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Foreword

We are delighted to introduce our Annual Report which highlights the work and achievements of the Secure Anonymised Information Linkage (SAIL) Databank between April 2017 and March 2018.

We hope you will enjoy this document, which gives a brief overview of our work this year, some of the projects which we have supported, and their impact in increasing health and wellbeing and improving public services for the population of Wales and beyond. We invite you to join with us in celebrating our many achievements as the SAIL Databank enters its second decade. The past year in particular has been one of considerable success for the SAIL Databank, with several long term programmes of work now starting to show tangible results and benefits. Our agenda for next year builds upon this success and will bring its own set of significant challenges.

We would like to express our gratitude to our funder, data providers and stakeholders for their continued support, without which the SAIL Databank could not continue to flourish. We also owe a huge debt of gratitude to the research teams who use SAIL, particularly those in the Administrative Data Research Centre, the FARR Institute and the National Centre for Population Health and Wellbeing Research, who in addition to using SAIL data, work with us to enrich, develop and improve the facilities available through SAIL.

As we celebrate the success of this year, our dedicated and skilled team look forward to the future with continued commitment to further improvements and novel developments to benefit health and well-being, along with our existing and new collaborators.
Executive summary

As the SAIL Databank enters its second decade of operation, it gives me great pleasure and considerable pride to present our Annual Report for 2017 -18. SAIL was founded with the ambitious objective of bringing together health data about the population of Wales and unlocking the enormous research potential of such data. Now in our eleventh year, we have largely succeeded in this initial mission. SAIL is internationally regarded as an exemplar in the fields of health informatics, information governance and data science, and we continue to make data available to support and enable an ever increasing range of research projects, with the aim of improving the health and wellbeing of the population and the quality of public services. Between 2015 – 18 projects supported by SAIL secured over £30 million research funds, with the majority of this funding coming into Wales.

In addition to enabling research by providing data, SAIL is now making a significant contribution to enabling research worldwide, by providing bespoke technology. The technology underpinning the SAIL Databank was developed by our team over many years, and is internationally recognised as world leading innovation in data de-identification, security and linkage. This package of technology has recently been made available to research groups as the Secure Research Platform (SeRP). This technology has been adopted and now underpins a number of important UK research collaborations including UK BioBank, the MS Register and ALSPAC, and is acknowledged as vital to enabling their programmes of research. There is now international interest in SeRP technology, with early discussions ongoing with research organisations in Australia and Canada.

With increased funding pressure on all public services, and the NHS struggling to meet ever increasing demand for health services, there is an urgent need for better information about which services add the most value to the population, and what interventions can be introduced to keep people in better health, and particularly out of hospital. There is recognition by Welsh Government and public services leads that the factors affecting health are very wide ranging and include factors such as genetics, educational attainment, family circumstances, social economic status, lifestyle choices and personal perceptions of wellbeing. SAIL is increasingly involved in projects to create new ‘blended’ health and non health datasets. These offer a wider and more comprehensive picture of the population and begin to make it possible to identify and study the complex interactions of factors which affect an individual’s wellbeing. Vaughan Gething (Welsh Assembly Cabinet Secretary for Health and Social Services) recently recognised the value of SAIL data to this emerging national agenda when he stated “SAIL data is a good example of where we’ve got anonymised data that is of a real benefit. It’s a good example also of being a small country that can make choices on a national basis and trying to have a real sense of national mission.” We look forward to supporting this emerging national mission, whilst continuing to support an expanding portfolio of research.

Professor David Ford,
Infrastructure Support Group Director, SAIL Databank

1 National Assembly for Wales Plenary Session 13/06/2017
Lay summary

The SAIL Databank is based at Swansea University and is a unique and world famous resource of data about the population of Wales which is used by researchers to improve public services and to increase health and wellbeing. SAIL collects data from a variety of public services. Each time any of us use public services such as the NHS, Social Services or education services, we create records of why we engaged with the service, and what happened to us as a result of this. This information is very valuable to researchers who can use it in a variety of ways to improve public services (for example this sort of data may be used to compare several treatments for a health condition and see which produced the best results over time). SAIL receives all data in a de-identified form, so that individuals cannot be identified and their privacy is safeguarded. All researchers wishing to use SAIL data have their requests assessed by an independent panel (which includes members of the public) who ensure that the research is in the public interest and that there is no risk to privacy and anonymity.

SAIL has been in operation for eleven years now, and during the first seven – eight years we concentrated almost entirely upon supporting research related to health. This is still a major priority for us – in the last three years projects using SAIL data have attracted over £30 million of research funding, and during the last 12 months we have supported more health related research than ever before. Other sections of this report give more details about some of the projects we have supported, and the differences they are making to healthcare services. However we are also now beginning to make a significant contribution to research in two other key ways; research enabling technology and development of new richer datasets.

As part of the establishment of SAIL, specialist software and technology had to be developed to de-identify data at source, to load and link it to other data about the same person and to store it securely, whilst allowing approved researchers to access it for their projects. The products developed by the SAIL team for these purposes were recognised as being world leading pieces of innovation, and other research groups with their own collections of data began to express interest in using the technology. About two years ago the technology developed within SAIL was packaged together as a product called the UK Secure Research Platform (SeRP). During this last year several prestigious groups within the UK have launched new data resource platforms using our SeRP technology, and we are in the early stages of negotiating with groups in Canada and Australia. There is more details about these groups in other sections of this report. Making the SeRP technology available worldwide is important and valuable as it enables more data to be made available to support medical and other research, in a safe and privacy protecting environment.

The second exciting development for SAIL this year has been the results of our ongoing work with a national research programme called the Administrative Data Research Centre (ADRC). We have been working in close partnership with the ADRC since 2015 to bring together more non health data, to add to the health related data we already had within SAIL. During 2017 - 18 Welsh Government recognised an increasing need to ‘join up’ data about the population of Wales, to enable researchers to identify and study how a wide and complex range of factors interact to affect people’s health and wellbeing. Our work with the ADRC has allowed us to make fuller ‘blended’ datasets available to meet this emerging national requirement. During this year, this expanded range of SAIL data has been used by Welsh Government to assess the
effectiveness of flagship programmes and services, and to make decisions about funding based on evidence that the schemes are having a measurable beneficial effect.

As we move into SAIL’s twelfth year of operation we look forward to continuing to make a positive impact for Wales, through the research that we support and the improvements to services which result from this. We have a full public engagement programme which underpins the work we do, and we involve members of the public in helping to shape research using SAIL data, and approving what data is made available. For more details about the SAIL databank, see our website [www.saildatabank.com](http://www.saildatabank.com)
1. **Introduction**

1.1 The SAIL Databank is partially funded by Welsh Government through Health and Care Research Wales.

1.2 Our mission is to provide a safe and trusted means of harnessing population-scaled data to increase the quality and quantity of research and support better policy making, practice and citizen health by working collaboratively with data guardians, academics, members of the public, practitioners and policymakers from Wales, across the UK and internationally.

1.3 Health and Care Research Wales fund or partially fund a small team of SAIL core staff (see diagram below).

1.4 Additional posts are funded through charges made to individual projects using SAIL, and from SAIL’s involvement in other collaborative partnerships, in particular with the Administrative Data Research Centre. In addition, key stakeholders in SAIL’s continued success include the research community whom we serve (both within Wales and internationally), the NHS and other data providing organisations, and the public whose data forms part of the resource which is SAIL.

1.5 We also owe an enormous debt of gratitude to our key research group partners. During the last year we have been co-located with the Administrative Data Research Centre, the FARR Institute and the National Centre for Population Health and Wellbeing Research (NCPHWR), all of whom work closely with the SAIL Databank team to develop and enrich the SAIL environment, to increase the range of data held and contribute to the body of knowledge around data usage methodologies. Without the
contributions made to SAIL by these partner organisations, our ability to continue to develop and improve SAIL would be compromised.

2. Work Packages

The SAIL Databank mission is to provide a safe and trusted National Data Repository which harnesses population-scaled health and associated data to increase the quality and quantity of research, and support better policy making, practice and citizen health and wellbeing, by working collaboratively with data guardians, academics, members of the public, practitioners and policymakers from Wales, across the UK and internationally.

Between 2017 – 18 we have been working to achieve this mission by continuing to improve our services in three key work package areas. These are:

2.1 Supporting more and better research using SAIL Data: We have continued to support more projects than ever before to access SAIL Data to undertake a wide variety of research projects. The outcomes of some of these projects are detailed in following sections of this report. An important aspect of this workpackage has been to develop and increase the flows of routine data into the SAIL databank, in consultation with NHS organisations, public sector bodies and other data-providing organisations.

2.2 Data Linkage Methods and Management: We have continued to develop and enhance novel methods and techniques to link, manage and utilise large-scale datasets for research in order for Wales to remain at the forefront of health informatics research. We have also started to make available some of the world leading data de-identification, security and linking technology previously developed by the SAIL Databank as a package called the UK Secure Research Platform (UKSeRP). Examples of national and international research groups who have deployed UKSeRP technology are detailed in following sections of this report.

2.3 Collaborating Effectively to Support Research using Health and other population level administrative data for Research: Welsh Government have recognised an increasing need to ‘join up’ data about the population of Wales, to enable researchers to identify and study how a wide and complex range of factors interact to affect people’s health and wellbeing. We have been involved in a number of projects to secure a wider range of non health data and to make this available in conjunction with existing SAIL health data to create fuller ‘blended’ datasets to meet this emerging national requirement. The following sections of the report provide examples of where SAIL has already been used as a means to assess the effectiveness of public service initiatives.
3. Key Achievements

3.1 Establishment of high-quality, high-performing research partnerships, groupings, collaborations, and building the research community.

3.1.1 During the past year, SAIL has continued to excel in providing data resources to a wide range of projects. Research income attracted from such projects has continued to rise, and the volumes of projects being supported by SAIL also continues to increase year on year.

3.1.2 In addition to our continuing success in supporting research partnerships by providing data, we have begun to collaborate with and make a significant contribution to some extremely prestigious research partnerships through the technology developed within SAIL Databank. Based on state-of-the-art High Performance Computing infrastructure, and overlaid with innovative data extraction and transportation technologies, the SAIL databank is an internationally renowned exemplar of technologies and techniques which address the challenges of large scale health data research. Robust Information Governance arrangements and a suite of approved privacy-protecting technologies and approaches ensure that data is de-identified, accurately linked and made available to researchers in a safe, controlled and privacy protecting environment. A number of the technologies and software products which make up the SAIL infrastructure have been designed by the SAIL databank team and have attracted international acclaim as groundbreaking innovations in the spheres of data de-identification, data linking and data security. Recognising the potential value of this combination of technology and software to other researchers using big data, the UK Secure e-Research Platform (UKSeRP) was developed. UKSeRP, a is high powered data management and sharing technology, is infinitely scalable to suit a range of use cases including imaging, genomics and analysis of free text. Deployment of this technology by the wider research community has resulted in many new data resources becoming available to the NHS and other researchers.

3.1.3 Examples of UKSeRP technology supporting and enabling new and high quality research partnerships include ALSPAC2, the MQ Adolescent Data Platform project3, and the UK Dementia Platform new collaborations with Washington DC4

3.2 Increasing research income into Wales through the successful development/funding of new, high-quality, clinical trials and other well designed studies

3.2.1 Between April 2015 and March 2018, the SAIL databank supported research projects with a combined value of £31,735,573. This represents a 10% increase in levels of research income attracted compared to the period 2012 – 2015. The range of projects supported by SAIL is extremely diverse and includes support to Health and Care Research Centres such as PRIME and National Centre for Population Health and Wellbeing Research, an MRC funded collaboration with Genomics England to establish

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2 http://www.bristol.ac.uk/alspac/about/
the Wales Genomic Medicine Centre\(^5\) and a flagship partnership with the charity MQ to establish the Adolescent Data Platform for Mental Health Research.

### 3.3 Key research findings including publications

SAIL has supported projects which have produced a number of publications this year (see full list at Appendix 1). These include a wide range of subject areas, and have resulted in a number of important advances in knowledge. Some examples are:

#### 3.3.1 evidence that elderly patients who suffer a fall could be safely treated by appropriately trained paramedics, reducing emergency ambulance calls and admissions to A&E;\(^6\)

#### 3.3.2 identification of increased risk of death for patients with particular conditions admitted to hospital over the weekend, providing hospitals with information to help them review specialist staffing provision for at risk groups;\(^7\) and

#### 3.3.3 a demonstration that declining academic achievement was one of a number of risk factors which could be used to identify children and adolescents at risk of depression.\(^8\) This information informs the ongoing development of protocols by schools and child/adolescent services for identifying at risk children earlier.

#### 3.3.4 The MS Register, which uses UK SeRP technology, continues to undertake a programme of research related to all aspects of multiple sclerosis. Examples of recent research topics include how many parents with MS have children with MS\(^9\), the effect of sun, sea and season of birth on MS incidence\(^10\) and the incidence of smoking amongst people with MS compared to the national population\(^11\).

### 3.4 Translation/knowledge transfer/impact

#### 3.4.1 Welsh Government recognised the power of the data held within the SAIL Databank and during this year have used it to assess the effectiveness of flagship programmes and services. Examples of this include “Evidence of significant positive impact on respiratory health and asthma for Welsh Fuel Poverty scheme recipients” a project which directly led to a Ministerial decision to invest a further £104m Warm Home Nest for 2018-21, which will improve a further 25,000 homes for the people of Wales. The research has also led to the establishment and funding of the Housing Conditions Evidence Programme and Housing Stock Analytical Resource Wales/Cymru (HSAR)


\(^9\) [https://www.ukmsregister.org/Newsletter/Read/News/10](https://www.ukmsregister.org/Newsletter/Read/News/10)

\(^10\) [http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0155181](http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0155181)

\(^11\) shortlisted for ‘Best Poster Award” in the biggest MS conference of the year in Paris. ECTRIMS 2017
which will be delivered in collaboration with ADRCW and SAIL DataBank. In another example, the project “The Welsh Government Supporting People Data Linkage Project: Assessing the impacts of Supporting People on well-being outcomes and service use in Wales (2016-20)” has already led directly to a decision to protect the WG’s Supporting People programme from a potential 15% cut in budget.

3.4.2 The UK Dementia Platform is another example of effective knowledge transfer enabling impact, in this case related to SeRP technology rather than data within SAIL. The UK Dementia Platform Data Portal (running on a SeRP) launched in November 2017 and is already enabling a portfolio of ongoing research into the condition

3.5 Commercial and industrial collaborations

During this year, SAIL has continued to build on existing partnerships with commercial research organisations, and have developed some exciting new collaborations. A summary of our commercial engagements during this year are given below:

3.5.1 Janssen-Cilag Ltd - An ongoing collaboration between the SAIL Databank and Janssen-Cilag Ltd. Investigating type 2 diabetes care and outcomes in Wales, focusing on questions such as how prescribing practice in Wales and the relationship between diabetes and deprivation. Initial results were reported to the Bevan Commission to inform their recommendations to government about health policy in 2015, and during 2017 – 18 the company commissioned further follow up work in the same research area. This follow up project is now complete and awaiting publication.

3.5.2 IBM – We have an ongoing collaboration with IBM, and have undertaken a number of projects to investigate the potential applications of these natural language processing software products.

3.5.3 Dementias Platform UK - Dementias Platform UK is a collaboration between academic and commercial partners, working together to speed up dementias research. The DPUK Data Portal (a data storage, analysis and linkage platform which provides the research resource for the community) is hosted on an instance of UP SeRP technology, developed and implemented by the SAIL team during the current grant period.

3.5.4 Bristol Myers Squibbs – We have formed a research partnership with this company to undertake a number of projects in a variety of clinical areas. The initial project under this programme (SAIL Warfarin Out of Range Descriptors (SWORDS) is well advanced and will be starting to generate reports and publications from August 2018 onwards. A second cardiology focussed project is being scoped and is expected to commence by the end of 2018.

3.5.5 Novartis – SAIL was involved in the initial stages of a project between Novartis, Welsh Government and NHS Wales to map clinical pathways for a range of conditions. This

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collaboration resulted in Novartis becoming more involved in research using Welsh data. We are currently supporting a project called “The health and social impact of psoriatic arthritis and spondyloarthropathy (ASIPsA)” which has been commissioned by Novartis and which involves researchers from Swansea and Cardiff Universities.

3.5.6 We are in the early stages of discussions about projects led by Pfizer and GSK, and hope that these will be the beginning of ongoing collaborations with both companies.

3.6 **NHS collaboration**

SAIL has supported a number of NHS led projects in conjunction with the Prudent Healthcare Intelligence Unit (a small team of data analysts co-located with the SAIL team). Projects undertaken include:

3.6.1 Evaluation of the Health Check programme (Aneurin Bevan UHB and Cwm Taf UHB);

3.6.2 Sarcoma cancer project (ABMU);

3.6.3 Opioid prescribing and resource utilisation (ABMU);

3.6.4 Critical Care outcome project (Aneurin Bevan UHB);

3.6.5 Respiratory Health interventions and outcomes (Cwm Taf)

3.6.6 Living Well Living Longer (Health check programme, PHW, AB and CT)

3.6.7 Stroke Service Assessment (ABMU)

3.6.8 The SAIL team have been invited to join the Primary Care Population Health Intelligence Support Group. The purpose of the group is to consider, scope and propose work that can be undertaken by health intelligence suppliers to support primary care in delivery of the national plan. The group is currently discussing plans for the All-Wales Primary Care Needs Assessment.

3.6.9 Two pieces of research supported by SAIL were presented at the NHS R&D Forum. A collaboration between researchers at Swansea and Manchester Universities received widespread national coverage from media organisations – the study showed an increased risk of unnatural death in people with epilepsy\(^\text{14}\). In addition a project showing that foetal exposure to epilepsy drug is tied to lower school grades was published at the conference and attracted considerable interest from delegates\(^\text{15}\).


3.7 Social Care collaboration

3.7.1 There has been a growing recognition for several years that better use of data and linking of wider ranges of data can have a profound impact on research and upon improvements in health and social care interventions, particularly those aimed at reducing the demand on front line services. The crisis currently faced by the NHS and social care in Wales demands a broader, more joined up approach to understanding which interventions produce greatest positive impact.

3.7.2 Welsh Government recently published A Healthier Wales: our Plan for Health and Social Care, which clearly recognises the importance of using data sharing technology such as UK SeRP to create broader and more blended data resources.

“Digital is a key enabler of transformational change, which the Parliamentary Review recognised as an important priority. It provides a shared platform for safe and effective joint working between different organisations, and with citizens directly. Making better use of digital, data, and communication technologies will help us to raise the quality and value of health and social care services, so that they are cost-effective and sustainable and also bring our offer in line with increasing expectations of technology in people’s day-to-day lives. Digital technologies will bring information from different providers together, so that they can model and predict the demand for health and social care services, and improve understanding and management of how services work together. An integrated platform will also capture much more information about the health and wellbeing outcomes which actually matter to people, so that this information can be used to prioritise services, based on a full picture of their quality and value, not just cost and volume.”

3.7.3 In addition, the Wellbeing of Future Generations Act places an obligation upon public bodies to work collaboratively and to share data to improve the health and wellbeing of the Welsh population. This theme is also fundamental to the Welsh Government’s national strategy “Prosperity for All” which is designed to drive integration and collaboration across the Welsh public sector.

3.7.4 The SAIL databank is at the heart of development of these broader datasets, bringing together health information with social care, education and other public sector datasets to create a uniquely broad and detailed picture of the Welsh population. Our longstanding collaboration with the Administrative Data Research Centre Wales has enabled a number of projects\textsuperscript{16} to be undertaken bringing together health and other public policy datasets. Funding is now being sought for a new phase of the Administrative Data Research partnership, which will further increase the amount and richness of health and other data available to researchers including the NHS. These resources have the potential to support transformational change within NHS Wales, enabling investigation of the broad range of factors which impact upon the wellbeing of the population and how these can be utilised to reduce the resource burden on health services.

\textsuperscript{16} See https://adrn.ac.uk/research-impact/research/ filter results for “Wales”
3.8 Improving public involvement and engagement

3.8.1 SAIL has a well-established consumer panel comprised of members of the public, who provide advice and feedback to researchers wishing to use SAIL data on how to make their research more understandable and accessible to the public. The Panel meets quarterly but we have also recently secured funding from Involving People to set up a rapid response facility to secure input from members of the public for researchers needing urgent feedback to meet a grant application deadline.

3.8.2 The SAIL team also regularly attend public events to raise the profile of SAIL Databank and to answer questions from the public about the work we do. Events attended this year include:

- Let’s talk about Data survey sessions. Various venues attended including Singleton Hospital, and Swansea Food Festival
- Swansea Science Festival – Swansea University annual family event – in excess of 9000 people attended. The 10 members of the SAIL team / researchers who use SAIL managed 3 ‘data fun zones’.
- British Heart Foundation Supporter Day – A volunteer celebratory event hosted by BHF.
- Carmarthenshire 50+ Forum
- Health and Care Research Wales Conference
- Public Health Wales Conference
- Swansea University Maths Masterclass – Interactive session for girls in year 9 and 10 who have an interest in pursuing a career involving maths
- Super Science Saturday – Oriel Science hosted family event.
- Involving People Conference
- Clinical Trials day, exhibition in Morriston Hospital
- South West Wales Participation Network meeting
- Carmarthenshire Health and Wellbeing Group meeting

4. Conclusion

4.1 Since its establishment in 2007, the SAIL Databank has witnessed a sustained period of rapid development in the use of informatics and big data as a research resource, with new paradigms, technologies and governance frameworks emerging, often as a result of work led by the SAIL team. This has resulted in international recognition for SAIL as an organisation at the leading edge of data-intensive research and the SAIL team are committed to maintain this position into the future.

4.2 As this report shows, the 2017 – 18 period has been one of significant success with our core programme of providing data to support research projects continuing and growing (including an extensive programme of work with NHS Wales, and a growing portfolio of projects with the private sector), and uptake of our UKSeRP technology offering starting
to show tangible results in terms of programmes which have deployed it, and the launch of new data resources underpinned by it.

4.3 2016 – 17 has also been notable for the success of our ongoing relationship with the ADRC, allowing us to make available more and richer data, enabling us to provide effective support to research groups undertaking projects at the intersection between health and social care data. The effect of two service evaluation projects in enabling Welsh Government to make informed decisions about funding is an example of this.

4.4 2017 – 18 has been a year of significant success for SAIL, when several major programmes of work which have been ongoing for several years (our collaboration with the ADRC and our development of SeRP technology) produced significant and tangible positive results.

4.5 2018- 2019 will be another exciting and challenging year. We are committed to continuing to provide our core service of making data available to Wales based researchers, and we also have ambitions to increase involvement in SAIL by non-Welsh groups. We look forward to continuing to collaborating with prestigious research organisations in the UK and internationally to support deployment of SeRP technology. We are seeking funding to continue our programme of data expansion and enrichment with Administrative Data Research colleagues, and look forward to continuing to be at the forefront of supporting the Welsh Government strategy of better data sharing and linkage. This is a challenging and exciting agenda for the forthcoming year, and one which we believe the SAIL team are uniquely well qualified to deliver. We look to the future with excitement as we continue to work on improvements and novel developments to enable the best use of data to benefit population health and well-being.
## Appendix 1 – Publications by SAIL supported projects 2017 - 18

<table>
<thead>
<tr>
<th>Publication</th>
<th>Year</th>
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<tbody>
<tr>
<td>Protty, M. B., Lacey, A., Smith, D., Hannoodee, S., &amp; Freeman, P. Increased morbidity, mortality and length of in-hospital stay for patients with acute coronary syndrome with pre-morbid psychiatric diagnoses.</td>
<td>2017</td>
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<tr>
<td>James, M., Christian, D., Scott, S., Todd, C., Stratton, G., McCoubrey, S., Halcox, J., Audrey, S., Ellins, E. and Brophy, S. Active children through individual vouchers—evaluation (ACTIVE): protocol for a mixed method randomised control trial to increase physical activity levels in teenagers.</td>
<td>2017</td>
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<tr>
<td>BeataFonferko-Shadrach, Arron S.Lacey, Catharine P.White, H.W. Rob Powell, Inder M.S.Sawhney, Ronan A.Lyons, Phil E.M.Smith, Mike P.Kerr, Mark I.Rees, W. Owen Pickrell Validating epilepsy diagnoses in routinely collected data</td>
<td>2017</td>
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<tr>
<td>Min, T., Davies, G.I., Rice, S., Chess, J. and Stephens, J.W Treatment choices for the glycaemic management of patients with type 2 diabetes and chronic kidney disease: Analysis of the SAIL patient linked dataset</td>
<td>2017</td>
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<td>Publication</td>
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<tr>
<td>King, W., Lacey, A., White, J., Farewell, D., Dunstan, F. and Fone, D. Socioeconomic inequality in medication persistence in primary and secondary prevention of coronary heart disease–A population-wide electronic cohort study.</td>
<td>2018</td>
</tr>
<tr>
<td>Majd Protty, Phillip Freeman, Omar Aldalati, Arron Lacey, William King, Richard Anderson and Dave Smith Severe symptomatic aortic stenosis: Medical treatment versus transcatheter aortic valve implantation: A real world analysis of admission profiles, cost, and mortality using the Secure Anonymised Information Linkage (SAIL) Databank</td>
<td>2018</td>
</tr>
<tr>
<td>Cooksey, R., Brophy, S., Kennedy, J., Gutierrez, F.F., Pickles, T., Davies, R., Piguet, V. and Choy, E. Cardiovascular risk factors predicting cardiac events are different in patients with rheumatoid arthritis, psoriatic arthritis and psoriasis.</td>
<td>2018</td>
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