-Free Cog) which will both provide longitudinal cognitive data but also aid retention and help keep our database up to date. We will aim to ensure that all the stakeholders (the ASDRC, the Network, the Brain and Tissue Bank, and the Health Informatics Centre) all work closely together and communicate as much as possible to ensure that everything runs smoothly.

Having reviewed the whole process from beginning to end, we have produced a new leaflet describing the whole process for potential donors so that they will clearly understand what is involved before signing up. We also plan to produce a brain tissue donor card — hopefully made from some sustainable material and not plastic — analogous to an organ donor card which will serve as a reminder of the person's intention to donate and also the procedure following death.

We are in the process of applying for an amendment to our ethical approval to allow these changes to be made. In advance of this approval, we re-launched the BTB on 4th March and have been speaking about it to various audiences, including the National Dementia Post-diagnostic Support Leads. This is invariably met with great interest, both from prospective donors and practitioners.

We are continuing to explore collaborations with the Dementia Research Institute (DRI) to extend the BTB to participate in specific projects, such as the human Alzheimer disease atlas, as described in a previous report.



Research attention (all time)

~ Total mentions
18,059

Total number of mentions for research outputs in this report

📄 Research outputs
564

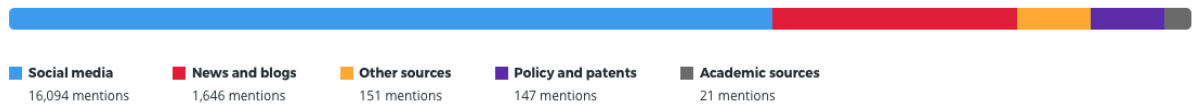
Total number of research outputs in this report, including those without mentions

📄 Outputs with mentions
450

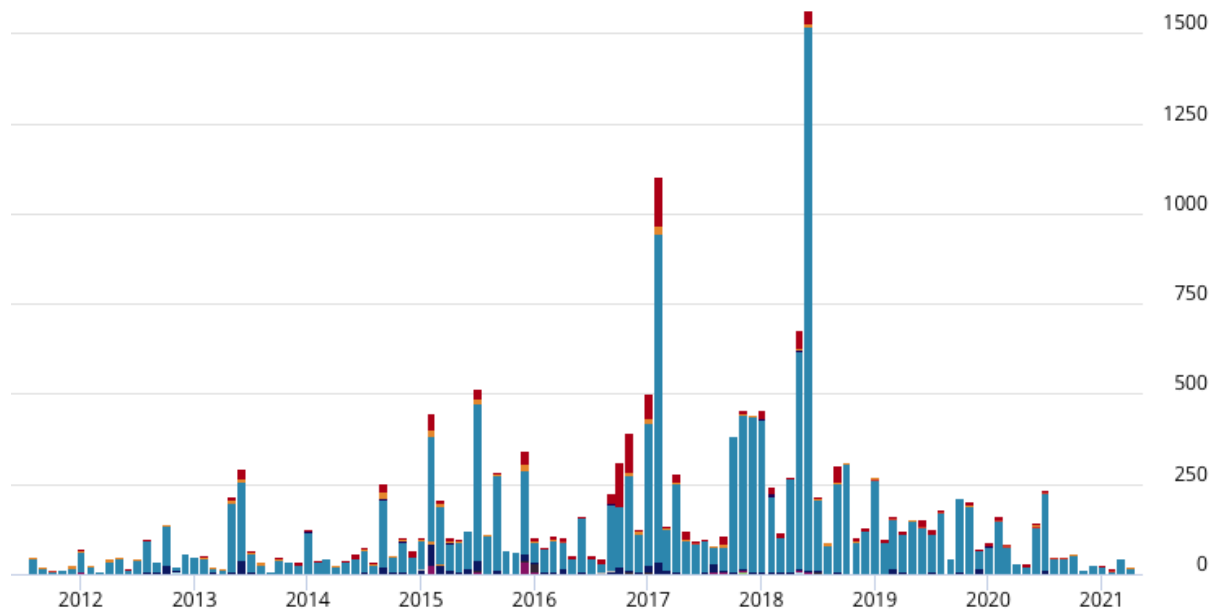
Total number of research outputs in this report that have Altmetric mentions

🏛️ Sources of attention
15











Number of attention sources that mention research outputs in this report



Attention over time

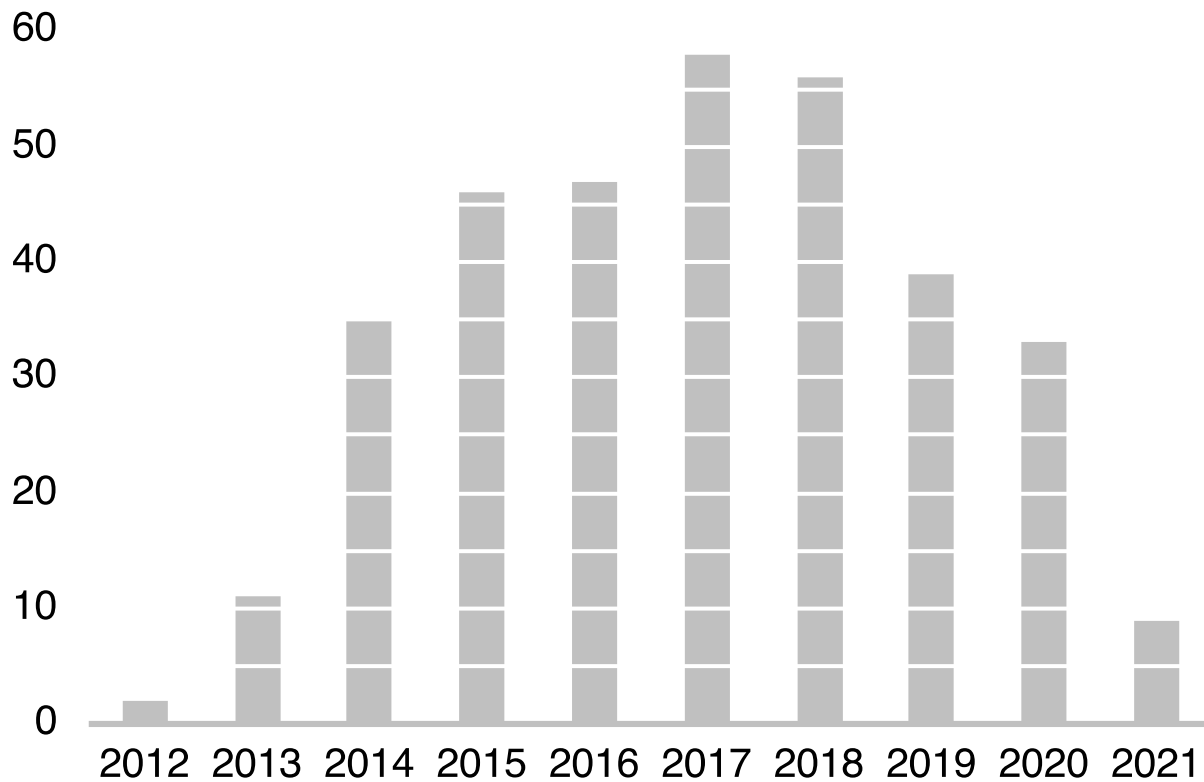


Top ten publications (of all time) in terms of Altmetric attention score

| Rank | Attention Score | Research Output |
|------|---|--|
| #1 |  | Study of 300,486 individuals identifies 148 independent genetic loci influencing general cognitive function Article in Nature Communications , May 2018 |
| #2 |  | Rare and low-frequency coding variants alter human adult height Article in Nature , February 2017 |
| #3 |  | Environmental risk factors for dementia: a systematic review Article in BMC Geriatrics , October 2016 |
| #4 |  | KLB is associated with alcohol drinking, and its gene product β -Klotho is necessary for FGF21 regulation of alcohol preference Article in Proceedings of the National Academy of Sciences of the United States of America , November 2016 |
| #5 |  | GWAS of 126,559 Individuals Identifies Genetic Variants Associated with Educational Attainment Article in Science , May 2013 |
| #6 |  | Cigarette smoking and thinning of the brain's cortex Article in Molecular Psychiatry , February 2015 |
| #7 |  | Directional dominance on stature and cognition in diverse human populations Article in Nature , July 2015 |
| #8 |  | Psychological distress in relation to site specific cancer mortality: pooling of unpublished data from 16 prospective cohort studies Article in British Medical Journal , January 2017 |
| #9 |  | Genome-wide association meta-analysis in 269,867 individuals identifies new genetic and functional links to intelligence Article in Nature Genetics , June 2018 |
| #10 |  | Genetic analysis of over 1 million people identifies 535 new loci associated with blood pressure traits Article in Nature Genetics , September 2018 |

Centre members' publications on PubMed

The total number of publications on PubMed affiliated to ASDRC continues to grow (N=276):



May 2020—Present (N=28)

1. **Welstead M**, Luciano M, Muniz-Terrera G, Taylor AM, **Russ TC** (2021) Prevalence of Mild Cognitive Impairment in the Lothian Birth Cohort 1936. *Alzheimer Dis Assoc Disord*.
2. **Welstead M**, Luciano M, Muniz-Terrera G, **Saunders S**, **Mullin DS**, **Russ TC** (2021) Predictors of Mild Cognitive Impairment Stability, Progression, or Reversion in the Lothian Birth Cohort 1936. *J Alzheimers Dis*. **80**(1): 225-32.
3. Wang H, Noordam R, Cade BE, Schwander K, Winkler TW, Lee J, Sung YJ, Bentley AR, Manning AK, Aschard H, Kilpeläinen TO, Ilkov M, Brown MR, Horimoto AR, Richard M, Bartz TM, Vojinovic D, Lim E, Nierenberg JL, Liu Y, Chitrala K, Rankinen T, Musani SK, Franceschini N, Rauramaa R, Alver M, Zee PC, Harris SE, van der Most PJ, Nolte IM, Munroe PB, Palmer ND, Kühnel B, Weiss S, Wen W, Hall KA, Lyytikäinen LP, O'Connell J, Eiriksdottir G, Launer LJ, de Vries PS, Arking DE, Chen H, Boerwinkle E, Krieger JE, Schreiner PJ, Sidney S, Shikany JM, Rice K, Chen YI, Gharib SA, Bis JC, Luik AI, Ikram MA, Uitterlinden AG, Amin N, Xu H, Levy D, He J, Lohman KK, Zonderman AB, Rice TK, Sims M, Wilson G, Sofer T, Rich SS, Palmas W, Yao J, Guo X, Rotter JI, Biermasz NR, Mook-Kanamori DO, Martin LW, Barac A, Wallace RB, Gottlieb DJ, Komulainen P, Heikkinen S, Mägi R, Milani L, Metspalu A, **Starr JM**, Milaneschi Y, Waken RJ, Gao C, Waldenberger M, Peters A, Strauch K, Meitinger T, Roenneberg T, Völker U, Dörr M, Shu XO, Mukherjee S, Hillman DR, Kähönen M, Wagenknecht LE, Gieger C, Grabe HJ, Zheng W, Palmer LJ, Lehtimäki T, Gudnason V, Morrison AC, Pereira AC, Fornage M, Psaty BM, van Duijn CM, Liu CT, Kelly TN, Evans MK,

Bouchard C, Fox ER, Kooperberg C, Zhu X, Lakka TA, Esko T, North KE, Deary IJ, Snieder H, Penninx B, Gauderman WJ, Rao DC, Redline S, van Heemst D (2021) Multi-ancestry genome-wide gene-sleep interactions identify novel loci for blood pressure. *Mol Psychiatry*.

4. **Russ TC**, Cherrie MPC, Dibben C, Tomlinson S, Reis S, Dragosits U, Vieno M, Beck R, Carnell E, Shortt NK, Muniz-Terrera G, Redmond P, Taylor AM, Clemens T, van Tongeren M, Agius RM, **Starr JM**, Deary IJ, Pearce JR (2021) Life Course Air Pollution Exposure and Cognitive Decline: Modelled Historical Air Pollution Data and the Lothian Birth Cohort 1936. *J Alzheimers Dis*. **79**(3): 1063-74.

HIGHLIGHT: This is the main publication from our NERC-MRC-CSO grant exploring historical air pollution. This has been accepted by the Journal of Alzheimer Disease and will be published open access. We intend to issue a press release and hope that it will attract a great deal of interest, not least because of the current interest in air pollution.

5. **Mur J**, McCartney DL, Chasman DI, Visscher PM, Muniz-Terrera G, Cox SR, **Russ TC**, Marioni RE (2021) Variation in VKORC1 Is Associated with Vascular Dementia. *J Alzheimers Dis*. **80**(3): 1329-37.

6. Juvinao-Quintero DL, Marioni RE, Ochoa-Rosales C, Russ TC, Deary IJ, van Meurs JBJ, Voortman T, Hivert MF, Sharp GC, Relton CL, Elliott HR (2021) DNA methylation of blood cells is associated with prevalent type 2 diabetes in a meta-analysis of four European cohorts. *Clin Epigenetics*. **13**(1): 40.

7. Hurwitz N, **Radakovic R**, Boyce E, Peryer G (2021) Prevalence of pain in amyotrophic lateral sclerosis: a systematic review and meta-analysis. *Amyotroph Lateral Scler Frontotemporal Degener*. 1-10.

8. Cuellar-Partida G, Tung JY, Eriksson N, Albrecht E, Aliev F, Andreassen OA, Barroso I, Beckmann JS, Boks MP, Boomsma DI, Boyd HA, Breteler MMB, Campbell H, Chasman DI, Cherkas LF, Davies G, de Geus EJC, Deary IJ, Deloukas P, Dick DM, Duffy DL, Eriksson JG, Esko T, Feenstra B, Geller F, Gieger C, Giegling I, Gordon SD, Han J, Hansen TF, Hartmann AM, Hayward C, Heikkilä K, Hicks AA, Hirschhorn JN, Hottenga JJ, Huffman JE, Hwang LD, Ikram MA, Kaprio J, Kemp JP, Khaw KT, Klopp N, Konte B, Kutalik Z, Lahti J, Li X, Loos RJF, Luciano M, Magnusson SH, Mangino M, Marques-Vidal P, Martin NG, McArdle WL, McCarthy MI, Medina-Gomez C, Melbye M, Melville SA, Metspalu A, Milani L, Mooser V, Nelis M, Nyholt DR, O'Connell KS, Ophoff RA, Palmer C, Palotie A, Palviainen T, Pare G, Paternoster L, Peltonen L, Penninx B, Polasek O, Pramstaller PP, Prokopenko I, Raikonen K, Ripatti S, Rivadeneira F, Rudan I, Rujescu D, Smit JH, Smith GD, Smoller JW, Soranzo N, Spector TD, Pourcain BS, **Starr JM**, Stefánsson H, Steinberg S, Teder-Laving M, Thorleifsson G, Stefánsson K, Timpson NJ, Uitterlinden AG, van Duijn CM, van Rooij FJA, Vink JM, Vollenweider P, Vuoksima E, Waeber G, Wareham NJ, Warrington N, Waterworth D, Werge T, Wichmann HE, Widen E, Willemsen G, Wright AF, Wright MJ, Xu M, Zhao JH, Kraft P, Hinds DA, Lindgren CM, Mägi R, Neale BM, Evans DM, Medland SE (2021) Genome-wide association study identifies 48 common genetic variants associated with handedness. *Nat Hum Behav*. **5**(1): 59-70.

9. Cox SR, Harris MA, Ritchie SJ, Buchanan CR, Valdés Hernández MC, Corley J, Taylor AM, Madole JW, Harris SE, Whalley HC, McIntosh AM, **Russ TC**, Bastin ME, Wardlaw JM, Deary IJ, Tucker-Drob EM (2021) Three major dimensions of human brain cortical ageing in relation to cognitive decline across the eighth decade of life. *Mol Psychiatry*.

10. **Welstead M**, Muniz-Terrera G, **Russ TC**, Corley J, Taylor AM, Gale CR, Luciano M (2020) Inflammation as a risk factor for the development of frailty in the Lothian Birth Cohort 1936. *Exp Gerontol*. **139**: 111055.

11. **Welstead M**, Jenkins ND, **Russ T**, Luciano M, Muniz-Terrera G (2020) A Systematic Review of Frailty Trajectories: Their Shape And Influencing Factors. *Gerontologist*.
 12. **Walesby KE**, Exeter DJ, Gibb S, Wood PC, **Starr JM**, **Russ TC** (2020) Prevalence and geographical variation of dementia in New Zealand from 2012 to 2015: Brief report utilising routinely collected data within the Integrated Data Infrastructure. *Australas J Ageing*. **39**(3): 297-304.
 13. Valdés Hernández MDC, Ballerini L, Glatz A, Muñoz Maniega S, Gow AJ, Bastin ME, **Starr JM**, Deary IJ, Wardlaw JM (2020) Perivascular spaces in the centrum semiovale at the beginning of the 8th decade of life: effect on cognition and associations with mineral deposition. *Brain Imaging Behav*. **14**(5): 1865-75.
 14. Toombs J, Panther L, Ornelas L, Liu C, Gomez E, Martín-Ibáñez R, Cox SR, Ritchie SJ, Harris SE, Taylor A, Redmond P, **Russ TC**, Murphy L, Cooper JD, Burr K, Selvaraj BT, Browne C, Svendsen CN, Cowley SA, Deary IJ, Chandran S, Spires-Jones TL, Sareen D (2020) Generation of twenty four induced pluripotent stem cell lines from twenty four members of the Lothian Birth Cohort 1936. *Stem Cell Res*. **46**: 101851.
 15. Todd OM, **Burton JK**, Dodds RM, Hollinghurst J, Lyons RA, Quinn TJ, Schneider A, **Walesby KE**, Wilkinson C, Conroy S, Gale CP, Hall M, Walters K, Clegg AP (2020) New Horizons in the use of routine data for ageing research. *Age Ageing*. **49**(5): 716-22.
 16. **Stirland LE**, Gregory S, **Russ TC**, Ritchie CW, Muniz-Terrera G (2020) Associations between midlife chronic conditions and medication use with anxiety and depression: A cross-sectional analysis of the PREVENT Dementia study. *J Comorb*. **10**: 2235042x20920443.
 17. Salas T, **Radakovic R**, Rodriguez-Castillo V, Marín S, Chaverri D, Rodriguez-Santos F (2020) Spanish Adaptation of the Dimensional Apathy Scale (DAS) in Amyotrophic Lateral Sclerosis. *Front Neurol*. **11**: 562837.
 18. **Russ TC**, **Welstead M** (2020) A pragmatic tool to identify aspects of frailty. *Int Psychogeriatr*. **32**(9): 1019-21.
 19. **Russ TC**, Kivimäki M, Batty GD (2020) Respiratory Disease and Lower Pulmonary Function as Risk Factors for Dementia: A Systematic Review With Meta-analysis. *Chest*. **157**(6): 1538-58.
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HIGHLIGHT:..In order to publicise our research as much as possible, we are aiming to deposit all manuscripts under review with journals on public websites such as medRxiv where they will be accessible to all during the peer review process.

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