UNIVERSITY OF CAMBRIDGE
Department of Public Health and Primary Care

University Hospitals of Leicester NHS
NHS Trust

Protocol

Improving Primary Care After Stroke (IPCAS): A randomised controlled trial to evaluate a new model of care for stroke survivors living in the community

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1. Trial Information

1.1. Trial Investigators

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1.2. Funding

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1.3. Reference Numbers

IRAS: 233891

1.4. Key contacts & Trial Team

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Steering Committee Membership

Alastair Hay	Professor of Primary Care	Independent Chair: Voting
Richard Stevens	Medical Statistician	Independent member: Voting
Anne Forster	Professor of Stroke Rehabilitation	Independent member: Voting
Marney Williams	Lay Representative	Independent member: Voting

2. Definitions

CCG	Clinical Commissioning Group	PID	Patient Identifiable Data
CI	Chief Investigator	PIS	Participant Information Sheet
CRF	Case Report Form	PN	Practice Nurse
CRN	Clinical Research Network	PPI	Patient & Public Involvement
DMC	Data Monitoring Committee	QALY	Quality-Adjusted Life Year
DMP	Data Management Plan	QoF	Quality Outcomes Framework
DOB	Date Of Birth	R&D	Research & Development
GP	General Practitioner	RCT	Randomised Controlled Trial
HADS	Hospital Anxiety and Depression Scale	REC	Research Ethics Committee
HLQ	Health Literacy Questionnaire	SAE	Serious Adverse Event
HRA	Health Research Authority	SAP	Statistical Analysis Plan
ICECAP-A	ICEpop CAPability measure for Adults	SDHS	Secure Data Hosting Service
IPCAS	Improving Primary Care After Stroke	SIS	Stroke Impact Scale
MLAS	My Life After Stroke	TIA	Transient Ischaemic Attack
NIHR	National Institute for Health Research	TSC	Trial Steering Committee
OTC	Over The Counter	VLAN	Firewall-protected Virtual Network
PI	Principal Investigator		

3. Summary

Background: No formal primary care based model of care exists to support stroke survivors living in the community. A large variation in the range, quality and access to health services offered to stroke survivors between and within local primary care trusts suggests that many of the stroke survivors' needs are not being met systematically. Therefore, to address the longer term needs we have developed a multi-factorial primary care model that seeks to enable greater engagement with stroke care and community services, to link effectively to specialist services, and to improve the lives of stroke survivors.

Aim: To evaluate the clinical and cost effectiveness of a novel model of primary care for stroke survivors living in the community.

Method: The IPCAS Trial is a two-arm cluster randomised controlled trial with general practices as the unit of randomisation. People on the stroke registers of GP practices in the East of England and the East Midlands will be invited to take part. We will aim to recruit 920 people with a history of stroke registered with 46 general practices.

Analysis: The primary endpoint for the trial will be two sub-scales (emotion and handicap) of the Stroke Impact Scale (SIS v3.0) as co-primary outcomes at 12 months (adjusted for baseline).

4. Background and Rationale

Survival after stroke is improving[1,2] which means the longer-term care of people with stroke is going to play an increasingly important part of population based stroke care. Surveys demonstrate that the longer term needs of people with stroke and their carers are not being adequately addressed and that the majority of stroke survivors are dissatisfied with care after discharge from hospital.[3,4] Two of the themes that run through these surveys are information needs (54% of respondents to the national Stroke Association survey reported wanting more information about stroke) and feelings of abandonment (42% of respondents to a Stroke Association survey reported feeling abandoned after leaving hospital).[3] Other important themes include the emotional and social impact of stroke in addition to the many physical and cognitive sequelae of stroke including memory and concentration problems and fatigue.[5]

The longer term problems faced by people with stroke and their carers have been highlighted in recent national reports such as the National Audit Office report 'Progress in Improving Stroke Care' (2010)[4] and the Department of Health Cardiovascular Disease Outcomes Strategy (2013).[6] Approximately a third of stroke survivors are left with moderate to severe levels of disability at 6-months[7]. However, evidence for how best to support long-term stroke survivors is sparse[8] especially beyond the first year after stroke[9]. Recent trials of greater specialist input for specific tasks such as speech and language therapy and occupational therapy have not demonstrated patient benefit[2,8].

Primary care could play an important role in the care of people with stroke, supporting access to community services, facilitating transfer back to specialist services when new problems emerge, education about stroke and provision of information, and continuing to manage those aspects of care that are traditionally managed in primary care (for example, risk factor management and psychological issues). However, the feeling of 'abandonment' of people with stroke after hospital discharge suggests this role is not always being fulfilled. Despite the recommended annual and structured health and social care review at six months and 1 year after the stroke[10], in reality the majority of survivors do not have a structured review of needs beyond the first six weeks after discharge[11].

At present no formal primary care based model of care exists to support stroke survivors living in the community. There is a large variation in the range, quality and access to health services offered to stroke survivors between and within local primary care trusts[12]. To address the longer term needs we have developed a multi-factorial primary care model that seeks to enable greater engagement with stroke care and community services, to link effectively to specialist services, and to improve the lives of stroke survivors.

5. Aims and Objectives

5.1. Aim

To evaluate the clinical and cost effectiveness of a novel model of primary care for stroke survivors living in the community.

5.2. Objectives

- To assess the clinical effectiveness of the new model of primary care for stroke survivors compared with standard care. The primary endpoint for the trial will be two sub-scales (emotion and handicap) of the Stroke Impact Scale (SIS v3.0)[13] as co-primary outcomes at 12 months (adjusted for baseline).
- To assess the long-term cost effectiveness of the new model of primary care for stroke survivors compared with standard care.

6. Methods

6.1. Design

The IPCAS Trial is a two-arm cluster randomised controlled trial with general practices as the unit of randomisation.

6.2. Trial Population

People with a history of stroke on the registers of GP practices in the East of England and the East Midlands will be invited to take part. We will aim to recruit approximately 920 people registered with 46 general practices. We will aim to evaluate the primary care model in contrasting catchment areas to reflect the different demographic characteristics of the general population.

6.2.1. Inclusion Criteria

- On practice register with a history of stroke
- Able to provide written informed consent (with or without the help of a carer)
- Age 18 years or older

6.2.2. Exclusion Criteria

- Patients on the palliative care register
- Living in a nursing home

6.3. Recruitment

6.3.1. GP Practices

Practices from the East of England and the East Midlands will be recruited in collaboration with the local Clinical Research Networks (CRNs), who will identify interested practices representing a range of urban/rural and different socio-economic status. We will target Practices with a stroke register comprising a minimum of 100

patients, to ensure that we reach our cluster target of 16 – 24 participants (see appendix B).

6.3.2. Stroke Survivors

Prior to randomisation at practice level (see below) electronic searches of the clinical computer system will generate a list of people on the register with a history of stroke who meet the inclusion criteria for the study.

Potentially eligible participants will be sent an invitation to take part in the study. The invitation pack will contain an invite cover letter, the Patient Information Sheet (PIS), a consent form, a questionnaire containing the primary outcome, and instructions to return the consent form and questionnaire to the researchers in a pre-paid envelope (provided). If no response is received within 2 weeks from the initial mail-out, the Practice will send a reminder. If no response is received after a further 4 weeks, no further attempts at contact will be made.

6.4. Randomisation

Once all invitation letters and reminders have been sent out to patients in a practice, the GP practice will be randomised to intervention or control (ratio of 1:1). Randomisation will be performed using a stratified, random permuted block design. The stratification factor will be GP practice size, split into two levels: ≤10,500 and >10,500 patients.

Randomisation will be performed centrally by the study team who will then inform each practice about their allocation.

7. Interventions

7.1. Intervention Arm

The new model of care incorporates a multi-factorial package of service aimed at providing a review of patient needs, facilitated self-management of longer-term stroke care needs for survivors and their carers, optimised communication between patients and health and social care services, enhanced communication pathways between the different care services, and increased awareness of and access to national and local community and charity provided services.

Specifically, the intervention will comprise the following components:

1. Structured review of patient needs;
2. A self-management programme (Managing Life After stroke, MLAS) for stroke survivors and their carers;
3. A direct point of contact for stroke survivors and carers at the GP surgery;
4. Enhanced Communication Pathways between General Practice staff and specialist services;
5. Service mapping for stroke related needs;
6. Training for General Practice staff.

7.1.1. Structured Review of Patient Needs

A structured review will be performed by a Practice nurse or other appropriately trained member of the Practice team as part of the regular annual review recommended by current guidelines[10]. As part of the review, a 15-item checklist of post-stroke needs (see appendix A) will be sent by the Practice to the stroke survivor in advance. The survivor will be asked to tick all needs which apply to them, and to bring this with them to the appointment. At the review, the patient will be asked which of the ticked items is the most important and they would like to discuss most. Dependent upon time availability at the review, Practice staff will discuss and address up to three key needs identified by the survivor. A blank checklist will also be available in the Practice if needed.

The review will last approximately 20-30 minutes, and include a routine physical check-up based on QoF recommendations (e.g. blood pressure, record of immunisation, and medication review) followed by the discussion of up to three post-stroke needs as identified by the stroke survivor. The expected outcome of the review is an action plan agreed with the stroke survivor on how to address each of the needs identified in the review. A record of the checklist and the agreed action plan (e.g. referrals, agreed actions to be undertaken by the patient) will be kept in the patient records.

The patient will be provided with an information leaflet about the MLAS programme, with instructions on how to get further information from the MLAS team and how to access the programme.

7.1.2. Self-management Programme (MLAS)

“My Life After Stroke” (MLAS) is a self-management programme for stroke survivors and their carers (where appropriate) consisting of an initial individual preparatory session, 4 weekly group-based sessions, and a final individual session 4 weeks after the last group session. Group sessions cover topics under the categories of stroke prevention, information, social needs and psychological issues. All sessions will be held at a suitable, accessible, local community facility.

Individual appointments will last approximately 30-45 minutes. The introductory appointment aims to explore the stroke survivor’s needs to support their active engagement in the group sessions and introduce them to key components of the programme. The final follow-up appointment will aim to address any remaining signposting that is needed, discuss goals, achievements and plans following the programme.

Group sessions will consist of stroke survivors and their carers (where relevant). Sessions will last approximately 2½ hours (including breaks). Participants will be given a handbook containing educational content and further information based on the session topics. Sessions will cover a variety of topics and include risk factors for stroke and prevention, psychological well-being, problem solving and goal setting.

The programme will be run by two trained facilitators who may be health care professionals or lay people i.e. from the voluntary sector (e.g. Stroke Association workers) with an interest/experience of stroke. Facilitators will be trained before delivery of the programmes and supported by the research team.

7.1.3. Direct Point of Contact

A direct point of contact will be provided for stroke survivors and their carers at the GP surgery. We operationalise the direct point of contact as: (1) signposting to further specialist or community services, and (2) providing advice for stroke specific issues, brief support over the phone, arranging follow-up appointments and, if appropriate, case management. A single or several Practice nurses or other appropriately trained members of the Practice team (depending on Practice and staff's preference) will assume the role. Stroke survivors and carers will be able to call the Practice and indicate that they would like to talk to someone about their stroke (or if they are a carer, the stroke of their family member/friend). If unavailable at the time, a designated member of the care team will call them back. We will provide the Practice with a comprehensive resource of local services based on our service mapping work (described below). The staff member conducting the review will explain to the patient how to make contact with the Practice with a stroke related issue at the end of the enhanced annual review.

7.1.4. Enhanced Communication Pathways

We will arrange an initial meeting between primary care staff from several practices and specialist staff (hospital and community) to agree how to facilitate primary/secondary care communication going forward. Practice staff will be encouraged to attend additional training/ meetings organised by the specialist services, and given direct contact details for informal communication. Video recordings of local specialist(s) describing their service, the type of patients normally referred to the service, and ways of contacting the service will be made available to all general practice staff.

7.1.5. Service Mapping

To address the information need regarding local services for stroke related problems, we will catalogue stroke (and other relevant) services in participating localities, including information on how to access them. This information and training on how best to use it will be provided to the relevant Practice staff. Set-up of the resource in the best format will be in collaboration with the designated IT or administrative staff at the Practice.

7.1.6. Training for General Practice Staff

Training for Practice staff involved in structured stroke reviews will include an overview of stroke and stroke related long-term needs, followed by discussion of vignettes based on items from the stroke review checklist. Practice staff will suggest and discuss with the research team the most suitable course of action in each situation.

The list of key health and social services available in the local area will be provided, and Practice staff will be familiarised with the service mapping resource that will be made available to them at the Practice. The outcomes of the structured review will be recorded on a template in the patient records.

We will discuss with the practice how best to embed the direct point of contact role within the current Practice operations.

7.2. Control Arm

The control arm will consist of usual care administered by the practice.

8. Outcomes

8.1. Primary Outcome

The primary endpoint for the trial will be two sub-scales (emotion and handicap) of the Stroke Impact Scale (SIS v3.0)[13] as co-primary outcomes at 12 months (adjusted for baseline) after entry into the trial.

8.2. Secondary Outcomes

To be collected at baseline, 6 and 12 months comprise:

- SIS Short Form[13]
- EuroQol EQ-5D-5L[14]
- ICEpop CAPability measure for Adults (ICECAP-A)[15]
- * Southampton Stroke Self-management questionnaire (SSSQ)[16]
- * Health Literacy Questionnaire (HLQ)[17]

* Only collected at 12 months follow-up.

9. Data Collection

9.1. Baseline Data Collection

The primary outcome data will be collected via postal questionnaire at the time of invite to the study prior to Practice randomisation. Secondary outcome data (SIS Short Form, EuroQol EQ-5D-5L, and ICEpop CAPability measure for Adults (ICECAP-A)) will also be collected by postal questionnaire after randomisation. Non-responders to the secondary outcome questionnaire will be followed-up by telephone. Where a patient has difficulty completing a questionnaire because of physical or communication difficulties, they will be encouraged to seek the help of a carer.

Demographic data including age, ethnicity, gender, time since stroke, partial post code, and co-morbidity and medication use (prescription & 'Over the Counter', OTC) will also be collected at baseline.

9.2. Follow-up Data Collection

Follow-up via postal questionnaire will take place at six months after entry into the trial. These will include all of the baseline instruments. Non-responders will be followed up by telephone.

Follow-up at twelve months will comprise a combination of postal and telephone administered questionnaires including all of the baseline instruments plus the Southampton Stroke Self-management questionnaire (SSSQ) and the Health Literacy Questionnaire (HLQ). Non-responders to the postal questionnaires will be

followed up by telephone. Again, where a patient has difficulty completing a questionnaire because of physical or communication difficulties, they will be encouraged to seek the help of a carer.

A review of general practice notes will also be conducted. Data extracted will include number and nature of primary care visits, secondary care inpatient and outpatient visits, investigations, medications and use of social services.

10. Statistical Methods and Analysis

10.1. Sample size

With 23 clusters per arm and an average of 20 patients per cluster, assuming an intra-class correlation of 0.03, a typical coefficient of variation of the cluster size of 0.65[18], and 2.5% significance (adjusted to 2.5% because of the use of two co-primary outcomes), we would be able to detect an effect size of 0.33 with at least 90% power on the co-primary outcomes (emotion and handicap sub-scales of the Stroke Impact Scale (SIS v3.0[13])). The sample size calculation has been inflated to allow for a rate of 20% loss to follow-up for patients within clusters. Loss to follow-up of entire clusters is not anticipated.

The conservative estimate of 20 patients per practice is drawn from our own pilot data (unpublished) and our experiences of running previous trials in this population[19,20,21]. A typical practice with a list size of between 7,000 to 10,000 will have approximately 100 - 150 patients on the stroke register[4]. We anticipate that the electronic search applying the exclusion criteria will eliminate around 40% of these (based on our pilot study) leaving 60 – 90 eligible patients per practice, of which about 30% will agree to take part (18 – 27 per practice). This will yield between 16 – 24 participants per practice. For further information see Anticipated Patient Recruitment Flowchart in Appendix B.

10.2. Analysis of Primary Outcome

We will use intention to treat (ITT) methods for the analysis of the primary end-points. A mixed effects model will be used to model each of the co-primary outcomes with a cluster random effect and fixed effects for the intervention and covariates that might potentially confound the relationship. Distributional assumptions will be assessed graphically by residual q-q plots and residual by fitted value plots. To handle the co-primary outcomes, 97.5% confidence intervals will be reported for the two primary treatment effects which are equivalent to having the Bonferonni correction on the planned 5% significance level for a single endpoint.

The missing data will be analysed under the assumptions of missing completely at random and missing at random. Multiple imputation will be used to impute missing outcome data and the various potential predictors of missingness will be included in the imputation model. Additionally, a sensitivity analysis may be used to investigate non-ignorable missingness mechanisms and their influence on the results.

The full details of the statistical analysis will be specified in the statistical analysis plan (SAP).

10.3. Economic evaluation

The long-term cost-effectiveness (cost-utility) of the new system of care (intervention package) compared with usual care will be determined in a within-trial economic evaluation.

Data will be collected on resource use implications of the intervention (including training), primary care visits, secondary care inpatient and outpatient visits, investigations, medications and use of social services, via electronic primary care records and patient questionnaires. Data on patient and carer-incurred costs will also be collected to allow analysis from a broader societal perspective. Data collection will be undertaken within the trial to determine the time taken to deliver the structured review, and any additional resources required. Attendance at the individual and group MLAS sessions will also be recorded for every participant, and each session will be costed, taking into account staff time, any consumables and use of the venue. Standard unit costs will be applied to health care resource use including NHS reference costs, the BNF for medications and Unit Costs for Health and Social Care (PSSRU).

The main outcomes of interest from the trial are quality of life (measured using EQ 5D-5L[14] at baseline and six and twelve months after attendance at review) and capability (using the ICECAP-A questionnaire[15]). Both measures will be scored using the appropriate values sets.

Initially, a cost-consequence analysis will be performed, to present a disaggregated analysis of all mean resource use and costs related to the intervention and usual care, health care, social care, patient/carer costs and EQ-5D-5L and ICECAP-A scores at all time points. Quality-adjusted life years (QALYs) will be calculated by the area-under-the-curve method using responses at all time points, and adjusted for baseline covariates including EQ-5D-5L score. Multiple imputation will be undertaken where there is missing cost and outcome data. An incremental cost-utility analysis will then be undertaken to determine the cost per QALY gained of the intervention compared with usual care. Base-case analyses will be conducted from an NHS/Personal Social Services perspective, with a sensitivity analysis from a societal perspective, taking into account broader costs and outcomes.

To explore uncertainties in the analyses, deterministic sensitivity analysis is proposed to test the robustness of the results when varying key assumptions (for example, length of time required to deliver the intervention). Probabilistic sensitivity analysis will be undertaken to incorporate the uncertainty around parameter values and quantify the overall decision uncertainty, with results presented as cost-effectiveness planes and cost-effectiveness acceptability curves.

11. Intervention fidelity

There will be both quantitative and qualitative assessment of the extent to which the intervention is implemented as planned. Our general approach to fidelity assurance is to use both real time practice data and real time informal feedback from the practice staff from regular telephone conversations, with visits where appropriate. These regular contacts will enable us to devise shared solutions to any fidelity issues.

11.1. Structured Review of Patient Needs

We will capture data relating to completion of the review checklist, development of action plans, and resolution of problems. A random sample (up to 10%) of the reviews will be audio-taped and assessed for fidelity. We will also ascertain whether the checklist continues to be used at the end of follow up (i.e. at twelve months).

We will regularly review the process and clinical data, and feedback to practice staff either in person or by telephone. We will ask practice staff whether they have encountered problems implementing the review service, and discuss the reasons for this (e.g. operational issues, staff capacity). Where implementation and intervention fidelity are a concern, we will ask the practice staff to reflect upon the specific actions or processes, and through negotiation develop a joint action plan to address these issues. This “real-time” feedback to practice staff will ensure that the model of care is delivered consistently in accordance with the implementation plan across the duration of the practice involvement.

11.2. Self-management Programme (MLAS)

We aim to assess both facilitator fidelity (do the facilitators deliver the intervention as trained?) and participant receipt (does the participant understand the information and acquire the skills?). This will be achieved using tools adapted from previous educational programmes for long term conditions developed by the team at Leicester Diabetes Centre. Direct observation of delivery of a sample (up to 10%) of the sessions will be carried out by observers trained in the use of a structured observation tool and an observation sheet. The observers will code the degree of participant/facilitator interaction and measure delivery of content, facilitator behaviour and facilitation skills. Participant receipt measures will include specific determinants of self-management (e.g. participant engagement in writing their own action plan; cognitive strategies and behavioural skills used). A case report form (CRF) capturing delivery of the modular programme and facilitators’ behaviours will be completed on a sample of MLAS sessions. The CRF will combine an ‘adherence measure’ to capture delivery (mode of delivery, dose, duration, content), use of resources (materials/activities) and a structured observation tool to assess facilitator delivery of Behaviour Change Techniques. Methods may incorporate remote observation (e.g. through video) if this is judged to be appropriate and feasible.

Feedback on the observed sessions will be provided to the facilitators on an on-going basis, and will be followed-up with further observation and top-up training if appropriate. We will provide a detailed description of any modifications/adaptations to the intervention as the study progresses.

11.3. Direct Point of Contact

The extent of use of this system will be captured during the regular feedback sessions with practice staff. We will capture from the medical records the proportion and total number of practice contacts that participants have with the named contact(s) and ask participants during post-review interviews whether they are aware of the direct contact system.

If necessary we will amend our information and training of practice staff to ensure that all participants are better informed.

11.4. Optimised Communication

We will audiotape the initial meeting that takes place and analyse the nature of the interactions, and the extent to which the meeting follows the study plan. The practice staff will log any contacts that they have with the specialist services, recording the contact as formal or informal communication, whether the advice received was helpful, and any actions taken as a result of the contact (e.g. referral, diagnostic tests or change of management/medication). Staff will also log instances when they had tried, but been unable to contact specialist services for advice in a timely manner.

We will analyse the logs on a regular basis, and where problems with contact occur we will confirm contact details and mechanism for getting in contact.

11.5. Service Mapping

This will be monitored through the regular feedback sessions with practice staff. We will look at how often the data is referred to, is it easy to access, whether the service being recommended was appropriate for the patient, and whether the service data is comprehensive i.e. does it contain all relevant sources or are there significant omissions.

If necessary, we will amend the format to allow easier access and searching of the data. Where significant omissions are found we will update our search to include new services.

12. Process evaluation

In both intervention and control practices, we will capture process data from the GP records to count the number of consultations, sub-divided into those related to stroke and those unrelated to stroke, and whether the consultation was with GP or practice nurse; prescriptions; and the number of referrals to secondary care. We will collect data on the background/speciality of the nurses performing reviews and of the facilitators conducting the MLAS courses, and how the direct point of contact was operationalised within each practice. Patient questionnaire at follow up will assess contact with other local services. To enable comparison of process between intervention and control practices, a sample of up to 10% of annual reviews in the control practices will be audiotaped. We will carry out semi-structured interviews with participants to explore experience of stroke care over the period of the study. We will also carry out semi-structured interviews with primary care professionals to explore attitudes to and experience of communication with specialists and confidence with

using referral pathways; reflections on the annual review; awareness of local services; strengths and weaknesses of current stroke services in the community.

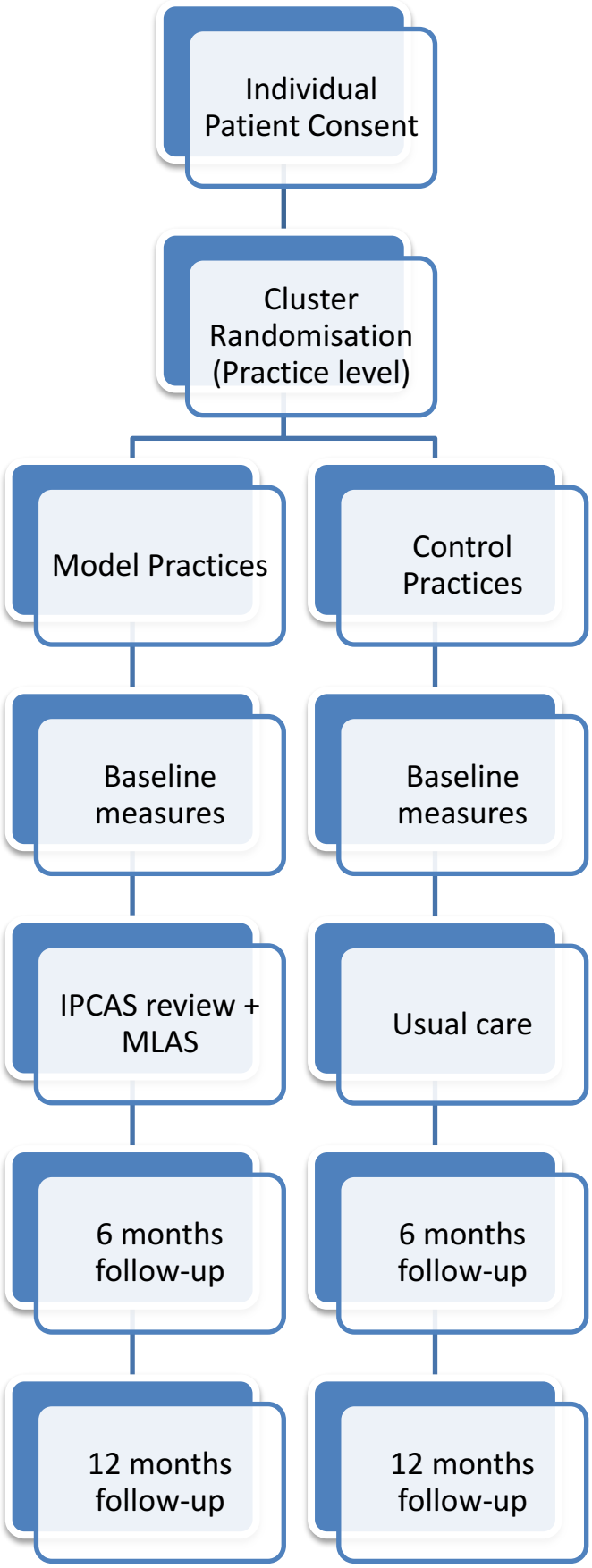
12.1. Patients

At the end of their study follow-up 25 participants (15 intervention; 10 control) will be recruited to take part in a semi-structured interview. Participants will be purposively selected to allow for a range of baseline characteristics and what aspects of the primary care model they had accessed. When participants are invited to take part they will be offered further information about the structure and content of the interview and given the chance to ask questions. Once the researchers have confirmed that a participant is still happy to be interviewed they will arrange for a member of the study team to visit them in their own home or at an alternative venue if they prefer. Participants will be consented by a member of the study team at the start of each interview.

12.2. Health Care Professionals

Up to 15 primary care professionals (10 intervention; 5 control) will be recruited to take part in a semi-structured interview at the end of study follow-up. Staff with be purposively selected to provide a range of trial roles and practice characteristics. The interview invitation with include information about the structure and content of the interview as well as data storage and confidentiality. Participants will be consented by a member of the study team at the start of each interview.

13. Flow Chart of Study



14. Timescale

See Gantt chart (appendix C)

15. Trial Management

Trial Sponsor: The Sponsor is responsible for initiation, management and financing of the trial. Sponsorship activities will be performed by NHS Cambridgeshire and Peterborough CCG and the University of Cambridge as detailed in the co-sponsorship agreement and sponsor letter. The nominated lead sponsor is the University of Cambridge.

Chief Investigator (CI): The CI (Professor Jonathan Mant) is the overall lead for the design, conduct, co-ordination and management of the trial. The CI has overall responsibility for the scientific quality and delivery of the trial.

Principal Investigator (PI): The IPCAS trial will be managed from the University of Cambridge. The Cambridge PI (Professor Jonathan Mant) will be responsible for the day to day leadership of the trial, ensuring the trial is delivered in line with this protocol.

Clinical Research Network (CRN): The study team will work with local CRNs in the East of England and the East Midlands to identify and recruit GP practices.

15.1 Monitoring

Oversight of the trial will fall to an independent committee fulfilling the combined roles of Trial Steering Committee (TSC) and Data Monitoring Committee (DMC). They will provide overall supervision of the conduct of the trial on behalf of the trial sponsor(s) in accordance with NIHR recommendations[22,23]. The committee will consider relevant factors in interim decision-making, such as recruitment rate and completion schedule, baseline comparability across treatment arms, data completeness and follow-up, safety profile and ethical issues.

Initially, the TSC/DMC will meet after the first 100 participants are recruited, then 6-monthly. This frequency may increase or decrease according to need.

15.2. Data Management

The full details of the data management will be specified in the data management plan (DMP).

15.2.1. Data Transfer

Data completed by participants, such as consent forms and questionnaires, will be returned to the study team via post. All relevant data collected at practice sites will be sent to the study team by trained and delegated practice staff via a secure transfer server (“https”). The study team may also make use of NHS.NET accounts as an alternative method of information sharing with practices, for example during the process of reporting and assessing Serious Adverse Events.

Data sharing between the study team members based at Cambridge and Leicester will occur through joint access to a Secure Data Hosting Service (see below) and a secure transfer server. Only appropriately trained and delegated members of the study team will have access to patient identifiable data.

15.2.2. Data Storage

Paper data (questionnaires, consent forms, reply slips and CRFs) will be stored in locked filing cabinets within a security card-protected building at the University of Cambridge, with access restricted to the study team.

Electronic data (including audio-recordings) will be stored on an ISO-27001 data security accredited Secure Data Hosting Service (SDHS) protected by a dual authentication (password-secured and personal security code secured) located on a firewall-protected virtual network (VLAN). Access to electronic study data is restricted to the study team by dual authentication and group permissions. Once stored centrally and checked, the data on audio and video recorders will be erased.

Personal identifiable data (participant contact details) will be archived for up to 3 years after completion of the trial and then destroyed. All anonymised data will be stored permanently and made available to bona fide researchers on a suitable repository only upon receipt of a valid data request and appropriate regulatory approval.

15.2.3. Data Protection & Patient Confidentiality

All investigators and trial site staff involved in this trial will comply with the requirements of the Data Protection Act 1998 with regards to the collection, storage, processing and disclosure of personal information.

The trial staff will ensure that the participants' anonymity is maintained. The participants will be identified by initials, DOB and a participant ID number on the CRF and Trial Management System Database. Consent forms will contain participant names. All documents will be stored securely and only accessible by trial staff and authorised personnel.

16. Withdrawals

The main ground for withdrawal from the trial is participant request. Participants may request this at any time. It is anticipated that the research team will seek to understand the participant's barriers to further trial participation and to address these where possible. In this instance, the researcher should ascertain whether the participant is still willing to undergo follow up, and if possible document the reason for withdrawal.

Participants also may be withdrawn if the study sponsor or regulatory authorities terminate the study prior to its planned end date.

17. Serious Adverse Events (SAEs)

It is not anticipated that the intervention sessions will result in any serious adverse events. However, each PI will report all SAEs not listed below to the CI within 24 hours of first notification. The Chief Investigator is responsible for ensuring the assessment of all SAEs for expectedness and relatedness is completed and the onward notification of all non-exempt SAEs to the Sponsor immediately but not more than 24 hours after first notification.

- Cardiovascular (CV) death e.g. fatal myocardial infarction [MI] / cerebrovascular accident [CVA] / congestive heart failure [CHF] / arrhythmia, cardiac arrest, death following CV intervention
- Non-fatal stroke/TIA
- Non-fatal MI
- Acute coronary syndrome
- CHF requiring hospitalisation
- Unstable angina requiring hospitalisation
- Any hospitalisation due to cardiovascular events
- Hospitalisation for any elective/pre-planned surgical procedure for pre-existing condition prior to trial enrolment
- Atrial fibrillation/Atrial flutter
- Ventricular fibrillation/tachycardia requiring intervention
- Deep Vein Thrombosis (DVT)
- Pulmonary embolism
- Percutaneous Coronary Intervention (PCI) – (including non-serious events)
- Accelerated or malignant hypertension/hypertensive urgency

The sponsor will keep detailed records of all SAEs reported to them by the trial team.

18. Ethical Considerations

18.1. Participant Recruitment

Patients will be initially contacted by the Practice and their identity only disclosed to the researchers once they return the consent form and primary outcome questionnaire to the study team. We assume that ability to complete the questionnaire and respond to the invitation letter implies capacity, whether provided with or without the help of a carer/guardian.

18.2. Inclusion & Exclusion Criteria

We designed inclusion criteria with the aim of broadest reach to maximise inclusivity. For example, we included survivors regardless of the severity of their stroke. However, due to the nature of research and the service offered, we recognise that certain groups of patients will most likely be excluded. For example, patients in living in nursing care homes may not be able to benefit from the components offered (e.g. referrals to other services). We therefore chose to exclude these groups.

18.3. Utilisation of the Model

The structured review will confer minimal additional burden to participants as it will be performed as part of the annual review. Patients may bring an informal caregiver to the review.

The MLAS service and direct point of contact is offered as an additional, opt-in service component which patients may use at their discretion.

18.4. Questionnaires

All the questionnaires are finding out complementary information of importance to evaluating the impact of the model. A full set of questionnaires should take no longer than 10 - 30 minutes to fill in during baseline and 45 minutes at follow-up. Patients are clearly informed in the Participant Information Sheet (PIS) about the flexibility of filling in the questionnaires in multiple sittings.

Information disclosed in the questionnaires will be kept confidential, anonymised and stored separately from patient identifiable data (PID; see data storage and confidentiality). The questionnaires (SIS, EQ-5D-5L, ICECAP-A, SSSQ, HLQ) do not include sensitive screening information and have been either used in large stroke trials or observational studies which included stroke patients.

18.5. Consent

The patient information sheet explains that their General Practice is taking part in a research study evaluating different models of care for stroke. It is entirely up to the patient to decide whether or not they wish to take part in the study. We are seeking consent to send them some questionnaires, possibly contact them by phone, and review their medical records. Patients will be sent a consent form by post (with an opportunity to contact the research team if they have any questions about the study).

19. Patient and Public Involvement (PPI)

Patient representatives were involved in the initial conception of the programme prior to funding submission. This included a patient representative attending the initial writing group plenary and two public workshops with stroke survivors and their carers.

Stroke patients and their carers were involved throughout the subsequent qualitative development work through interviews (n=36) and focus groups (n=19). Likewise, healthcare professionals including primary care representatives were engaged in 9 focus groups. This qualitative work was used to understand the current experience of primary care for stroke survivors and their carers and inform model components such as the structured review, checklist of stroke needs, and direct point of contact. In addition, we have consulted several local stroke support groups (Bedford, Bradford, Cambridge and London) during the development of the model. A multidisciplinary team of clinicians involved in stroke care, including a patient representative, has been regularly consulted on the model throughout the developmental stages.

Continued PPI will be achieved through the Trial Steering Committee which includes a patient representative. Some PPI members have also expressed an interest in

becoming facilitators for the “My Life After Stroke” course which we will seek to achieve.

20. Approvals

Favourable ethical opinion for the research will be sought via Health Research Authority (HRA) prior to the recruitment of participants commencing at any NHS site.

Any subsequent amendments to study documentation, along with safety, annual progress and final study reports will be submitted to R&D and REC for information and/or approval, as required.

21. Dissemination

Dissemination will be via peer-reviewed journals and presentation at relevant conferences and local stroke groups. Participants will also receive a summary copy of the results, if they so wish.

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Appendix A

Stroke Review Checklist

This is a list of problems some people have after a stroke. This is to help you **think** about problems **you** may be having.

Under each heading there are some **examples**. This list does not cover everything. If you have a problem that is not listed here please write it under **number 15**.

Please tick (✓) all the areas you have difficulty with.

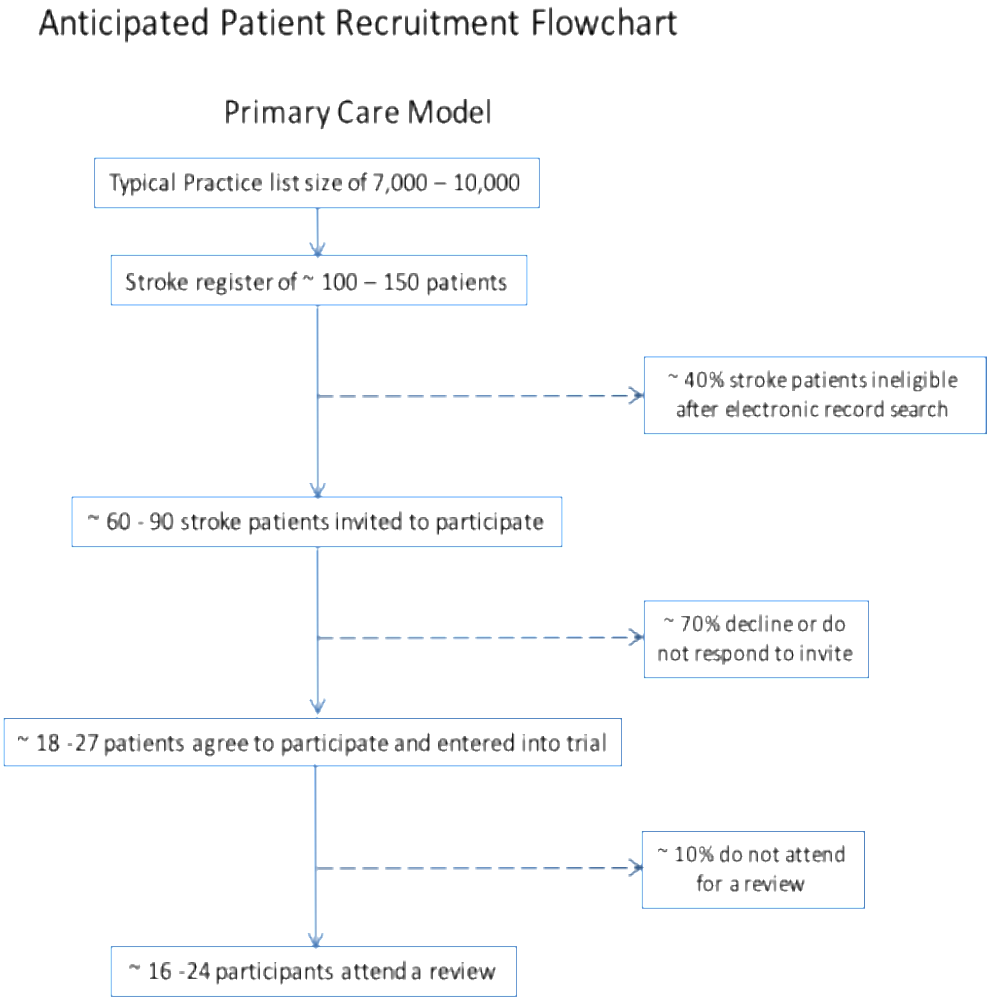
Please bring this completed checklist to your stroke review.

	Tick here
1. Secondary Prevention	
I need advice on changes to lifestyle or medications for preventing another stroke.	
2. Activities of Daily Living (ADL)	
▪ I have difficulty dressing, washing and/or bathing. ▪ I have difficulty preparing hot drinks and/or meals. ▪ I have difficulty getting outside.	
3. Mobility	
▪ I am finding it difficult to walk. ▪ I am finding it difficult to move safely around the house.	
4. Pain	
▪ I experience physical/muscular pain. ▪ I have headaches.	
5. Stiffness	
I find that my arms, hands, and/or legs are stiff.	
6. Incontinence	
I am having a problem controlling my bladder or bowels.	

	Tick here
7. Communication ▪ I am finding it difficult to understand / communicate with others. ▪ I have problems with speech, word finding or talking to others. ▪ I lack confidence when talking to others either in person or over the phone.	
8. Mood ▪ I feel anxious or depressed. ▪ I feel that my personality since stroke has changed.	
9. Cognition I find it difficult to think, concentrate, or remember things.	
10. Relationships with Family My personal relationships with my family have become difficult or stressed.	
11. Fatigue ▪ I feel tired most of the time or I get easily tired. ▪ I find it difficult to concentrate and do things.	
12. Intimate relationships Since my stroke I have problems with sex.	
13. Work I am having problems at work or I would like support and advice on returning to work.	
14. Social activities I find it difficult to take part in hobbies or leisure activities.	

15. Have you noticed anything else that you are concerned about?

Appendix B


Anticipated Patient Recruitment Flowchart
Primary Care Model
Typical Practice list size of 7,000 – 10,000
Stroke register of ~ 100 – 150 patients
~ 40% stroke patients ineligible after electronic record search
~ 60 - 90 stroke patients invited to participate
~ 70% decline or do not respond to invite
~ 18 -27 patients agree to participate and entered into trial
~ 10% do not attend for a review
~ 16 -24 participants attend a review

Appendix C

RCT Gantt Chart - Developing Primary Care Services for Stroke Survivors																																					
Workstream 3: Evaluation of the interventions	**Starting 01/04/2017**												**Year 2 (from 01/04/2018)**												**Year 3 (from 01/04/2019)**											
Summary of Activities	Apr 17			Jul 17			Oct 17			Jan 18			Apr 18			Jul 18			Oct 18			Jan 19			Apr 19			Jul 19			Oct 19			Jan 20		
Set up RCTs (REC, R&D approvals)																																					
Recruit Practices and train staff to deliver interventions																																					
Recruitment of participants																																					
Delivery of interventions																																					
6 Months follow-up of participants (patients)																																					
12 months follow-up of participants (patients)																																					
Data analysis, write-up & dissemination of findings																																					