NI CRN
CLINICAL RESEARCH NETWORK

NORTHERN IRELAND CLINICAL RESEARCH NETWORK ANNUAL REPORT

2017/18

NI C R N
CLINICAL RESEARCH NETWORK

CONTENTS

1.0 EXECUTIVE SUMMARY

Clinical research is essential for better understanding of disease processes and for the development of new tests, treatments and interventions. The purpose of NICRN is to provide and manage the infrastructure necessary to support high quality clinical research in the Health and Social Care (HSC) Trusts and in primary care across N. Ireland. NICRN currently supports research (deploying 45.33 Whole Time Equivalent research staff) across twelve Clinical Specialty Groups : Cardiovascular, Child Health, Critical Care, Dementia, Diabetes, Gastroenterology, Mental Health, Renal medicine, Respiratory Health, Stroke, Primary Care and Vision.

In 2017/18 all five HSC Trusts and 62 out of 332 (19%) general practices were actively involved in recruiting to NICRN adopted studies. Over this period there were 203 active research studies and a total of 1532 participants were recruited. The number of participants recruited was lower than that in previous years but may be explained at least in part, by the adoption of more complex studies to the NICRN portfolio. NICRN aims to support a broad spectrum of high quality clinical research studies including national publically funded studies, commercially sponsored research and which incorporate a range of study methodologies (Randomised Controlled Trials, observational studies, qualitative research. evaluation of tests etc.). The study portfolio balance as regards both sponsorship and study type is similar to previous years : 36% of studies were commercially sponsored and 54% were of randomised controlled trial design.

Recruitment of participants to research studies to time and target is an important quality measure, now monitored by NICRN. The median % attainment of target recruitment had increased again in 2017/18 to 91.7%. The median time to recruitment of first patient was 51 days for commercial sponsored studies and 34 days for non-commercial sponsored studies. The percentage of studies recruiting the first participant in < 30 days was 33% for commercial sponsored studies and 46.7% for non-commercial sponsored studies. As a comparator, in the NIHR CRN Portfolio (2016/17), 36% of commercial and 49 % of non-commercial sponsored studies respectively recruited the first participant in < 30 days.

NICRN has faced particular challenges in 2017/18. Firstly, there have been increasing requests for the support of studies in disease areas outside those covered by the existing Clinical Specialty Groups and also for the establishment of new Clinical Specialty Groups. A priority for NICRN will be to consider how it can best support such a broader portfolio. A second challenge has been the restriction of the NICRN primary care team in pre-screening potential study participants in general practices. The Primary Care Clinical Specialty Group is now exploring the use of commercial software programmes to facilitate pre-screening so that potential study participants can be identified in a process that meets the requirements of research ethics and information governance.

NICRN held a very successful Industry liaison workshop to explore the theme of effective collaboration with pharmaceutical industry. This well attended event, supported by ABPI ,had contributions from industry, clinical and academic research and research management.

NICRN remains committed to ensuring that patient and public involvement (PPI) is integrated into its research activities through involvement in the NICRN Steering Committee and in individual Clinical Specialty Groups.

2017/18 has been a busy and productive year for NICRN and I commend all NICRN staff, investigators and the Clinical Specialty Groups for their hard work and dedication to clinical research. I particularly wish to thank all

those patients and members of the public who have contributed to NICRN either in an advisory capacity or as research participants who have given so generously of their time and energy.

Dr Maurice O'Kane

NICRN Director

Northern Ireland Clinical Research Network

2 BACKGROUND

The Northern Ireland Clinical Research Network (NICRN) was established in 2008 to support the staff and service users of the five Health and Social Care (HSC) Trusts and the primary care sector to participate in high quality clinical research studies. Clinical research is essential to improve understanding of disease processes and the development of new tests and treatments. From a patient perspective, involvement in clinical research offers the opportunity of prioritising research questions of most relevance to patients or carers and the possibility of contributing to and participating in high quality research studies. For health care organisations active participation in clinical research helps foster an organisational ethos of intellectual rigour and enquiry all of which go and in hand with excellence in the delivery of care.

NICRN comprises 12 Clinical Speciality Groups (CSGs) which are focussed on areas of existing excellence in clinical research: Cardiovascular, Child Health, Critical Care, Dementia, Diabetes, Gastroenterology, Mental Health, Primary Care, Renal, Respiratory Health, Stroke and Vision.

The NICRN provides the staffing infrastructure (including clinical research nurses, Allied Health Professionals [AHPs] along with and managerial and administrative staff). to support studies within each of the five Health and Social Care Trusts in N. Ireland

Figure 1: Operational structure of NICRN

NICRN is organised on a hub and spoke design (**Figure 1**), with the NICRN Co-ordinating Centre providing management and administrative support to ensure effective management and co-ordination of regional activity with good communication and connectivity between the stakeholders throughout N. Ireland. The NICRN Co-ordinating Centre is hosted by the Belfast Trust and comprises the NICRN Director, Senior Manager, Senior Nurse and administrative staff.

Each CSG is directed by a Lead, or more commonly two Co-leads, who chair a clinical management group comprising research active clinical staff from across N. Ireland, including HSC Trusts, Queens University and Ulster University. There may also be patient and public representation. The responsibility of the clinical management group is to direct and oversee the activity of the CMG by prioritising and adopting new studies onto the CSG portfolio taking into account study quality, local capacity and capability. The CSG Leads are listed in **Appendix 1**.

In the past two to three years there has been an increasing number of requests for NICRN support for clinical research in specialties outside the current twelve Clinical Specialty Groups and for the establishment of additional Clinical Specialty Groups. A major priority for NICRN is to consider how the finite staff resource can be most effectively deployed to accommodate these requests.

The NICRN places patient needs at the centre of its activities. NICRN staff act as patient advocates within the research process and the NICRN steering committee and CSGs benefit from direct Patient and Public Involvement (PPI) which provides guidance and direction.

NICRN has developed close links with the pharmaceutical industry and clinical research organisations to allow more effective collaborative working and to increase clinical trial activity in N. Ireland.

3 MAJOR DEVELOPMENTS IN REPORTING YEAR

3.1 STAFFING

NICRN currently deploys 72 staff members (45.81 Whole Time Equivalents [WTE]) distributed across the five Health and Social Care (HSC) Trusts and primary care. The primary care team team, which supports studies throughout N. Ireland, are employed by the Belfast HSC Trust. Staffing levels have remained relatively constant over the last 3 years.

The NICRN team comprises 35.7 WTE research nurses, 2.5 WTE physiotherapists, 1.0 WTE optometrist, 1.0 WTE imaging technician, 0.6 WTE Quality Assurance Officer, 1.0 WTE clinical trials practitioner and 4.0 WTE administrators who provide support to Clinical Specialty Groups **(Table 1).**

In addition to the above, the NICRN Co-ordinating Centre staff comprise a 1.0 WTE senior manager, 1.0 WTE regional staff manager, 1.0 WTE regional portfolio manager, 0.6 WTE adoption/co-ordinator and 1.0 WTE administrator.

Each staff member is trained in key research areas such as Good Clinical Practice, Informed consent, recruitment and retetention, data quality and management.

Clinical Specialty Group	WTE	POSTS
Cardiovascular	6	10
Child Health	3.5	5
Critical Care	6.8	9
Dementia	2.00	3
Diabetes	3.53	6
Gastroenterology	1.50	3
Mental Health	1.00	1
Primary Care	2.50	3
Renal	3.03	6
Respiratory Health	7.10	11
Stroke	3.85	7
Vision	5.00	8
Total	**45.81**	**72**

Table 1. Staff resource supporting each of the Clinical Specialty Groups [CSG].

(WTE: Whole time equivalent)

Of the NICRN total staff complement, 63.2% are based in Belfast HSC Trust and 36.8% % in the other four HSC Trusts (**Table 2**). The NICRN Co-ordinating Centre staff and the Primary Care team staff are employed by the Belfast HSC Trust but provide support to NICRN adopted studies across N. Ireland.

HSC Trust	WTE Deployed
BHSCT	**28.63**
WHSCT	**5**
NHSCT	**3.85**
SEHSCT	**4.8**
SHSCT	**3.53**

Table 2 Staff resource allocation across the five HSC Trusts. (WTE: Whole Time Equivalent)

3.2 STAFF TRAINING AND EDUCATION

NICRN supports continuing professional development and training of network staff. In addition to mandatory training (both HSC Trust and professional body requirements), NICRN hosts a series of half or whole day training sessions for network staff. In 2017-18 the NICRN training was delivered on the following topics:

1. Informed consent training
2. Time management
3. Finders keepers for recruitment and retention of study participants
4. GCP update course
5. GDPR session

Delegates at the NICRN Industry Liaison workshop

An industry liaison workshop was held on 20 April 2018 to explore the theme of effective collaboration with the pharmaceutical industry. This was a very successful event with over 80 attendees including clinical and academic researchers in addition to NICRN staff. This conference was supported by ABPI and external speakers included Dr Sheuli Porkess, Deputy Chief Scientific Officer, ABPI and Dr Stephen Burke Industry manager, Scottish Research Network.

3.3 PORTFOLIO ACTIVITY: ADOPTED STUDIES

The number of active network studies across the network has remained broadly static over the last three years at between 198 and 205 active studies (Table 3), indicating perhaps that the network is working at or close to capacity.

Year	Total active studies across NICRN Portfolio
2014/15	174
2015/16	198
2016/17	204
2017/18	203

Table 3 Active studies across the NICRN portfolio from 2014 to 2018

The number of active studies varies between Clinical Specialty Groups and over time within individual Clinical Specialty Groups (**Tables 4a and 4b**). The Mental Health Clinical Specialty Group became active in 2017/18 and for the first time adopted studies.

There has been a noticeable fall in activity in the Primary Care Group which reflects in major part challenges arising from the fact the primary care clinical research nurse team (employed by BHSCT rather than individual practices) can no longer be involved in the pre-screening of potential research participants. In particular this has resulted in one major study (SITLESS) which would have involved 50 general practices in N. Ireland being declined. To overcome these challenges the Primary Care Clinical Specialty Group is currently exploring the use of Apollo software to facilitate participant screening within practices.

Year	Cardiovascular	Child Health	Critical care	Diabetes	Dementia	Gastroenterology
2014/15	27	15	18	14	4	-
2015/16	35	18	13	16	5	-
2016/17	39	16	17	17	7	1
2017/18	35	19	24	10	8	6

Table 4a. Number of active studies by Clinical Specialty Group

Year	Mental Health	Primary Care	Renal	Respiratory Health	Stroke	Vision
2014/15	-	16	24	21	12	23
2015/16	-	13	23	33	15	27
2016/17	-	13	22	31	14	28
2017/18	5	7	21	27	17	24

Table 4b Number of active studies by Clinical Specialty Group

There is NICRN supported research activity all five N. Ireland HSC Trusts. As in previous years the Belfast HSC Trust accounts for just under half (45%) of the total active study sites delivering the NICRN portfolio (**Table 5**). The greater activity at Belfast HSC Trust reflects a number of factors which include the size of the Trust, the co-location of the Medical School with research active academic staff and the range of specialist regional clinical services not delivered at the other Trust sites. Patients from throughout N. Ireland receiving care from a regional clinical specialty service in the Belfast HSC Trust will therefore have an opportunity to participate in clinical trials.

Of the 332 general practices in N. Ireland, 62 (19%) have hosted NICRN adopted clinical studies. This represents a fall from previous years and reflects the challenges in screening described above.

HSC Trust	2014/15	2015/16	2016/17	2017/18
Belfast	119	138	133	135
Northern	34	28	35	41
South Eastern	33	27	32	37
Southern	39	41	40	39
Western	43	43	41	45

Table 5 The number of NICRN adopted studies active in each HSC Trust

3.4 PORTFOLIO ACTIVITY: PATIENTS SCREENED AND ACCRUED

Recruitment into a clinical research study requires initial screening to ensure that the potential participant fulfils the required study inclusion and exclusion criteria. Screening may be a time consuming process for both participants and staff. NICRN has been supporting the direct clinical care teams in ensuring that screening procedures are as efficient as possible. This has been reflected in a reduction in the ratio of screened to recruited research participants from 9 : 1 in 2014/15 to 3.6 : 1 in 2017/18, indicating a more efficient use of study participant and staff time (**Table 6**).

Over the reporting period a total of 1532 participants in N. Ireland were recruited to NICRN adopted studies across the portfolio **(Tables 6) .** This represents a fall from the three previous years, although there is considerable year on year variability in recruitment numbers. This variability reflects the fact that individual research studies in the NICRN portfolio may differ markedly in complexity i.e. from relatively low intensity observational studies (to which many participants may be recruited easily) to complex, high intensity intervention studies (for which recruitment may be more challenging).

Recruitment within individual Clinical Specialty Groups varied from 283 participants (Cardiovascular) to seven (Mental Health), (**Supplementary Table 1**). These differences relate to staffing levels within individual Clinical Specialty Groups and both the number and complexity of studies coming forward for adoption.

	Total activity across all Clinical Specialty Groups	
	Screened	**Recruited**
2014/15	19 234	2114
2015/16	14 276	4384
2016/17	9 149	2814
2017/18	5570	1532

Table 6 Number of patients Screened and Recruited across the NICRN Study portfolio.

3.5 PORTFOLIO ACTIVITY: RECRUITMENT TO TARGET

It is essential for study sponsors that research sites can accurately estimate potential participant recruitment numbers and deliver on agreed recruitment targets. Target recruitment figures will be estimated on a range of factors including the study design, the target patient population and local capacity to deliver the studies. For some studies requiring stringent inclusion and exclusion criteria or which are seeking to access difficult to reach patient groups or where the study protocol is complex and labour intensive for the research team, recruitment may be challenging. For the overall success of a study it is important that recruitment targets at individual sites are realistic and feasible so that the study sponsor can ensure that a sufficient number of study sites have been enrolled. The ability to estimate and attain realistic treatment targets is an import skillset of the site research team which is based on research experience, efficient participant screening and recruitment.

In 2017/18 across the NICRN portfolio median percentage target recruitment had increased to 91.7% **(Tables 7)**. Between individual Clinical Specialty Groups , this varied from 60 to 155% (**Supplementary Table 2**) .

	Median % target recruitment
2014/15	86.6%
2015/16	80.8%
2016/17	90.5%
2017/18	91.7%

Table 7. Median % recruitment to target attained across the NICRN portfolio.

For individual HSC Trusts the median percentage target recruitment varied from 51.4% to 104.2% **(Table 8)**. The variation between HSC Trusts reflects in major part the different portfolio of studies active at each HSC Trust site.

	2014/15		2015/16		2016/17		2017/18	
HSC Trust	No of active studies	Median % TR	No of active studies	Median % TR	No of active studies	Median % TR	No of active studies	Median % TR
Belfast	119	80%	138	69%	133	90%	135	90%
Northern	34	80%	28	73%	35	78.3%	41	78.3%
South Eastern	33	90%	27	93%	32	86.4%	37	104.2%
Southern	39	84%	41	100%	40	57%	39	51.4%
Western	43	87.1%	43	78%	41	98.5%	45	85.4%

Table 8. The median % target recruitment to target attained at each HSC Trust

3.6 PORTFOLIO BREAKDOWN: COMMERCIAL V. NON –COMMERCIAL SPONSORSHIP

NICRN recognises the essential role the commercial sector plays in developing new therapies and interventions. While NICRN prioritises high quality, national publicly funded studies (e.g. NIHR, MRC etc.) it does seek to strike a balance between commercial and non-commercial sector studies. Over the past four years the proportion of commercial sponsored studies has been broadly static between 35 and 41% (**Table 9**). The great majority of the commercial sector studies have been pharmaceutical industry sponsored studies of Investigational Medicinal Products (IMPs). Between Clinical Specialty Groups the proportion of commercial sponsored studies varies markedly from 8.3% (Critical Care) to 70% (Diabetes), (**Supplementary Table 3**); this wide variation reflects the pipeline of new IMP development in different disease areas.

Year	Commercial	Non-commercial	% commercial
2014/15	71	103	41%
2015/16	78	120	39%
2016/17	82	123	40%
2017/18	72	131	35.5%

Table 9 Breakdown between commercial and non-commercial sponsor studies across the entire NICRN portfolio

3.7 PORTFOLIO BREAKDOWN: RANDOMISED CONTROLLED TRIAL (RCT) V. NON-RCT

Different types of clinical study design may be deployed to answer clinical research questions. A Randomised Controlled Trial (RCT) is a trial in which participants are randomly assigned to one of two or more groups (interventional [test] group and control [comparison] group). This design is commonly used (particularly in studies of investigational medicinal products) for determining the effect of a clinical intervention. However the RCT design may not be a suitable approach for answering other types of research questions such as those looking at identifying disease risk factors, evaluating diagnostic tests or studies using qualitative methods to assess patient/carer experience. To ensure that all types of high quality clinical research studies can be supported it is important that the NICRN portfolio incorporates studies employing a range of study designs.

For the total NICRN study portfolio the percentage RCTs has been steady over the last 4 years at just over 50% (**Table 10**).

Reporting year	RCTs as % of total portfolio
2014/15	56.9%
2015/16	53%
2016/17	54.6%
2017/18	53.7%

Table 10 Randomised Controlled Trials (RCTs) as % of the total NICRN study portfolio

Between Clinical Specialty Groups the proportion of RCTs varies significantly from 20% (Mental Health) to 76.5% (Stroke), **(Supplementary Table 4).**

3.8 PORTFOLIO ACTIVITY: TIME FROM STUDY SET UP TO FIRST PATIENT RECRUITED

The time interval from study set up to first patient recruited is an important measure of performance as it indicates the speed with which research teams can recruit participants to the study. The time interval commences when a study has received all relevant approvals to proceed (research ethics and local Trust research governance approval) and when the study sponsor has put in place all other arrangements necessary for the study to commence (e.g. the provision of study medication, study specific training etc).

Across the NICRN portfolio the median first patient recruited time was 51 days for commercial contract studies (range 19 to 164 days between Clinical Specialty Groups) and 34 days for non-commercial contract studies (range 8 to 83 days between Clinical Specialty Groups), (**Table 11 and Supplementary Table 4).**

Across the NICRN portfolio the proportion of studies recording first patient recruited < 30 days was 33.1 % for commercial contract studies (range 0 to 66.7% between Clinical Specialty Groups) and 4.7% for non-commercial contract studies (range 0 to 100%), (**Table 11 and Supplementary Table 5).**

	Commercial contract	Non - commercial contract
% of studies meeting 30 day target	33.1%	46.7%
Median time (days) to first patient recruited]	51 days	34 days

Table 11. **Time to first patient recruited for commercial contract and non-commercial contract studies across the NICRN portfolio.**

There was significant variation between Trusts in both the median time to first patient recruited and in the proportion of studies with first patient recruited <30days (**Table 12**); this may relate to differences in the study portfolios between Trusts.

	Commercial Contract		Non-Commercial contract	
	Median time (days)	**% < 30 days**	**Median time (days)**	**% < 30 days**
BHSCT	55	28.4%	26	43.7%
NHSCT	37	50.0%	47	46.4%
SEHSCT	38	27.1 %	28	36.7%
SHSCT	38	30.0%	43	42.5%
WHSCT	19	80.6%	21	45.6%

Table 12. **Median time to first patient recruited (days) and percentage of NICRN studies recruiting first patient within 30 days in HSC Trusts for commercial and non-commercial contract studies**

3.9 COMPARISON WITH NIHR HIGH LEVEL OBJECTIVES

NIHR reports annually on performance against NIHR CRN High Level Objectives (HLO) with the most recent report available from July 2017 (National Institute for Health Research, NIHR CRN High Level Objectives Year End Performance report- 2016/17; Public version: Version 1 3 July 2017). Direct comparison of NICRN performance with NIHR HLOs is hampered in by the use of differing definitions for the various items measured. The recent development of an agreed set of consistent UK-wide metrics is therefore welcome and should allow more meaningful comparison.

HLO 1 ***Participant recruitment target.***

No recruitment target is set for N. Ireland.

HLO2 A and B ***Proportion of commercial contract studies and non-commercial contract studies achieving recruitment to time and target. The NIHR HLO is 80% of studies recruiting to time and target.***

The prospective recruitment period end date is not yet consistently recorded in N. Ireland; a direct comparison is not therefore possible. Across the NICRN portfolio the median recruitment to target was the highest yet attained at 91.5%.

HLO3A ***Number of commercial contract studies undertaken (Target 650 new studies, attained 729).***

NICRN added 72 commercial contract studies in 2017/18 and this figure has remained fairly static. No NICRN target is set for this.

HLO3B ***The percentage of commercial contract studies supported by NIHR CRN when compared to the total number of commercial MHRA Clinical Trial Authorisation approvals for Phase II-IV studies (Target 75%, attained 88%).***

Taking a figure of 828 studies for which a CTA approval was granted in 2016/17, 82 were undertaken in N. Ireland i.e. 9.9%. It is not clear what the target for this should be in N. Ireland.

HLO4 ***The percentage of studies which achieved NHS set up at all sites within 40 calender days (from 'Date Site Selected to Date Site Confirmed).***

Data are not currently collected in this format.

HLO5A ***The percentage of commercial contract studies which achieved first participant recruited within 30 calender days (Target 80%, attained 36%).***

For NICRN the proportion of commercial contract studies recruiting the first participant within 30 days was 33.1%.

HLO5B ***The percentage of non-commercial contract studies which achieved first participant recruited within 30 calender days (Target 80%, attained 49%)***

For NICRN the proportion of non-commercial contract studies recruiting the first participant within 30 days was 46.7%.

HLO6A. ***The proportion of Trusts recruiting into portfolio studies (Target 99%, attained 99%).***

All N. Ireland Trusts i.e. 100% recruit into NICRN portfolio studies.

HLO6b. ***The proportion of Trusts recruiting to commercial contract studies. (Target 70%, attained 79%).***

All N. Ireland Trusts i.e. 100% recruited to commercial contract studies.

HLO6C ***The proportion of General Medical Practices recruiting to portfolio studies. (Target 25%, attained 48%)***

In N. Ireland 19% of General Medical Practices recruited to portfolio studies in 2017/18.

HLO7 ***The number of patients recruited into Dementias and Neurodegeneration Specialty Studies.***

No recruitment target is set for N. Ireland.

4. NICRN STEERING COMMITTEE

The NICRN Steering committee met on two occasions over the reporting period. The composition of the steering committee is given in **Appendix 2**.

5 PATIENT &PUBLIC ENGAGEMENT

In line with HSC Research and Development Division policy, NICRN wishes to ensure that Patient and Public Involvement (PPI) is integrated into the research cycle so that researchers prioritise topics that are important to service users and carers and formulate questions, processes and outcomes that are meaningful to people other than just the researcher.

The NICRN Steering Committee includes two PPI representatives. For each of the Clinical Specialty Groups, the management committee must be able to demonstrate appropriate Personal and Public Involvement (PPI) in the decision making process but there is no mandated approach to PPI and committees are free to choose the most appropriate way to involve patients, carers and the public. Five of the 12 clinical management groups currently have PPI members and have full voting rights as regards study adoption.

On International Clinical Trials Day teams of NICRN staff based in each of the HSC Trusts participated in public engagement events to raise the profile of clinical research and to encourage patients, carers and the public to ask their health professional about research opportunities that might be available to them and remind health and social care professionals to be research aware.

The NICRN team at SHSCT publicising International Clinical Trials Day on 21 May 2018.

6. PUBLICATIONS ARISING FROM NICRN ADOPTED STUDIES

Below are listed publications arising from NICRN supported studies which have been reported to the NICRN Co-ordinating Centre. (This list is unlikely to be complete as there may be other publications from other Clinical Specialty Groups of which the NICRN Co-ordinating Centre is unaware).

Primary Care

1. Verheugt, F.W., Gao, H., Al Mahmeed, W., Ambrosio, G., Angchaisuksiri, P., Atar, D., Bassand, J.P., Camm, A.J., Cools, F., Eikelboom, J. and Kayani, G., **2017**. Characteristics of patients with atrial fibrillation prescribed antiplatelet monotherapy compared with those on anticoagulants: insights from the GARFIELD-AF registry. *European heart journal*, *39*(6), pp.464-473.

2. Apenteng, P.N., Hobbs, F.R., Roalfe, A., Muhammad, U., Heneghan, C. and Fitzmaurice, D., **2017**. Incidence of venous thromboembolism in care homes: a prospective cohort study. *Br J Gen Pract*, pp.bjgpfeb-2017.

3. Steinberg, B.A., Gao, H., Shrader, P., Pieper, K., Thomas, L., Camm, A.J., Ezekowitz, M.D., Fonarow, G.C., Gersh, B.J., Goldhaber, S. and Haas, S., **2017**. International trends in clinical characteristics and oral anticoagulation treatment for patients with atrial fibrillation: results from the GARFIELD-AF, ORBIT-AF I, and ORBIT-AF II registries. *American heart journal*, *194*, pp.132-140.

4. Fox, K.A., Lucas, J.E., Pieper, K.S., Bassand, J.P., Camm, A.J., Fitzmaurice, D.A., Goldhaber, S.Z., Goto, S., Haas, S., Hacke, W. and Kayani, G., **2017**. Improved risk stratification of patients with atrial fibrillation: an integrated GARFIELD-AF tool for the prediction of mortality, stroke and bleed in patients with and without anticoagulation. BMJ open, 7(12), p.e017157.

5. Fox, K.A., Accetta, G., Pieper, K.S., Bassand, J.P., Camm, A.J., Fitzmaurice, D.A., Kayani, G., Kakkar, A.K. and GARFIELD-AF Investigators, **2017**. Why are outcomes different for registry patients enrolled prospectively and retrospectively? Insights from the global anticoagulant registry in the FIELD-Atrial Fibrillation (GARFIELD-AF). European Heart Journal-Quality of Care and Clinical Outcomes, 4(1), pp.27-35.

6. Fox, K.A., Gersh, B.J., Traore, S., Camm, A.J., Kayani, G., Krogh, A., Shweta, S. and Kakkar, A.K., **2017**. Evolving quality standards for large-scale registries: the GARFIELD-AF experience (vol 3, pg 114, 2017). European Heart Journal-Quality of Care and Clinical Outcomes, 3(4), pp.328-328.

7. Camm, A.J., Accetta, G., Al Mahmeed, W., Ambrosio, G., Goldhaber, S.Z., Haas, S., Jansky, P., Kayani, G., Misselwitz, F., Oh, S. and Oto, A., **2017**. Impact of gender on event rates at 1 year in patients with newly diagnosed non-valvular atrial fibrillation: contemporary perspective from the GARFIELD-AF registry. *BMJ open*, *7*(3), p.e014579.

8. Fox, K.A., Lucas, J.E., Pieper, K.S., Bassand, J.P., Camm, A.J., Fitzmaurice, D.A., Goldhaber, S.Z., Goto, S., Haas, S., Hacke, W. and Kayani, G., **2017**. Improved risk stratification of patients with atrial fibrillation: an integrated GARFIELD-AF tool for the prediction of mortality, stroke and bleed in patients with and without anticoagulation. BMJ open, 7(12), p.e017157.

9. Le Heuzey, J.Y., Bassand, J.P., Berneau, J.B., Cozzolino, P., D'Angiolella, L., Doucet, B., Mantovani, L.G., Martelet, M., Mouallem, J., Muller, J.J. and Pieper, K., **2018**. Stroke prevention, 1-year clinical outcomes and healthcare resource utilization in patients with atrial fibrillation in France: Data from the GARFIELD-AF registry. Archives of cardiovascular diseases.

10. Bassand, J.P., Accetta, G., Al Mahmeed, W., Corbalan, R., Eikelboom, J., Fitzmaurice, D.A., Fox, K.A., Gao, H., Goldhaber, S.Z., Goto, S. and Haas, S., **2018**. Risk factors for death, stroke, and bleeding in 28,628 patients from the GARFIELD-AF registry: Rationale for comprehensive management of atrial fibrillation. PloS one, 13(1), p.e0191592.

11. Apenteng, P.N., Gao, H., Hobbs, F.R. and Fitzmaurice, D.A., **2018**. Temporal trends in antithrombotic treatment of real-world UK patients with newly diagnosed atrial fibrillation: findings from the GARFIELD-AF registry. BMJ open, 8(1), p.e018905.

SHARE- D Study publication

1. Cupples, M.E., Cole, J.A., Hart, N.D., Heron, N., McKinley, M.C. and Tully, M.A., **2018**. Shared decision-making (SHARE-D) for healthy behaviour change: a feasibility study in general practice. *BJGP Open*, p.bjgpopen18X101517.

TEAM- MED study publications

1. O'Neill, R.F., McGowan, L., McEvoy, C.T., Kee, F., Patterson, C.C., Cupples, M., McKinley, M.C. and Woodside, J.V., **2017**. Effect of a peer support intervention to encourage adoption and maintenance of a Mediterranean diet in established community groups: A cluster randomised trial. Proceedings of the Nutrition Society, 76 (OCE3).

2. McEvoy, C.T., Moore, S.E., Appleton, K., Cupples, M.E., Erwin, C.M., Hunter, S.J., Kee, F., McCance, D., Patterson, C.C., Young, I.S. and McKinley, M.C., **2018**. Trial to encourage adoption and maintenance of a Mediterranean diet (TEAM-MED): Protocol for a randomised feasibility trial of a peer support intervention for dietary behaviour change in adults at high cardiovascular disease risk. International Journal of Environmental Research and Public Health, 15(6).

3. Erwin, C.M., McEvoy, C.T., Moore, S.E., Prior, L., Lawton, J., Kee, F., Cupples, M.E., Young, I.S., Appleton, K., McKinley, M.C. and Woodside, J.V., **2018.** A qualitative analysis exploring preferred methods of peer support to encourage adherence to a Mediterranean diet in a Northern European population at high risk of cardiovascular disease. BMC public health, 18(1), p.213.

SPHERE Study publications

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Other Critical Car acheievements: Critical Care studies involving NICRN members as co-applicants have secured >£2M NIHR funding for the following projects:

NIHR HTA programme **£909,834** **2018-2021**

STandard versus Accelerated initiation of Renal Replacement Therapy in Acute Kidney Injury (STARRT-AKI): UK arm of a multi-centre randomized controlled trial (17/42/74)

NIHR HTA programme **£1,749,082** **2018-2021**

Alpha 2 agonists for sedation to produce Better outcomes from critical illness (A2B Trial):

(HTA 16/93/01)

NIHR EME (MRC funded) programme **£239,772** **2017-2019**

Defining ARDS and sepsis sub-phenotypes: a re-analysis of two trials to inform a stratified medicine approach with future trials (EME 16/33/01)

APPENDICES

APPENDIX 1: CLINICAL SPECIALTY GROUP LEADS

Clinical Specialty Group	Lead(s)
Cardiovascular	Professor Donna Fitzsimons (QUB) / Dr Patrick Donnelly (SEHSCT)
Child Health	Dr David Sweet (BHSCT) / Dr Anthony McCarthy (BHSCT)
Critical Care	Professor Danny McAuley (QUB)
Dementia	Professor Peter Passmore (QUB) / Dr Stephen Todd (WHSCT)
Diabetes	Professor Vivien Coates (UU) / Dr Hamish Courtney (BHSCT)
Gastroenterology	Dr Peter Watson (BHSCT) / Dr Patrick Allan (SEHSCT)
Mental Health	Professor Gerry Leavey (UU) / Dr Ciaran Mulholland (NHSCT)
Primary Care	Mrs Claire Leathem (BHSCT) / Dr Nigel Hart
Renal	Professor Peter Maxwell (BHSCT) / Dr Neal Morgan (SHSCT)
Respiratory Health	Professor Judy Bradley (QUB) / Dr Lorcan McGarvey (QUB)
Stroke	Dr Michael Power (SEHSCT) / Mrs Carolee McLaughlin (BHSCT)
Vision	Professor Julie Silvestri (BHSCT) / Professor Jonathan Jackson (BHSCT)

APPENDIX 2: NICRN STEERING COMMITTEE MEMBERSHIP

Maurice O'Kane	NICRN Director (Chair)
Paul Biagioni	NICRN senior manager
Margaret McFarland	BSHCT pharmact
Judy Bradley	Clinical Specialty Group lead
Sonia McKenna	NICRN senior staff manager
Trevor Lyttle	PPI
Sonia Patton	PPI
Frances Johnston	Research Manager NHSCT
Melanie Morris	NICTN senior manager
Janice Bailie	PHA R&D Division
Clive Wolsley	PHA R&D Division
Colette Donaghy	Venn Life Sciences
Dermot Hughes	Medical Director WHSCT
James McElnay,	QUB
Cherie Armour,	Ulster University
Danny McAuley,	Clinical Specialty Group lead
Collette Goldrick	APBI
Shane Jackson	NICRN Co-ordinating Centre
Roisin Kerr	NICRN Co-ordinating Centre
Ciara McKenna	NICRN Co-ordinating Centre

Supplementary Table 1

Number of patients screened and recruited by Clinical Specialty Group

	Cardiovascular		Child Health		Critical Care		Diabetes		Dementia		Gastro – enterology	
Year	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**
2014/15	1528	384	354	146	4090	445	681	317	81	81	-	-
2015/16	856	404	190	138	2365	220	2148	382	255	2	-	-
2016/17	825	553	196	75	1723	479	1136	287	689	412	6	0
2017/18	785	283	261	73	1262	427	371	96	137	93	33	8

	Mental Health		Primary Care		Renal		Respiratory Health		Stroke		Vision	
Year	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**	**S**	**R**
2014/15			7204	281	680	257	1457	95	2878	35	281	73
2015/16			4049	2587	696	337	2145	101	1389	94	183	119
2016/17			1175	111	247	213	1439	154	1320	205	393	325
2017/18	16	7	358	48	331	177	1489	195	366	61	161	64

Supplementary Table 2

Median % attainment of recruitment target by Clinical Specialty Group

	Cardiovascular	Child Health	Critical Care	Dementia	Diabetes	GI
2014/15	104%	61%	100%	57%	92%	-
2015/16	90%	50%	80%	2%	110%	-
2016/17	97%	40%	77%	100%	100%	-
2017/18	88%	76%	155%	102%	91.7%	60%

	Primary care	Renal	Respiratory Health	Stroke	Vision
2014/15	102%	82%	96%	60%	75%
2015/16	105%	67%	82%	71%	88%
2016/17	106%	84%	100%	77%	80%
2017/18	100	75%	100%	68%	105%

Supplementary Table 3

Proportion of commercial sponsored studies by clinical specialty group

Year	Cardiovas-cular	Child Health	Critical Care	Dementia	Diabetes	Gastro-enterology
2014/15	51.9%	6.7%	11.1%	50%	57.1%	-
2015/16	54.3%	16.7%	7.7%	20%	62.5%	-
2016/17	56.4%	18.8%	5.9%	14.3%%	82.4%	-
2017/18	54.3%	15.8%	8.3%	25%	70%	66.7%

Year	Mental Health	Primary Care	Renal	Respiratory Health	Stroke	Vision
2014/15	-	31.3%	41.7%	66.7%	8.3%	60.8%
2015/16	-	30.8%	21.7%	57.6%	13.3%	51.9%
2016/17	-	38.5%	13.6%	58%	21.4%	42.9%
2017/18	20%	42.9%	23.8%	51.9%	17.7%	37.5%

Supplementary Table 4

Randomised Controlled Trials (RCTs) as a % of the study portfolio for each Clinical Specialty Group

Year	Cardiovas - cular	Child Health	Critical Care	Dementia	Diabetes	Gastro-enterology
	% RCTs	% RCTs	% RCTs	% RCTs	% RCTs	% RCTs
2015/16	42.9%	55.7%	61.5%	40%	68.8%	-
2016/17	48.7%	68.9%	70.6%	28.6%	76.5%	100%
2017/18	51.4%	63.2%	66.7%	50%	70%	33.3%

Year	Mental Health	Primary Care	Renal	Respiratory Health	Stroke	Vision
	%RCTs	% RCTs	% RCTs	% RCTs	% RCTs	% RCTs
2015/16	-	46.2%	26.1%	66.7%	86.7%	44.4%
2016/17	-	46.2%	27.3%	54.8%	78.6%	50.0%
2017/18	20%	57.1%	23.8%	55.6%	76.5%	50%

Supplementary Table 5

Time to first patient recruited by Clinical Specialty Group

	Commercial		**Non-commercial**	
	Median	**% < 30 days**	**Median**	**% <30 days**
Cardiovascular	19	50%	34	37.5
Child Health	65	33.3%	15	36.1%
Critical Care	42	0%	8	36.2%
Diabetes	65	30%	11	100%
Dementia	164	0%	52	50%
Gastroenterology	85	0%		
Mental Health	-	-	45	0%
Primary Care	21	66.7%	30	75%
Renal	31	50%	49	44.7%
Respiratory health	51	40%	20	71.7%
Stroke	19	50%	83	22.5%
Vision	58	44.4%	35	40%