

REFRESH study: nutRition intervEntions For malnourished oldEr adultS in care Homes - A parallel, superiority, three-arm cluster randomised controlled trial

Submission date 04/08/2025	Recruitment status Recruiting	<input checked="" type="checkbox"/> Prospectively registered <input type="checkbox"/> Protocol
Registration date 16/10/2025	Overall study status Ongoing	<input type="checkbox"/> Statistical analysis plan <input type="checkbox"/> Results
Last Edited 09/03/2026	Condition category Nutritional, Metabolic, Endocrine	<input type="checkbox"/> Individual participant data <input checked="" type="checkbox"/> Record updated in last year

Plain English summary of protocol

Background and study aims

Many older people living in care homes are at risk of malnutrition, which means they aren't getting the nutrients they need. This can lead to poor health, lower quality of life, and a higher chance of falls and infections. The REFRESH study will compare three approaches to nutritional care: fortified foods, supplement drinks, and usual care. Around 1,530 residents from 90 care homes will take part to help find out which approach works best to improve nutrition and quality of life.

Who can participate?

Participants will be older adults (65 years or over) with or at risk of malnutrition, living in a care home which has applied to take part and met certain care home inclusion criteria.

What does the study involve?

Once eligible care home residents (or consultees) have agreed to take part in the study, initial information will be collected (baseline data). Each care home will then be randomly placed into one of three groups. Residents will receive one of the following for 12 months:

- Oral nutritional supplements: Two ready-to-drink supplements each day between meals, alongside their usual diet.
- Fortified food: Meals, snacks and drinks made with extra protein, calories, vitamins and minerals, alongside their usual diet.
- Usual care: The care home will continue with their usual approach to nutrition for residents who are malnourished.

Further information will be collected at 6 months and again at 12 months.

What are the possible benefits and risks of participating?

We cannot guarantee there will be any benefits from taking part in the study as we do not know what the results will be. However, the participants' involvement will contribute to the development of new knowledge and understanding of malnutrition in care homes, which could

help to improve the care of older people in the future.

There is a chance that the oral nutritional supplements or the fortified food may cause the following:

- Gastrointestinal symptoms (i.e., constipation, bloating, nausea)
- Poorly controlled blood glucose (blood sugar levels that are too high or too low) in those with diabetes.

These effects may occur whichever group the participant is in, including usual care if these options are used as part of it. If necessary, the food or supplement which is thought to be the cause would be stopped.

Where is the study run from?

University of Plymouth (UK)

When is the study starting and how long is it expected to run for?

January 2025 to December 2028

Who is funding the study?

National Institute for Health and Care Research (NIHR) Health Technology Assessment (HTA) Programme (UK)

Who is the main contact?

refresh.penctu@plymouth.ac.uk

Contact information

Type(s)

Principal investigator

Contact name

Prof Mary Hickson

ORCID ID

<https://orcid.org/0000-0001-7996-0095>

Contact details

University of Plymouth
School of Health Professions
Intercity Place
North Road East
Plymouth
United Kingdom
PL4 6AB

-
mary.hickson@plymouth.ac.uk

Type(s)

Principal investigator

Contact name

Prof Jane Murphy

ORCID ID

<https://orcid.org/0000-0003-3531-5566>

Contact details

The Adam Practice
Upton Surgery
Blandford Road North
Poole
United Kingdom
BH16 5PW

-
jane.murphy@dorsetgp.nhs.uk

Type(s)

Public, Scientific

Contact name

Dr . Refresh PenCTU

Contact details

University of Plymouth
Plymouth
United Kingdom
PL4 8AA

-
refresh.penctu@plymouth.ac.uk

Additional identifiers**Integrated Research Application System (IRAS)**

334241

Central Portfolio Management System (CPMS)

58561

National Institute for Health and Care Research (NIHR)

160348

Study information**Scientific Title**

NutRition intervEntions For malnourished oldEr adultS in care Homes (REFRESH)

Acronym

REFRESH

Study objectives

Research question: In older adults with or at risk of malnutrition living in care homes, what is the clinical and cost-effectiveness of oral nutritional supplements (ONS arm) and fortified food (FF arm) compared to routine practice (usual care arm)?

Primary objective: The primary objective is to compare the health-related quality of life of care home residents (with or at risk of malnutrition) receiving the ONS and FF with those receiving usual care, measured using EQ-5D-5L-proxy, at 6 months' follow-up.

Secondary objectives:

1. Evaluate the effects of ONS and FF compared to usual care on:
 - 1.1. Dementia-specific Quality of Life (DEMqoL-CH) at 6 months post-randomisation
 - 1.2. Nutritional status (Mini Nutritional Assessment (MNA)) at 6 months post-randomisation
 - 1.3. Weight (kg) at 6 months post-randomisation
 - 1.4. Dietary intake (3-day photographed food records and food record charts used to estimate nutrient content) at 6 months post-randomisation
 - 1.5. Functional limitations (Modified Barthel Index (MBI)) at 6 months post-randomisation
 - 1.6. Acceptability and adherence (3-day photographed food records and food record charts at 6 months post-randomisation)
 - 1.7. Morbidity (antibiotic usage) at 6 months post-randomisation
 - 1.8. Mortality (registered death records) at 6 months and 12 months post-randomisation
 - 1.9. EQ-5D-5L-proxy at 12 months post randomisation
2. Evaluate the cost-effectiveness of ONS and FF compared to usual care at 6- and 12-months post randomisation by measuring the cost of delivering the ONS and FF interventions, participant health and social care resource use (bespoke health and care service use questionnaire) and health-related quality of life (EQ-5D-5L utility values).

Ethics approval required

Ethics approval required

Ethics approval(s)

approved 07/10/2025, West Midlands – Coventry & Warwickshire Research Ethics Committee (2 Redman Place, Stratford, London, E20 1JQ, United Kingdom; +44 207 104 8151; Coventryandwarwick.rec@hra.nhs.uk), ref: 25/WM/0154

Study design

Interventional randomized controlled trial

Primary study design

Interventional

Study type(s)

Treatment

Health condition(s) or problem(s) studied

Malnutrition

Interventions

Each participating care home will be randomised into one of the following trial arms:

Oral Nutritional Supplement (ONS) Arm: Residents would receive two ready-to-drink ONS to be given at suitable points within the day between mealtimes, daily for 12 months. Residents will continue to receive meals and nutritional care according to the care home's usual routines.

Fortified Food (FF) Arm: Care homes would instigate a menu providing fortified food (usual food, drinks and snacks with added ingredients to increase nutrient density for participating residents) for 12 months. The fortified menu will be very similar in content to the usual menu, but some items will be fortified (e.g. porridge, mashed potato, soups etc.). We will provide a list of nutrient dense ingredients that can be used to fortify different items on the menu (e.g. milk powder, peanut butter, cheese, eggs etc.). Residents will continue to receive nutritional care according to the care home's usual routines.

Care homes randomised to one of the above intervention arms will receive manualised training split into two levels: malnutrition awareness training and management of malnutrition training tailored to the allocated intervention. These care homes will be asked to appoint an 'in-house' nutrition champion to help disseminate information, promote, and embed the training during the trial, and support data collection.

Usual Care Arm: These care homes should manage malnutrition as they usually would.

Following recruitment of the trial participants and completion of the baseline assessments, care homes (clusters) will be randomly allocated in a 1:1:1 ratio to one of the three trial arms (30 care homes per trial arm) using block randomisation via computer generated random numbers. Care homes will be sequentially randomised (i.e., individually as soon as they are ready for allocation) following collection of the baseline data, rather than being randomised in batches (i.e., at the same time as other care homes).

Intervention Type

Other

Primary outcome(s)

Health-related quality of life (HRQoL) measured using EQ-5D-5L Proxy Version 2 at 6 months

Key secondary outcome(s)

1. Dementia-specific quality of life measured using (DEMQoL-CH) at 6 months post-randomisation
2. Nutritional status assessed using the Mini Nutritional Assessment (MNA) at 6 months post-randomisation
3. Weight (kg) measured at 6 months post-randomisation
4. Dietary intake measured using 3-day photographed food records and food record charts used to estimate nutrient content at 6 months post-randomisation
5. Functional limitations measured using the Modified Barthel Index (MBI) at 6 months post-randomisation
6. Acceptability and adherence measured using 3-day photographed food records and food record charts at 6 months post-randomisation
7. Morbidity measured using antibiotic usage at 6 months post-randomisation
8. Mortality measured using registered death records at 6 months and 12 months post-randomisation
9. EQ-5D-5L-proxy at 12 months post-randomisation
10. The cost of delivering the ONS and FF interventions, participant health and social care resource use (bespoke health and care service use questionnaire) and health-related quality of life (EQ-5D-5L utility values) at 6 and 12 months

Completion date

31/12/2028

Eligibility

Key inclusion criteria

1. Permanent resident in a care home (not respite or intermediate care)
2. Aged ≥ 65 years at the time of consent
3. Able to eat and drink
4. With or at risk of malnutrition as measured by scoring 1 or more out of 6 on the MUST
5. Able to obtain informed consent from the individual or a consultee based on the presumed will of an incapacitated adult

Participant type(s)

Patient

Healthy volunteers allowed

No

Age group

Senior

Lower age limit

65 years

Upper age limit

120 years

Sex

All

Total final enrolment

0

Key exclusion criteria

1. Fed via feeding tube
2. Already receiving nutrition support (ONS or fortified meals) on the advice of a healthcare professional (e.g. GP) and/or individualised dietetic advice
3. Active cancer treatment or recent major surgery
4. Considered by the care home staff to be approaching the end of life, where participation in the study would not be appropriate‡.

‡In cases where there is uncertainty, this decision will be made collaboratively by care home staff, in consultation with the resident (where possible), and a consultee (if applicable). Care home staff, who are leading initial discussions about the study, will use their professional judgment on a case-by-case basis to ensure that the decision reflects the resident's condition, preferences, and advice of the consultee (if applicable).

Date of first enrolment

01/11/2025

Date of final enrolment

31/05/2027

Locations

Countries of recruitment

United Kingdom

England

Study participating centre

Hill House Nursing Home

Park Avenue

Brixham

England

TQ5 0DT

Study participating centre

Chestnut Lodge

166 Hendford Hill

Yeovil

England

BA20 2RG

Study participating centre

Primley Court Nursing Home

13 Primley Park

Paignton

England

TQ3 3JW

Study participating centre

Camelot House and Lodge

Taunton Rd

Wellington

England

TA21 9HY

Study participating centre

Sheridan House

10c Douglas Avenue

Exmouth

England

EX8 2BT

Study participating centre

Mulberry House

Lower Brimley Lane, Bovey Tracey

Newton Abbot

England

TQ13 9JS

Study participating centre

Mount Olivet Nursing Home

2 Great Headland Road

Paignton

England

TQ3 2DY

Study participating centre

West Eaton House

Worcester Road

Leominster

England

HR6 0QJ

Study participating centre

Summerdyne Nursing Home

Cleobury Road

Wyre Hill

Bewdley

England

DY12 2QQ

Study participating centre

The Cottage Christian Nursing Home

Granville Road

Newport

England

TF10 7EQ

Study participating centre

The Lawns Nursing Home

33 Main Road
Kempsey
Worcester
England
WR5 3NF

Study participating centre

Atholl House Nursing Home

98-100 Richmond Road
Compton
Wolverhampton
England
WV3 9JJ

Study participating centre

Avon View

Loring Road
Christchurch
England
BH23 2GZ

Study participating centre

Trafalgar Care Home

207 Dorchester Road
Weymouth
England
DT4 7LF

Study participating centre

Burwood Nursing Home

100 Dunyeats Road
Broadstone
England
BH18 8AL

Study participating centre

Upton Bay Care Home

1 Hoyal Road

Poole
England
BH15 4HY

Study participating centre
Blenheim Care Home
17 Dunbar Road
Talbot Woods
Bournemouth
England
BH3 7AZ

Study participating centre
Oakhill Mansions
College Park Drive
Westbury-on-trym
Bristol
England
BS10 7QD

Study participating centre
Waltham House
Stoke Park Road, Stoke Bishop
Bristol
England
BS9 1JF

Study participating centre
Somerhill
Little Somerford
Chippenham
England
SN15 5BH

Study participating centre
St Teresa's Nursing Home
Corston Lane
Corston
Bath
England
BA2 9AE

Study participating centre

Three Corners

3 Greenway Road
Galmpton
Brixham
England
TQ5 0LW

Study participating centre

Pendrucombe House

23 Tavistock Road
Launceston
England
PL15 9HF

Study participating centre

Valley Court

Valley Road
Cradley Heath
England
B64 7LT

Study participating centre

Elmwood

Swan Hill Road
Colyford
Colyton
England
EX24 6QJ

Study participating centre

Parkwood House

72-74 Exmouth Road
Stoke
Plymouth
England
PL1 4QJ

Study participating centre

Hillcrest House

Barbican Road

Looe

England

PL13 1NN

Study participating centre

Larkhall Springs Nursing Home

Swainswick Gardens

Larkhall

Bath

England

BA1 6TL

Study participating centre

Hurstway

142 the Hurstway

Birmingham

England

B23 5XN

Study participating centre

Cole Valley Nursing Home

326 Haunch Lane

Kings Heath

Birmingham

England

B13 0PN

Study participating centre

Asher Care

120 Ashburton Road

Newton Abbot

England

TQ12 1RJ

Study participating centre

Arbour Walk

7-21 Hungerford Road

Bristol

England
BS4 5HU

Study participating centre

Davlyn House

41 Bull Lane
Brindley Ford
Stoke-on-trent
England
ST8 7QL

Study participating centre

Branksome Heights

44 Branksome Wood Road
Bournemouth
England
BH4 9LA

Study participating centre

Pendennis

64 Dartmouth Road
Paignton
England
TQ4 5AW

Study participating centre

Neville Williams House

8-14 Greenland Road
Selly Park
Birmingham
England
B29 7PP

Study participating centre

Resthaven CIO

15 Gussiford Lane
Exmouth
England
EX8 2SD

Study participating centre
Woodlands Quaker Home
434 Penn Road
Penn
Wolverhampton
England
WV4 4DH

Study participating centre
Streets Meadow
Hanham Road
Wimborne
England
BH21 1AS

Sponsor information

Organisation
University of Plymouth

ROR
<https://ror.org/008n7pv89>

Funder(s)

Funder type
Government

Funder Name
National Institute for Health and Care Research

Alternative Name(s)
National Institute for Health Research, NIHR Research, NIHRresearch, NIHR - National Institute for Health Research, NIHR (The National Institute for Health and Care Research), NIHR

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location

United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

The datasets generated during and/or analysed during the current study will be stored in a publicly available repository: After the trial has been reported, an anonymised dataset may be committed to University of Plymouth's open access research repository: <https://pearl.plymouth.ac.uk/>

The datasets generated during and/or analysed during the current study will be available upon request from the CIs and the Sponsor: After the trial has been reported, the de-identified individual participant data that underlies the results will be available on request from the Chief Investigators and the Sponsor, along with supplementary files as required (e.g., data dictionaries, analysis code, etc.). Data will be shared with (or access to the data will be provided to) requestors whose proposed use of the data has been approved by the CIs and Sponsor, under an appropriate data sharing agreement. It will not be possible to identify participants personally from any information shared. As part of consenting for the study, participants are asked to consent to the following clause 'I understand that the information collected about me may be used to support other research in the future and may be shared anonymously with other researchers.'

IPD sharing plan summary

Available on request, Stored in publicly available repository

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Study website	Study website	11/11/2025	11/11/2025	No	Yes