Review of the year

Professor Clive Ballard, Director of Research

There has been an increased focus on dementia and dementia research both in the UK and internationally in the past year. The government has committed to doubling spending on dementia research in the UK. However, to ensure this new research has the greatest impact it is essential that we identify the current gaps in our knowledge and the areas of biggest need for people with dementia. This needs to happen in parallel with a serious effort to increase the number of high quality young researchers working in the dementia field. Alzheimer’s Society has an enormous amount to contribute to these critical areas and we are working closely with government and key funding agencies to ensure that these issues are addressed.

In 2011/12 the Society’s Research team dedicated an enormous amount of expertise and time to support the government’s dementia-themed call for funding proposals. Working with UK researchers, we helped improve the quality of applications by enabling them to talk directly to Research Network volunteers with experience of living with dementia. This valuable approach has been extremely successful and we will continue to support this work in the future. Importantly, the Society is also committed to an ambitious programme of increased research funding to enable us to play an even more substantial role in delivering and enabling the research that will improve the lives of people with dementia.

It has been a quiet year for new treatment developments. Several large trials of vaccine therapies for people with Alzheimer’s disease have recently been discontinued, for not meeting the trial goals. Investment in taking forward new treatments into clinical trials within the pharmaceutical industry has been on hold pending these results. There may now be reluctance within the pharmaceutical sector to pump considerable new investment into the field, and it will be essential to find novel ways in which charities, other funders and universities can contribute to discovering new drugs and treatments.

It is easy to forget that treatment is not entirely about drugs or vaccines, and that there are many other aspects of treatment and care that have an enormous impact on quality of life and well-being for people with dementia. For example, work over the last year has highlighted the importance of better identification and treatment of pain in dementia. There is also an emerging body of evidence emphasising the benefits of simple training for care staff and the use of non-drug treatments such as reminiscence, social interaction, music and activities to improve well-being and specific psychiatric and behavioural symptoms such as depression, irritability and aggression. At the Society, we are building on this knowledge to explore different ways to support people with dementia, ensuring research directly improves the lives of people today.
Research is a major priority for Alzheimer’s Society. This year we’ve invested a total of £2.6 million in high quality research into the cause, cure, care and prevention of dementia.

There have been a huge number of successes over the year, and the Research programme supported by the Research Network, is continuing to grow from strength to strength. Our rigorous application process ensures that we fund the highest quality research that addresses the real needs of those affected. Here are a few of the highlights.

NIHR themed call

We were delighted that the National Institute of Health Research (NIHR) announced a call for research into the cure, cause, care and prevention of dementia. In response to this, we hosted a workshop in May 2011 to bring together Research Network volunteers with the best researchers, with the aim of driving forward and supporting high quality research applications in priority areas. The event was a success, with attendees filling the workshop to its capacity. In total, the Society supported 40 research applications submitted to the NIHR, playing a key role in making the most of this important opportunity to increase national investment in research. We look forward to supporting and helping to take the successful applications forward.

Launch of Drug Discovery

A key highlight for the Research programme was the launch of the Drug Discovery programme in May 2011, at a special reception at the House of Lords. The project aims to develop better, cheaper treatments for dementia within the next 10 years. It is hoped that by using existing drugs, new treatments will be developed more quickly, improving the quality of life for thousands of people with dementia.

Symposium at AAIC

This year we had the opportunity to host an evening symposium at the American Alzheimer’s Association International Conference (AAIC), which was held in Paris. The theme of the symposium was treating behavioural and psychological symptoms in people with dementia, with a focus on new findings from important clinical trials that explored alternatives to antipsychotics. Securing the symposium at such a large event was an achievement for the Society, helping to raise the profile of Alzheimer’s Society Research.

Best practice guide to reduce the use of antipsychotic drugs

During the symposium, the Society announced the publication of a guide for health care professionals, Optimising treatment and care for behavioural and psychological symptoms of dementia: A best practice guide, to reduce the number of inappropriate prescriptions of antipsychotic drugs. The guide was very well received and has since been disseminated among clinicians in the UK, and health care professionals from other countries, and has been translated into four different languages.

DOMINO-AD clinical trial

In March this year, we saw positive results from a clinical trial, donepezil and memantine in moderate to severe Alzheimer’s disease: The DOMINO-AD trial that Alzheimer’s Society jointly funded with the Medical Research Council (MRC). The study investigated the effects of continuing treatment with the drug donepezil (Aricept) into the moderate to severe stages of Alzheimer’s disease.

The drug is currently only licensed for use in mild to moderate stages, but the trial showed that people who continued treatment, (for longer than National Institute for Health and Clinical Excellence (NICE) guidance), showed considerably less decline in cognition and function when compared to those taking a placebo. We hope that NICE will now change their guidance within the NHS.
Our Research Network of 225 carers, former carers and people with dementia are fully involved at the heart of our research programme. Between April 2011 and March 2012 the Research Network and Friends of Research continued to flourish and grow. In the past year, 76 new Research Network volunteers were recruited, inducted and trained and Friends of Research grew rapidly from 425 to 695. Record numbers of volunteers attended training events, including introductory training delivered collaboratively with Asthma UK, Epilepsy Action and Parkinson’s UK. A new training programme on communicating research was also successfully piloted.

The Research Network continued to play a pivotal role within our Research Grants programme through reviewing applications, equal representation on grant panels, monitoring ongoing projects and disseminating outcomes. Many Research Network volunteers have also started to use the new online grants system to review our grant applications.

A particular highlight of this year has been the Network’s extended influence and activity with external research programmes. A phenomenal amount of effort was put in by staff and volunteers to support the NIHR’s themed call on dementia. Further afield, Shirley Nurock, Research Network volunteer, spoke at a symposium organised by Alzheimer’s Society at the Alzheimer’s Association International Conference in Paris, becoming the first carer to do so. Twenty-three Research Network volunteers have become co-applicants on external grant programmes and many more have been actively involved in consultations and focus groups to improve the quality of the proposed research. Two Research Network volunteers, Angela Clayton-Turner and Lynne Ramsay, were recognised by the Society for their outstanding contributions by receiving William Brooks Volunteering Awards at a ceremony at Buckingham Palace in November.

This year, however, saw the sad passing of Jean Town who for many years was the Research Network Area Coordinator in the Lakes. Jean’s dedication to improving the quality of our research led her to monitoring a phenomenal amount of Society funded projects. At the time of her death she was involved with nine individual projects, far more than any other volunteer. Researchers who have worked with Jean have told us how much they looked forward to her visits and the valuable contributions she made. She will be missed by everyone involved with the Society.

Annual research conference

This year, Alzheimer’s Society hosted its Annual Research conference in Birmingham, bringing together Research Network volunteers with some of our funded researchers. This provided members of the Research Network with the opportunity to explore the world of dementia research and scientists the chance to meet each other and discuss their areas of expertise.

The event consisted of presentations from our funded researchers explaining their work, and discussions on the wider aspects of dementia research. The evening plenary talk, chaired by Professor Clive Ballard, included a discussion on current treatments for dementia and the best way to develop new ones.

We look forward to the next conference, which will be held in Leeds, on 4 and 5 October 2012.
Research funded 2011–2012
Alzheimer’s Society invested £2.6 million in essential, cutting edge research into the cause, cure, care and prevention of dementia.

Project grants
Investigating the causes of white matter damage and its link to dementia
(Scientific title: Blood–brain barrier neuropathology, white matter lesions and dementia)
Dr Atticus Hainsworth, St George’s, University of London

Long-term reduction in blood flow – a cause of vascular dementia and Alzheimer’s disease?
(Scientific title: Vulnerability of the neurovascular unit to cerebral hypoperfusion: an early event in vascular dementia and Alzheimer’s disease?)
Dr Karen Horsburgh, University of Edinburgh

Chronic stress as a risk factor for the development of Alzheimer’s disease
(Scientific title: Chronic stress as a risk factor for the development of Alzheimer’s disease)
Professor Clive Holmes, University of Southampton

Testing the effect of the diabetes drug Liraglutide in Alzheimer’s disease
(Scientific title: Effect of GLP-1 analogue, Liraglutide, on cerebral glucose metabolism and microglial activation in Alzheimer’s disease)
Dr Paul Edison, Imperial College London

How can we change stem cells into brain cells?
(Scientific title: Regulation of the pro-neural gene Sox1 to regulate stem cell potential)
Dr Virginie Sottile, University of Nottingham

Fellowships
Study of rare genetic variants in Alzheimer’s disease
(Scientific title: Powerful study of rare variants in Alzheimer’s disease)
Dr Rebecca Sims, Cardiff University

Short-term memory: A sensitive cognitive marker for Alzheimer’s disease?
(Scientific title: Short-term memory binding: a sensitive cognitive marker for Alzheimer’s disease)
Dr Mario Parra, University of Edinburgh

Understanding how biological markers can help to diagnose and monitor Alzheimer’s disease
(Scientific title: Understanding how transcriptomic, genomic and proteomic variation is associated with metabolic changes in Alzheimer’s disease)
Dr Petroula Proitsi, Institute of Psychiatry, King’s College London

PhD studentships
Understanding the role that genes play in Alzheimer’s disease tau tangles
(Scientific title: Molecular mechanisms underlying haplotype-specific regulation of expression at the MAPT locus)
Dr Richard Wade-Martins, University of Oxford

What role does the immune system play in recognising the Alzheimer’s disease hallmark, amyloid?
(Scientific title: The role of pattern recognition receptors in amyloid-beta-induced inflammation)
Dr Martha Triantafilou, Cardiff University

How do cells make and use energy during Alzheimer’s disease?
(Scientific title: Novel consequences of mitochondrial beta-amyloid in Alzheimer’s disease)
Professor Frank Gunn-Moore, University of St Andrews

Understanding how the brain processes copper during Alzheimer’s disease, using brain scans – a potential tool for diagnosis
(Scientific title: PET Imaging of changes in copper metabolism associated with Alzheimer’s disease: potential new diagnostics)
Professor Philip Blower, King’s College London

How does the ‘culture’ within a nursing home influence the prescription of certain drugs?
(Scientific title: The impact of contextual factors on the prescribing of psychoactive drugs with older people: an analysis of treatment culture in nursing homes)
Professor Carmel Hughes, Queen’s University, Belfast

Dissemination grant
Providing Alzheimer’s disease brain scan data to other researchers
(Scientific title: Minimal interval resonance imaging in Alzheimer’s disease and normal ageing (MIRIAD): Disseminating a unique imaging database to the Alzheimer’s disease research community)
Dr Jonathan Schott, Institute of Neurology, University College London
Stem cells are a group of cells that are able to reproduce themselves, and differentiate into any specialist cell within the body, including nerve cells within the brain. This unique property makes them a potential target to repair brain damage caused by neurological conditions, such as dementia.

Dr Virginie Sottile is investigating how genes can be ‘switched on’ in stem cells to make them develop into nerve cells. Her team’s previous research discovered how this process can be activated in mice, and she is now ready to move into investigating the process in human cells. The first step is to alter human bone marrow stem cells to resemble brain stem cells by ‘switching on’ a gene normally active only in brain stem cells. The researchers will then test these altered bone marrow cells to determine how closely they can match the properties of brain cells.

This research will provide valuable information towards manipulating bone marrow stem cells from patients directly, a strategy expected to contribute to novel therapies in the future.

Stem cells from bone marrow will be turned into brain stem cells. Image courtesy of Dr Virginie Sottile.

How can we change stem cells into brain cells?
(Scientific title: Regulation of the pro-neural gene Sox1 to regulate stem cell potential)
Dr Virginie Sottile, University of Nottingham

Fundraising for research
In the financial year 2011/2012 over £2.7 million was secured through fundraising for the Society’s Research programme. Donations were received from charitable trusts, companies, individuals and legacies.

Over £900,000 was secured from trusts and statutory donations. We would like to thank all of these key supporters, particularly Charles Wolfson Charitable Trust, the Department of Health, Nominet Trust, Rosetrees Trust, The Hartley Charitable Trust, The Henry Smith Charity, the Robert Luff Foundation, the Stavros Niarchos Foundation, The RS Macdonald Charitable Trust and Sir Samuel Scott of Yews Trust. Thanks also to the Edwin George Robinson Charitable Trust and the Lord and Lady Lurgan Trust.

Thanks to all of our individual supporters, who together donated £234,605. We are particularly grateful to Mr David Mayhew CBE who donated £25,000 this year towards the Society’s Drug Discovery programme, The Ingram Trust who donated £11,000 to research and The William Scott Foundation who gave £3,000 towards stem cell research. Thank you also to Mr Charles Hunt who has supported the Society’s vascular dementia projects, and Ms Joy Phillips who donated £10,000 towards Professor Clive Holmes’ research into chronic stress as a risk factor for the development of Alzheimer’s disease.

We would also like to thank everyone who took part or helped to organise a Memory Walk. This level of support allows us to invest in the current volume of high quality projects. We greatly appreciate all those who made contributions to the Society’s research in their wills; this raised a total of £689,805.

Thanks to all the people and organisations who continue to give so generously towards the Society’s Research programme.
Research completed
2011–2012

Project grants
Testing the effects of insulin-like drugs on Alzheimer’s disease
(Scientific title: New strategies to prevent neurodegeneration in Alzheimer’s disease using insulin-like drugs)
Dr Christian Hölscher, University of Ulster

What happens to people with dementia identified in general hospital?
(Scientific title: What happens to people with dementia identified in general hospital?)
Dr Bart Sheehan, University of Warwick

Fellowships
Decoding the genetics of Alzheimer’s disease
(Scientific title: Functional genomic variation in Aβ degrading enzymes: role in determining risk for late-onset Alzheimer’s disease)
Dr Gillian Hamilton, University of Edinburgh

Investigating the role of inflammation in Alzheimer’s disease
(Scientific title: Are Wnt or insulin conditioned microglia neuroprotective in Alzheimer’s disease?)
Dr Claudie Hooper, Institute of Psychiatry, King’s College London

PhD studentships
Understanding posterior cortical atrophy
(Scientific title: Visual deficits and posterior cortical atrophy: a behavioural and imaging study)
Professor Nick Fox, University College London

How can we change stem cells into brain cells?
(Scientific title: Neuronal potential of bone marrow stem cells: using a Sox1 reporter to identify pro-neural regulators in a novel in-vitro model)
Dr Virginie Sottile, University of Nottingham

Dissemination grant
Building stakeholder knowledge of how to improve dementia care in general hospitals
(Scientific title: Building stakeholder knowledge of how to improve dementia care in general hospitals)
Dr Bart Sheehan, University of Warwick

Publications and impact
Last year the Society was acknowledged as a funder of 68 new scientific publications, an increase from 50 the year before.

Impact beyond publications
As well as publications, the Society aims to translate research into tangible benefits for people living with dementia. Following on from an Alzheimer’s Society publication, we are rolling out an evidence-based training programme to 150 care homes across England and Wales, which has been shown to reduce the use of antipsychotic drugs in people with dementia in care homes by almost 50%.

A publication showed that computerised support could help GPs with the management of dementia. In response to this the Society launched a free online training programme for GPs, GP trainees and practice nurses which has been completed by over 1,000 users. In addition, arising from a grant awarded for Deaf and dementia research, a new referral service has been created for people who are Deaf and are suspected of having dementia.
Insulin, which regulates blood sugar levels, also stimulates growth and repair of nerve cells. Liraglutide is a drug available for type 2 diabetes that mimics the effects of insulin.

Dr Hölscher’s team investigated the effect of liraglutide on the brains of a mouse model of Alzheimer’s disease. Following treatment, the Alzheimer’s mouse model animals performed as well as normal mice and were much better in memory tests than Alzheimer’s mice not treated with liraglutide.

These initial results are very positive and suggest that liraglutide may be a potential drug treatment, even if commenced at an advanced stage of disease progression. Dr Paul Edison, at Imperial College London, has received a project grant to take this work forward and test the drug in a pilot clinical trial of people with Alzheimer’s disease.

The hippocampus is an area that is important in learning and memory, and is often affected in Alzheimer’s disease.

Research in the press

Alzheimer’s Society has once again seen its public status as the leading authority on dementia research gain more ground. A total of 116 comments across the media spectrum were published. The media was also used to promote our work on Drug Discovery programme and involvement in the DOMINO trial. Over the year, Alzheimer’s Society was mentioned in more than 500 pieces of media coverage at both national and regional levels, in newspapers, on the radio and on television.

AAIC symposium
One of the most successful media pushes of 2011–12 was at the Alzheimer’s Association International Conference in Paris. We focused on a piece of research by the Karolinska Institute in Oslo that looked at the benefits of giving pain medication to people with dementia who display aggressive and agitated behaviour. Giving the story exclusively to the BBC secured 31 pieces of coverage.

Risk reduction
As always, risk reduction featured prominently in the media this year. Some of the big stories included obesity in middle age, the benefits of grilled fish and solving puzzles. Alzheimer’s Society prepared responses on the results of these studies and many others with quotes appearing in the Express, the Guardian and the Mirror.

Potential treatment
Among the potential treatments that received media attention this year were a nicotine patch and a vitamin B pill. Alzheimer’s Society offered cautious support on both these papers, highlighting the importance of all research looking into new drugs and therapies.

Early diagnosis
Something that always gets the attention of the press is studies or possible new tools that could help bring about earlier and more accurate diagnoses of dementia. This year we saw a press conference on a new computer tablet-based diagnosis tool for GPs. Alzheimer’s Society also achieved good coverage with our opinions on papers looking at potential early signs of dementia.
Policy and research

There have been major policy developments in research between 2011 and 2012. The government has shown its commitment to improving the lives of people with dementia and investment in research has been a key feature in government policies.

The Prime Minister’s challenge on dementia was launched in March 2012. Underpinning the challenge, the Prime Minister stated his personal commitment to improving the lives of people affected by dementia. The challenge is divided into three work streams: driving improvements in health and care, creating dementia friendly communities, and better research. The challenge aims to push further and faster to deliver a major improvement in dementia care and research in England by 2015, to ensure people with dementia, their families and carers get the services and support they need.

Money will be made available to fund a specific aspect of the UK BioBank, a large, long-term project that aims to understand what happens as we age. The MRC will fund the brain scanning of a subset of the participants, so that additional information with regard to brain structures and the development of dementia can be collected and analysed alongside the information that will be collected from all participants. The government is also keen to encourage people with dementia to participate in research and offering people the opportunity to participate in research will become one of the conditions for accreditation of memory services.

The challenge commits to more than doubling government spending on research, from £26.6 million in 2009/10, to an estimated £66.3 million in 2014/15. This will directly increase the budgets of bodies that award research grants such as the MRC, and the Economic and Social Research Council (ESRC) for research into dementia at institutions across the UK.

The Health and Social Care Act has recently been passed and research is at the heart of the Act, which places duties on the Secretary of State for Health to promote research. Currently, Clinical Commissioning Groups are going through an approval process where they need to demonstrate how they will exercise important functions, such as promoting research. This is still in its early stages, but the Policy team will keep a watch on developments.

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