Study Protocol

Project Title: Taking Charge after COVID-19 a feasibility study: Can outcomes be improved for people with 'Long COVID' using a psychologically informed rehabilitation approach?

Project team

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What are the research activities this person will be responsible for: Project management, recruitment, assessment and intervention as required, analysis and reporting Does this person have a current Good Clinical Practice certificate? ☒ Yes / ☐ No	
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What is the position of this person on the research project? Associate Investigator

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Resources

What resources are necessary for the project to be conducted? Therapist time to recruit, assess and provide intervention for participants in the study. We will use University computer hardware and software for the data analysis of the study.
Please declare what funding support and amount is being sought or has been secured for this project**:** Funding of $79,374 has been granted in the 2022 SALHN Enquiry Grant Round to undertake this project.

Project design

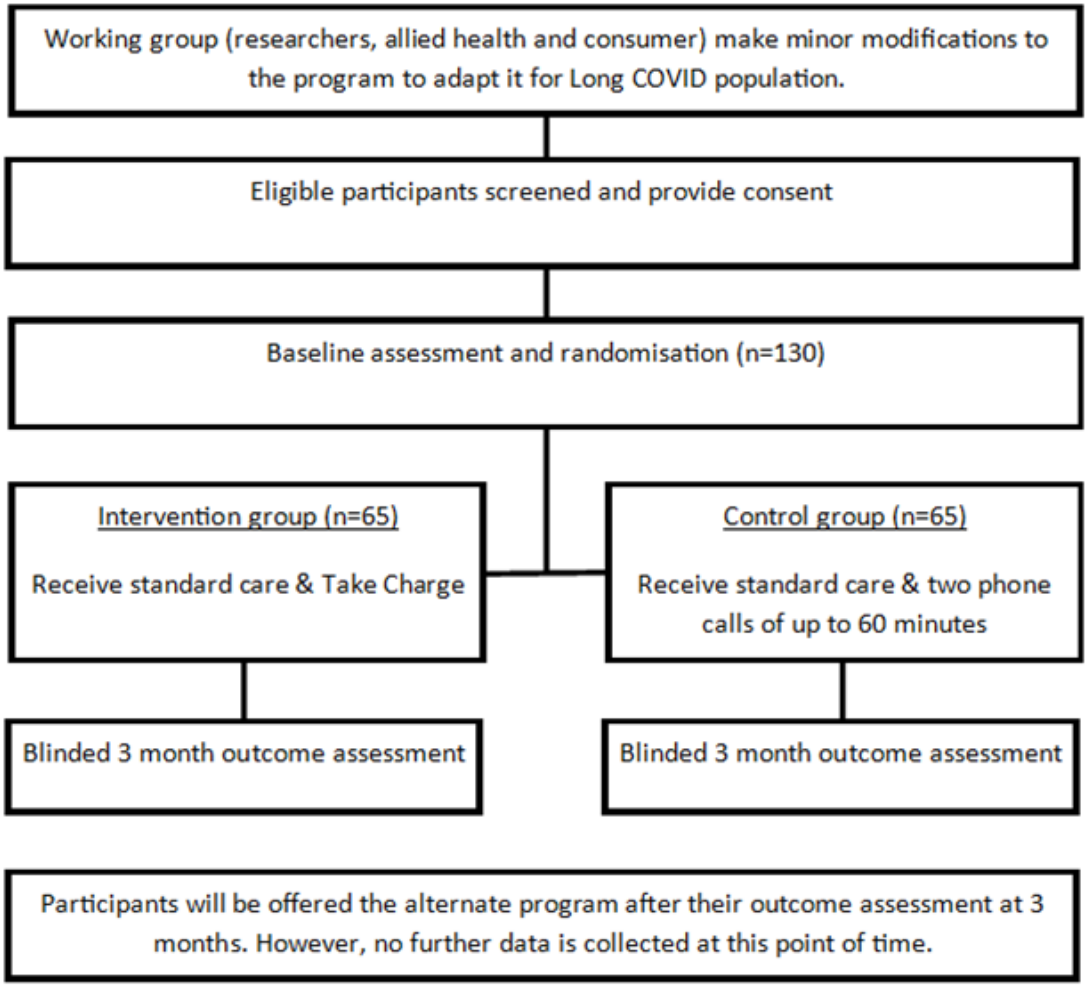
Introduction The ‘Take Charge’ intervention is a short (2 sessions) therapeutic intervention which encourages people with chronic health conditions to consider their values and what is important to them and

how they will maximise their quality of life in the coming months. The 'Take Charge' intervention was tested in two randomised controlled trials in New Zealand and was shown to be effective in improving health related quality of life when used with people after stroke.

We are proposing to adapt the 'Take Charge' intervention with minor modifications and test the intervention with people with Long COVID.

The 'Take Charge' intervention has been developed based on existing evidence and is underpinned by psychological theory relating to the benefits of 'patient activation'. As we are proposing to evaluate the 'Take Charge' program in a new population (individuals with Long COVID) work is required to evaluate its efficacy in this group. An overview of the study design is presented in Figure 1.

Figure 1: Overview of trial design



Background

The population of interest:

The SARS CoV-2 (COVID-19) pandemic has affected millions of people globally. In Australia alone there have been over 10 million cases reported and over 14,000 deaths to date (1). The majority of people who develop COVID-19 fully recover however, evidence suggests approximately 10% - 20% experience a variety of mid- and long-term effects after they recover from their initial illness (2). These long-term effects are collectively known as post COVID-19 condition, also commonly known as Long COVID (and hereafter referred to as Long COVID) and have a profound impact on the quality of life of those affected. Long COVID is defined as the illness that occurs in people who have a history of probable or confirmed COVID-19 infection; usually within three months from the onset of COVID-19, with symptoms and effects that last for at least two months and cannot be explained by an alternative diagnosis (3). Using a conservative estimate of 10% prevalence in persons who have had a confirmed or suspected diagnosis of COVID-19 we estimate more than 1 million Australians to be living with Long COVID.

While more than 200 symptoms across 10 organ systems have been reported the most common are fatigue, breathlessness and cognitive dysfunction and often are significant enough to impact activities of daily living (2, 4). There does not appear to be a relationship between the initial severity of COVID-19 infection and the likelihood of developing Long COVID and hence patients of all demographics and baselines are at risk (2, 4). Symptoms may persist from the initial illness or develop after initial recovery and may fluctuate or relapse over time (5).

Evidence shows a young mean age of 46.4 years and hence the work force has been significantly impacted (5). A large study of 3,762 participants reported 1,700 (45.2%) Long COVID respondents required a reduced work schedule and 22.3% were completely unable to work due to the severity of their symptoms (4). Australian statistics indicate approximately 31,000 employees required sick leave each day due to Long COVID with an economic cost of $100 million weekly and $5.2billion yearly (6). This has led to calls for a parliamentary inquiry into Long COVID (6). Evidence in chronic back pain literature indicates that likelihood of returning to work after several months reduces significantly and that psychological and psychosocial factor contribute to this (7).

Current gaps in research and health services for people with Long COVID: With no clear pharmacological or non-pharmacological evidence-based treatment currently available, the World Health Organisation recommends holistic care, including rehabilitation (2). Additionally, the National Institute for Health and Care Excellence's (NICE) recommend advice and information on self-management to people with Long COVID. However, there is no consensus upon self-management strategy, approach, or underpinning rationale on how to provide this (8). There is a significant risk that individuals with Long COVID will continue to experience debilitating symptoms and remain out from the workforce and hence it is imperative we focus our efforts on investigating interventions that may improve outcomes for this cohort.

Aims of this research: We are proposing to test the feasibility of an intervention which promotes hope, activity and participation and differs vastly from current practice in which people receive brief

advice only about lifestyle changes. 'Take Charge' is an evidence-based psychologically informed rehabilitation approach for a patient centred holistic strategy (9, 10). It is designed to de-medicalise a condition, improve intrinsic motivation and foster the patient to 'Take Charge' of their own recovery. Few interventions have been able to achieve this or have required time intensive programs and extensive training which 'Take Charge' does not. Unlike traditional self-management programs that focus on symptom management 'Take Charge' aims to shift the focus away from the disease and symptoms and enable the individual to focus on their sense of purpose, personal identity and hopes for the future (9, 11). The program is undertaken in two sessions of up to 60 minutes with a facilitator who is trained in the approach and works to ensure all ideas are generated by the person or their family without the facilitator's directions. The facilitator assists the individual to break down their aspirations into doable steps and identify key supports utilising an illustrated booklet (9-11). Components of the sessions include: 1) a non-directed exploration of what aspects of life and which people were most important for the person, 2) hopes and fears for the future and 3) an individualised assessment of areas where they could make progress and set personal goals, i.e. self-directed rehabilitation. The assessment is documented by the participant in the booklet, using headings such as: physical, social, emotional, information needs, financial, and health promotion.

Individuals can add to, or amend, the booklet at any time. This leads to improvements in the person's sense of purpose, mastery and connectedness with others and is grounded in well-established evidence including the Self Determination Theory which proposes intrinsic motivation composed of purpose, autonomy, mastery and connectedness with others is necessary for successful outcomes (8-10). The intervention has had significant success in two randomised controlled trials recruiting a total of 572 stroke patients where it was shown to improve quality of life, reduce carer strain and increase independence up to 12 months post intervention (9, 11). The intervention is brief, low cost and requires minimal training and is able to be delivered face to face or via tele-health (12).

Hypothesis - We hypothesise that people who receive the 'Take Charge' program (a short, early, patient activation intervention) will have improved medical outcomes (e.g., COVID-19 Yorkshire Rehabilitation Scale, Short Form 36 and other scales), as well as increased rates of return to work or working hours. We anticipate that patients will report higher levels of quality of life, higher levels of hope and increased levels of independence at 3, 6 and 12 months after receiving intervention than those who are offered standard advice and care for Long COVID. We hypothesise that the intervention will be acceptable and feasible to provide to patients with Long COVID.

Aims – This study aims to assess whether the 'Take Charge' intervention is feasible, acceptable, translatable and effective in the Long COVID patient population in improving symptoms and quality of life. More broadly, the study aims to contribute to the current paucity and urgently needed information on treatment strategies for people with Long COVID.

Objectives - Our objectives are to:

1) Adapt the 'Take Charge' program for people Long COVID. 2) Determine the outcomes for people who have received the program (health related quality of life,, function in daily tasks and Long COVID symptoms) 3) Understand the experience of receiving the program from the perspective of the person and/or family members involved and learn of any further suggestions for refinement 4) Evaluate the intervention's feasibility for a larger scale research and long term implementation into clinical practice
Expected outcomes – We anticipate obtaining information about what proportion of people are interested in this type of program, whether people report improvements in outcomes after participation and whether the measures and treatment of the control group are feasible and appropriate in practice.
Rationale / justification - At present, Southern Adelaide Local Health Network (and many other) Long COVID services do not have any robust evidence-based interventions to offer people with Long COVID. This is as an area of significant need given the debilitating impact of Long COVID on Australians of all ages but particularly on younger working age patients (mean age 46.3 years) and hence on the health services and the economy (4). If the 'Take Charge' intervention is as successful as it has been in the stroke cohort it will have a dramatic impact in improving symptoms, quality of life, increased working hours and reducing economic burden.
Literature review: There are currently no effective pharmacological or non-pharmacological evidence-based treatment available for people with Long COVID. Many Australian health units, including the Southern Adelaide Local Health Network, have opened Long COVID outpatient clinics to address this health concern. The Southern Adelaide Local Health Network (SALHN) clinic is led by the rehabilitation and respiratory services with collaboration from psychiatry, nursing, pharmacy and physiotherapy in line with the World Health Organization's recommendations. The clinic commenced in March 2022, it has received 160 referrals, 126 patients have been reviewed to date with a significant waiting list of 6 months reflective of the service demand. The median age of patients in our clinic is 48 years and 70% female and is consistent with the literature (3). The majority (71%) of patients reviewed were in paid employment prior to COVID-19 infection with 42% reporting they needed to reduce or cease work due to Long COVID. Our group has recently adapted the program for people with Mild Cognitive Impairment with success (trial currently in progress). However, to date 'Take Charge' has not been investigated in people with Long COVID and this remains an area of unexplored promise.
Research project setting – Southern Adelaide Local Health Network Long COVID outpatient clinic at Flinders Medical Centre.
Methodological approach –

We will conduct a hybrid trial to examine implementation and efficacy outcomes of the study in which we compare two active forms of treatment in a pilot randomised controlled trial. Comparative effectiveness trials are important for decision making as they test new innovations against widely accepted models of care and are therefore highly relevant for clinicians, guideline developers and decision makers. An overview of the trial design in presented in Figure 1. We will employ a health professional who is blind to allocation to complete the outcome assessments. We will register the trial with the Australian New Zealand Clinical Trial Registry and will publish our protocol ahead of time ensuring transparency and avoiding selective reporting.

Consumer and Community engagement – We have invited a consumer representative Debrah Jaggard to join our investigating team. She has been involved in all steps of the research project to date and has contributed to the grant application and study design. She will continue to be a crucial part of the project and will be involved in further governance, study design, conduct, interpretation of findings and dissemination.

All patients enrolled will receive the outcome measures listed below at baseline and at 3 months.

The baseline measures will be completed prior to randomisation and the 3 month physical assessment will be performed by a researcher blinded to allocation. At 6 and 12 months the participant will be sent only the self-directed outcome measures (except Likert Scale). Participants will be required to complete baseline, 3 and 6 month data to be considered as having met the study requirements.12 month measures will be sent out but are optional acknowledging that participants may have taken up the offer of the alternate intervention between 6-12 months.

The following outcome measures have been selected with consideration of the Post COVD-19 Condition Core Outcome Set study's how to measure consensus process (13).

<u>Existing measures included in the study</u>

- Collection of demographic data including age, sex, employment, comorbidities and hospitalisation
- Baseline investigations including postural blood pressure and heart rate, temperature, weight and height
- Hand grip strength
- 6 minute walk test
- 1 minute sit to stand test
- Modified COVID-19 Yorkshire Rehabilitation Scale (17 items)
- Generalised Anxiety Disorder Assessment GAD-7 (7 items)
- Modified Medical Research Council (MMRC) Dyspnoea Scale (1 item)
- Patient Health Questionaire-9 PHQ-9 (10 items)

<u>Additional measures for this study</u>

- Recovery scale for COVID-19 (1 item)
- Medical Outcomes Study Short Form 36 (36 items)

- Work Productivity and Activity Impairment Questionnaire (6 items)
- Fatigue severity scale (10 items)
- General Self Efficacy Scale (10 items)
- Survey of work status by collecting data on 3 stages of employment rates and work hours
    - Pre COVID-19 infection, (2) at time of recruitment and (3) at 3 month follow up. Work hours will be defined as a proportion of hours against a standard working week of 38 hours per week, 7.6 hours per day as well as days worked in the past month. We will also separate the role of student, volunteer and paid worker to report on employment and estimate economic impact.
- Data on medications being taken during trial participation, referrals from the Long COVID clinic appointments and participation in allied health therapies within the Long COVID clinic
- Likert Scale Survey's regarding acceptability of the interventions provided (2 items at baseline assessment, 4 questions at end outcome measures)

Qualitative data collection:

- We will also conduct interviews with ten patients in the experimental intervention group and 5 patients in the control intervention group to understand their experience of receiving the program.

- Data will be audio recorded, professionally transcribed and coded in order to categorise and present key themes.

The primary outcome measures for the study will be:

- Modified COVID-19 Yorkshire Rehabilitation Scale (17 items)
- Recovery scale for COVID-19 (1 item)

Other measures will be considered secondary outcome measures for this study.

To address our feasibility objectives we will record the following data and evaluate based on the following criteria:

1. *Recruitment feasibility*

- We will log the number of potential participants provided with trial information (PICF)
- Those that met eligibility criteria and any reasons for exclusion
- Those that provided formal consent for the trial and reasons for non-participation

2. *Intervention and control acceptability*

- Analysis of qualitative interviews with participants
- Likert scale survey questions pertaining to intervention perceptions and acceptability
- Participation in study interventions including mode and length of sessions completed
- Study attrition and retention including number of participants that drop out and reason
- Interview clinicians involved in delivery of the Take Charge and Control Phone Call program

3. *Intervention effectiveness*

- Statistical analysis of the completion of a range of objective and subjective measures evaluating changes to symptoms, physical measures and quality of life
- Simple economics evaluation such as a cost benefit analysis or quality of life years adjusted (QALY) calculations.

4. Completion and feasibility of outcome measures (baseline and three months post-randomisation and mode of completion)

- Number of participants that complete baseline and end outcome measures
- Number of participants that completed the intake and outcome surveys within the specified time period (7 days maximum)
- Number of participants that complete only the primary outcome measures compared to all study measures

Project duration: 18 months

Participant selection and activities

How many participants will be selected for the study? 130

How will participants be recruited into the study?

Patients may be recruited to the trial by:

- Attendance at a Long COVID Clinic appointment: We will educate Long COVID clinic medical clinicians about the project and the inclusion criteria verbally and with written information. Clinicians whom see patients as part of the Long COVID clinic either (as part of initial consultation or review) are asked to identify people who meet the inclusion criteria and tell them about the study. They will advise potential participants that the study is currently running at Flinders Medical Centre and is examining the effectiveness of a program designed to help Long COVID patients focus on improving their quality of life. The patient will be asked for verbal consent for the researchers to make contact with the person by phone and provide the advertising brochure and a copy of the Patient Information and Consent Form (PICF).
- Distribution of flyer, PICF and follow up phone call: Patients who have attended the clinic may be sent a research information brochure and a copy of the PICF in the post. Following this, a researcher or clinician from the clinic (who has not previously reviewed the potential participant to ensure there is no sense of coercion or pressure) will contact the patient by phone to follow up and proceed with consent if the patient is willing.

How are they identified as possible participants?

We will educate Long COVID clinic clinicians about the study and ask them to identify possible participants. We may also mail study information to all patient's who have attended the clinic. Eligibility will be confirmed by the researcher.

We may also educate local general practitioners regarding the Long COVID Clinic and study information. Clinicians who identify people who may be suitable for the clinic will be asked to refer patients to the Flinders Medical Centre Long COVID Clinic for further review. Patients who are reviewed in the clinic and deemed appropriate will be provided with further information regarding the study.

Pre-screen for eligibility – waiver of consent

The recruitment method must be compliant with the Health Care Act 2008. If you need to access a patient's medical records to pre-screen for eligible participants, and you do not have prior patient consent to do so or are not part of the patient's clinical care team, you will need to apply for an exemption under 93(3)(f).

Are you requesting a waiver of consent to pre-screen?

☒ No

We will not be accessing the person's medical records.

What are the inclusion and exclusion criteria?

Inclusion: Eligible participants will be community living adults, aged 18 years or over, with a confirmed diagnosis of Long COVID and ongoing symptoms. Participants must have attended the Southern Adelaide Local Health Network's Long COVID clinic.

Exclusion: Are medically inappropriate as determined by the multidisciplinary team.

Patients who are randomised to the intervention arm will receive -

Standard clinic care which includes medical, nursing and physiotherapist assessment. If clinically indicated, patients will also be referred to any relevant specialist, occupational therapy, exercise physiology and/or a specific rehabilitation program. Patients will be followed up based on clinical need in line with current standard practice.

In addition to

- Two Take Charge sessions of up to 60 minutes, 4 weeks apart. Take Charge sessions will take place onsite at Flinders Medical Centre in the Long COVID clinic setting. They will be undertaken with an allied health professional. The interventionist will receive training and follow the existing 'Take Charge' manual (which is not specific to diagnosis). The intervention can be adapted for telehealth delivery if required (in consideration of COVID-19 restrictions) and our team has plentiful experience in offering telehealth interventions.

- Family members or friends can be present at the patient's request. A 'Take Charge' illustrated workbook adapted to the Long COVID population is used to structure the process and help the person consider the future and generate ideas. The booklet remains with the person after the session is completed.

The intervention group will be offered the control program after their outcome assessment at 6 months. However, no further data is collected at this point of time.

Participants randomised to the control arm will receive - Standard clinic care which includes medical, nursing and physiotherapist assessment. If clinically indicated, patients will also be referred to any relevant specialist, occupational therapy, exercise physiology and/or a specific rehabilitation program.

Patients will be followed up based on clinical need in line with current standard practice. In addition, the control group will also receive two phone calls of up to 60 minutes from a nurse or allied health practitioner to match the time received by the intervention group. The content of the phone calls will include general symptom review, check in about any health-related issues the patient wishes to discuss and standardised medical responses to this in line with current recommendations for Long COVID. This is in order to match the additional contact time received by the intervention group. If concerning issues are identified during the phone call, appropriate actions will be taken, for example directing the patient to see their GP or attend the emergency department, making a follow-up clinic appointment. There will be no overlap with the content of the 'Take Charge' program. If a patient in the intervention group voluntarily brings up a symptom of concern during a 'Take Charge' session they will be similarly directed to seek appropriate care.

The control group will be offered the intervention program after their outcome assessment at 6 months. However, no further data is collected at this point of time.

How you will be obtaining consent and/or what alternatives you will be using:

We will be obtaining written consent. Participants will be provided with a copy in person, by post or emailed a copy of the PICF and asked to email, post or return the signed consent form to the research team at their next appointment.

Are you requesting a waiver of consent

☐ Yes

☒ No

Which investigators will issue the information sheets and consent forms: Dr Subbuh Luker, Dr Kisani Manuel, Amelia Doveton or A/Prof Kate Laver or a research assistant.

How much time will participants have to consider participation: As long as required. We will suggest that participants consider participation and let us know their decision within one week and will contact them to follow up if required. They will be able to ask questions of the research team and will be provided with more time to consider their participation should they need it.

Please specify which investigators will obtain consent from participants: Dr Subbuh Luker, Dr

Kisani Manuel, Amelia Doveton or A/Prof Kate Laver or a research assistant.
Will there be an opportunity to confirm or renegotiate consent during the research project? – The population involves people with confirmed Long COVID and we do not anticipate that their decision making ability will change significantly over the course of their trial participation. . If the person's mental state does deteriorate significantly over time we will: • Support the person by discussing whether they still wish to be part of the study. They will be reminded that they have the right to withdraw without any implication. We will encourage them (and any family involved in care) to visit their GP for a check-up if they have not been in the past fortnight. • Include the person's data (where available in the study). It is important that this study reports on group data rather than just those who successfully completed (i.e., intention to treat analysis). Where the person decides to withdraw (based on deterioration as mentioned above) this will be included in the study reporting.
Who will be confirming or renegotiating consent with participants and what process will be undertaken? One of the investigators named on the application will confirm or renegotiate consent.
Conflicts of interest: Please refer to the National Statement chapter 5.4, and your institutional policy for guidance **Please provide details of the conflict of interest**: The investigators declare no conflicts of interest.
How will the conflict be managed? Not applicable.

Ethical considerations

Describe any ethical considerations related to the approach to consent that you will be seeking and your strategies for addressing and managing these issues. Our eligible participants will be community living adults aged 18 years or over who are referred to the Southern Adelaide Health Network Long COVID clinic and have a confirmed diagnosis of Long COVID. We acknowledge that seeking consent from the eligible participants can be complex, especially for people with Long COVID symptoms that may present challenges to participants when taking in information required for informed consent, such as fatigue, sleep and cognitive problems (e.g. memory and concentration difficulties). We will be taking steps to ensure that eligible participants understand the study and have an opportunity to discuss their participation with a trusted person prior to consenting. Unfortunately PICF's are long and hard for lay people to interpret so we will run through the PICF verbally with the person making sure they understand the commitments of the study and the potential risks and benefit plus key information (eg confidentiality, being free to withdraw at any time).

Please describe the risk and burden associated with your research.

Mild Cognitive Risks and burdens to participants:

- Psychological discomfort:

Discussing the person's diagnosis and perceptions about their health condition may be upsetting for the person.

We will also conduct interviews with ten patients in the intervention group and five patients in the control group to understand their experience of receiving the program. Some participants during the interview may experience psychological discomfort associated with discussing their Long COVID recovery process.

- Time burden:

In addition, there is a time burden associated with participation. Participants in the intervention group will have two 'Take Charge' sessions of up to 60 minutes, 4 weeks apart. Participants in the control group will also receive two phone calls of up to 60 minutes from a nurse or allied health practitioner to match the time received by the intervention group. Participants will spend approximately one hour completing outcome assessments at the start and at 3 months of their trial participation, 6 and 12 month measures will be expected to take 30 minutes to complete.

How will any risks be managed?

We do not anticipate any more than mild psychological discomfort as a result of participation in this study. If we have concerns about someone's mental health, we will recommend that they make an appointment with their GP to discuss these concerns and symptoms.

Should a participant becoming uncomfortable during the intervention or qualitative interview, the clinician or facilitator will ask if they wish to withdraw or remove themselves for a break. Participants will be provided contact numbers for support services such as Lifeline on the PICF and at the end of completing subjective outcome measures.

Benefits – People who participated in two studies of the 'Take Charge' intervention in New Zealand reported higher levels of health-related quality of life. We anticipate that participants in this study who receive the program may experience the same benefits. All participants will be receiving the intervention in addition to usual care.

Wider benefits include the opportunity to contribute to improved care and outcomes for people with Long COVID. Long COVID is a new and poorly understood debilitating condition. There is ever growing demand for services to address it with a significant 6 month waiting list at our own SALHN Long COVID clinic and huge patient and economic implications. If offered at the right time, the 'Take Charge' intervention may change the trajectory of care and delay decline, disability and high resource utilisation. This project will also provide much needed information

about appropriate care and treatment for people with Long COVID and puts the SALHN and its Long COVID clinic at the forefront of research in this highly publicised area.

Does a dependant or unequal relationship exist between the participant and the researcher? Please refer to the National Statement 4.3 for advice and guidance on how to manage this**.**

☒ No

Conflicts of interest: Please refer to the National Statement chapter 5.4, and your institutional policy for guidance

Please provide details of the conflict of interest: No conflicts of interest identified.

How will the conflict be managed? Not applicable.

Data management

Who will collect the study data / information? A number of the measures are routinely collected as part of the Long COVID clinic by clinic staff (demographics, baseline nursing investigations, hand grip strength, 6 minute walk test, 1 minute sit to stand test, Modified COVID-19 Yorkshire Rehabilitation Scale, GAD-7, PHQ-9, MMRC).

Additional measures specific to this study will be collected by Dr Subbuh Luker or the study research assistant (who will be an allied health clinician) (Recovery scale for COVID-19, Medical Outcomes Study SF36, Work Productivity and Activity Impairment Questionnaire, Fatigue Severity Scale, Survey of work status, Likert scale and data on medications and clinic referrals).

The participant will have the option of completing self-directed outcome measures through an online form generated in REDCap in which a link developed specifically for them will guide them through required measures.

Information on referrals completed to specialists and engagement in allied health within the Long COVID clinic will be gathered through review of the participants medical records accessed by a clinician working within the clinic.

The following is a list of accepted protocol deviations:

- Time between outcome measure collection to intervention provision should not exceed 4 weeks.
- Time between collection of initial measures and 3 month measures can be 11-13 weeks if 12 weeks not possible.
- Time between interventions can be 3-5 weeks if 4 weeks is not possible.

- Interventions in both groups can be up to 60 minutes in length however the participant can terminate earlier and extend up to 15 minutes longer if required.

What format will the data or information be stored?

Electronic data will be stored in password protected REDCap database on the Flinders University drive and in secure documents and folders on the SA Health drive.

Files containing identifying information (i.e., participant name and contact details) will be password protected. Only SA Health staff involved in the trial will have access to the database will have access to the database. Paper files will be stored in a locked cabinet at Flinders Medical Centre, Rehabilitation Aged and Palliative division in the research offices.

De-identified data files may be shared with the Flinders University research team members or statisticians for analysis purposes. Data analysis will be done using Flinders University computers and software. De-identified data files will be securely stored on the Flinders University research drive.

Please provide details regarding training of the research team on maintaining the integrity and security of the data: All researchers of this study are familiar with the National Statement on Ethical Conduct in Human Research. A/Prof Laver has attended training through Flinders University on research data management and has read the University's Guidelines for Research Data Management.

What conditions can the data be accessed or granted to others? The data will not be able to be accessed or granted to others.

How will the research data be stored and what security measures are in place to protect it?

Electronic data will be stored in password protected REDCaps database on the Flinders University drive and in secure documents and folders on the SA Health drive. Two factor authentication will be required to access the REDCap database with relevant restrictions applied to approved users to ensure patient privacy is maintained.

Files containing identifying information (i.e., participant name and contact details) will be password protected. Only SA Health staff involved in the trial will have access to the database. Paper files will be stored in a locked cabinet at Flinders Medical Centre, Rehabilitation Aged and Palliative division in the research offices.

De-identified data files may be shared with the Flinders University research team members or statisticians for analysis purposes. Data analysis will be done using Flinders University computers and software. De-identified data files will be securely stored on the Flinders University research drive.

How will you provide access to, disclose, use/re-use or transfer the data? Only SA Health staff involved in the trial will have access to the data from a SALHN computer. De-identified data may be shared with the research team or statisticians for analysis purposes. We will not transfer the data to other people outside of the research team.
How long will the data be retained for? As the study may be considered to be a clinical trial, data will be retained for 15 years. At the conclusion of the trial electronic data will be deleted by Dr Subbuh Luker.
What plans are in place to store / archive the study data once the research is completed? The research may remain on the FMC Research Drive for 15 years prior to being deleted. Any paper files will be securely archived according to SALHN's records management procedures.
How will the study data be destroyed? The data will be deleted from the Drive and paper files will by destroyed in accordance with SALHN's records management procedures.
Matching and sampling strategies: We will attempt to recruit any participants who are referred to the study and who meet the eligibility criteria. Participants will be allocated to intervention or control group.
Accounting for potential bias, confounding factors and missing information: We will report on any information available and will clearly report where data are missing and statistical strategies used for dealing with missing data. Outcomes will be assessed by someone blind to allocation. The study will be registered with the ANZCTR as required and this will ensure that the researchers are not selectively reporting data.
Sample size and statistical or power issues – This study will aim to recruit 130 participants. These 130 participants will be randomly allocated to intervention (n=65) or control group (n=65). Our sample size is based on data from a similar population of Long COVID patients to that seen in the SALHN Long COVID clinic (14). In this study the mean SF-36 score was 57.6 (SD 30.4). With an anticipated 30% improvement in the intervention group our sample size is 130 with 65 patients randomised to each arm. Randomisation will occur in varied block sizes of 2 or 4. The randomisation sequence will be developed by a health and scientific data expert external to the research trial and encoded into the REDCap database for use in the trial. The randomisation sequence will be blinded to researchers involved the trial.
How will you measure, manipulate and/or analyse the information collected? Information collected will be entered into a database. Descriptive statistics (mean, standard deviation, range) will be used to report the information. Analysis will be conducted in SPSS. We will use an independent samples t-test to compare means between groups. We will consult with a statistician in the College of Medicine and Public Health to determine the best approach to analysis of efficacy taking into account distribution of the data and any missing data.

Data linkage – None planned.
What impact will a participant withdrawing have on the data and how will this be responded to? If a participant withdraws, we will not collect further information and we will report broad reason for withdrawal (e.g. illness, decided not to proceed, moved) and will present information so that missing data is clearly interpreted. We will not withdraw any previously collected data unless they ask us to.

Results, reporting, outcomes and future plans

Please detail your plans for the return of the research results to the participants: As per the Participant Information Sheet, participants will be able to ask for the results of the study to be mailed to them upon completion of the study. Anyone interested in the results will be posted a one page summary of the study process and results.
What are your plans for dissemination and publication of project outcomes: Outcomes will be presented in a scientific journal and at relevant conferences as well as local opportunities for promotion (eg SALHN workshops or presentations). We will contact the SALHN media and communications team and the Flinders University media team to coordinate local dissemination of results to the community.
Please detail other potential uses of the data at the end of the project: None foreseen.
What are your plans for sharing and/or future use of data and/or follow-up research? i.e. We do not anticipate using the data for other reasons.
What is the project closure process? At the conclusion of the study we will notify stakeholders that the study has concluded, complete a final report for ethics and archive data as per Flinders University records management procedures.

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