

# Digital denture scanning and 3D printing for residents in care homes

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|----------------------------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Submission date</b><br>21/10/2021   | <b>Recruitment status</b><br>No longer recruiting | <input type="checkbox"/> Prospectively registered<br><input checked="" type="checkbox"/> Protocol |
| <b>Registration date</b><br>24/03/2022 | <b>Overall study status</b><br>Completed          | <input type="checkbox"/> Statistical analysis plan<br><input checked="" type="checkbox"/> Results |
| <b>Last Edited</b><br>05/02/2024       | <b>Condition category</b><br>Oral Health          | <input type="checkbox"/> Individual participant data                                              |

## Plain English summary of protocol

### Background and study aims

For any individual, losing or breaking a denture (false teeth) can have a detrimental effect on their overall well-being, impacting on nutrition, communication, and dignity and it is not always possible to remake them. Dentures take on average five dental appointments over eight weeks to remake. Often people in care homes may be frail or have a cognitive condition such as dementia and are unable to cooperate with the invasive denture making process. Making dentures via digital scanning and 3D printing is well established in the private dental sector and provides a non-invasive, person-centred solution to replacing dentures for people living in care homes.

The aim of the study is to explore the possibility of digitally scanning dentures for residents living in care homes. To examine if scanning and 3D printing provide a better solution to lost or broken dentures compared with conventional methods of remaking a denture.

### Who can participate?

Care home residents who wear dentures.

### What does the study involve?

Residents will be provided with the printed replicate dentures which will then be assessed for function and appearance. Brief semi-structured interviews will be conducted with a number of residents to evaluate their experience and acceptability of the replicate dentures.

### What are the possible benefits and risks of participating?

Benefits of participating is to contribute to research that aims to reduce the impact of denture loss in vulnerable groups. Residents will have a spare 3D printed denture and oral health assessment.

We do not foresee any risks associated with this study. It is designed around the standard of care that is provided to care home residents.

### Where is the study run from?

East Surrey Hospital (UK)

When is the study starting and how long is it expected to run for?  
January 2021 to June 2022.

Who is funding the study?  
1. Royal College of Surgeons of England  
2. British Society of Gerodontology

Who is the main contact?  
Mr Daniel Gillway, daniel.gillway@nhs.net

## Contact information

**Type(s)**  
Public

**Contact name**  
Mr Daniel Gillway

**ORCID ID**  
<https://orcid.org/0000-0003-4306-7806>

**Contact details**  
East Surrey Hospital  
Canada Avenue  
Redhill  
United Kingdom  
RH1 5RH  
-  
daniel.gillway@nhs.net

## Additional identifiers

**Integrated Research Application System (IRAS)**  
296809

**Central Portfolio Management System (CPMS)**  
51913

## Study information

**Scientific Title**  
Digital denture scanning and 3D printing for residents in care homes – an innovative solution for managing denture loss/breakage

**Study objectives**  
To examine the feasibility of digitally scanning dentures for residents living in care homes. To examine if scanning and 3D printing provides a better solution to lost or broken dentures compared with conventional methods of remaking a denture.

**Ethics approval required**

Old ethics approval format

### **Ethics approval(s)**

Approved 15/10/2021, London – Brighton and Sussex REC (Health Research Authority, Skipton House, 80 London Road, London, SE1 6LH, UK; +44 (0)207 104 8137; [brightonandsussex.rec@hra.nhs.uk](mailto:brightonandsussex.rec@hra.nhs.uk)), ref: 21/LO/0601

### **Primary study design**

Observational

### **Study design**

Observational qualitative feasibility study

### **Study type(s)**

Other

### **Health condition(s) or problem(s) studied**

Dentures for care home residents

### **Interventions**

The aim is to scan a minimum of 10 dentures at the care home. Residents will be provided with the printed replicate dentures which will then be assessed for function and appearance. Brief semi-structured interviews will be conducted with a number of residents to evaluate their experience and acceptability of the replicate dentures.

This study is a prospective qualitative feasibility study to be carried out in the care home setting with residents. Once the care home resident has had the opportunity to wear the replicated denture, semi-structured interviews will be carried out with the resident.

Interviews will take place in a quiet, private room provided by the care home with the research team (chief investigator and supervisor), and the resident. The research team is trained in supporting residents who require help with communication and each individual will be assessed separately for this. Interviews will be short and semi-structured, they would not be expected to last longer than 30 minutes and will be guided by the research team. They will be audio recorded using basic .mp3 laptop software and transcribed verbatim using Microsoft office. Field notes will be made by the research team. Any personal identifiable data such as names that might be collected during the interview will not be included in the transcripts, no participant in the study will be able to be identified from the transcripts.

Data analysis will be conducted by the Chief Investigator and supervisor.

### **Intervention Type**

Other

### **Primary outcome(s)**

Thematic analysis of semi-structured interviews from the care home residents into their opinions on denture loss and the feasibility of 3D scanning and printing dentures in care homes. Interviews will take place at a single time point.

### **Key secondary outcome(s)**

There are no secondary outcome measures

**Completion date**

01/06/2022

## Eligibility

**Key inclusion criteria**

1. Adult (over 18 years) care home resident
2. Denture wearer, either full denture or one with significant function (i.e. it replaces more than 5 teeth) or where there is an aesthetic benefit (it replaces front teeth)
3. If the resident does not speak English as a first language we will liaise with their key worker on how they communicate with the resident (member of staff, communication app or translator) and use this method.
4. Adults who are assessed as having the capacity to consent to take part in this study

**Healthy volunteers allowed**

No

**Age group**

Adult

**Lower age limit**

18 Years

**Sex**

All

**Total final enrolment**

8

**Key exclusion criteria**

1. Residents who do not wear full/partial denture
2. Residents who have declined consent to participate
3. Residents with dentures that are not worn or cannot be 3D printed/scanned
4. Residents where best interests decision is against oral health assessment or dentures scanning due to distress or otherwise
5. Residents who are assessed as not having the capacity to consent

**Date of first enrolment**

15/10/2021

**Date of final enrolment**

27/01/2022

## Locations

**Countries of recruitment**

United Kingdom

England

**Study participating centre**  
**East Surrey Hospital**  
Surrey and Sussex Healthcare NHS Trust  
Canada Avenue  
Redhill  
United Kingdom  
RH1 5RH

## Sponsor information

**Organisation**  
Surrey and Sussex Healthcare NHS Trust

**ROR**  
<https://ror.org/0480vrj36>

## Funder(s)

**Funder type**  
Research council

**Funder Name**  
Royal College of Surgeons of England

**Alternative Name(s)**  
RCS England, RCS ENG, The Royal College of Surgeons of England, RCS

**Funding Body Type**  
Private sector organisation

**Funding Body Subtype**  
Universities (academic only)

**Location**  
United Kingdom

**Funder Name**  
British Society of Gerodontology

# Results and Publications

## Individual participant data (IPD) sharing plan

All data generated or analysed during this study will be included in the subsequent results publication

## IPD sharing plan summary

Published as a supplement to the results publication

## Study outputs

| Output type                                   | Details   | Date created | Date added | Peer reviewed? | Patient-facing? |
|-----------------------------------------------|-----------|--------------|------------|----------------|-----------------|
| <a href="#">Results article</a>               |           | 29/10/2023   | 05/02/2024 | Yes            | No              |
| <a href="#">HRA research summary</a>          |           |              | 28/06/2023 | No             | No              |
| <a href="#">Participant information sheet</a> | version 2 | 29/09/2021   | 24/03/2022 | No             | Yes             |
| <a href="#">Plain English results</a>         |           |              | 05/02/2024 | No             | Yes             |
| <a href="#">Protocol file</a>                 | version 2 | 29/09/2021   | 24/03/2022 | No             | No              |