# STaR report

## Introduction

**Title**

**Maximum submission date** 01/01/2022

## Looking back

### Research progress

* Chapter 1: Introduction
  + This short chapter presents the aims and objectives of the thesis, an overview of each chapter, an introduction to evidence synthesis as the theoretical framework underlying the thesis, and a summary of thesis output.
  + A draft of this chapter is complete.
* Chapter 2: Background
  + This chapter will provide an overview of the main topics covered in the thesis, including dementia, blood lipids fractions, and lipid regulating agents.
  + This chapter is ~70% complete.
* Chapter 3: medrxivr tool for searching preprints
  + A short chapter describing the motivation, development and reception of medrxivr, a tool built to facilitate the systematic searching of the medRxiv and bioRxiv preprint servers. This chapter represents a more comprehensive version of a published manuscript <https://doi.org/10.21105/joss.02651>.
  + A draft of this chapter is complete.
* Chapter 4: Comprehensive systematic review
  + This Chapter presents the methods and findings of a comprehensive systematic review into the relationship between blood lipids levels/statins and dementia subtypes.
  + Data extraction is complete and I am in the midst of finishing the risk-of-bias assessments.
* Chapter 5: observational analysis: adiposity -> metabolites
  + This chapter uses data from the Clinical Practice Research Datalink (CPRD) to investigate the relationship between statin use and dementia.
  + This analysis has proven challenging, likely due to the presence of unaddressed confounding by indication. The suggestion has been to write up the corresponding paper as an example of the dangers of EHR in cases where strong confounding by indication is likely.
* chapter 6: Individual patient data meta-analysis
  + This chapter will use data from several Dementia Platform cohorts (plus some of the cohorts identified through the systematic review) to investigate the relationship between blood lipids levels and dementia outcomes. This analysis has not yet started, but data access has been secured.
* Chapter 7: Triangulation
  + This short chapter will draw together different sources of information (including the primary analyses performed as part of this thesis) as part of a qualitative triangulation exercise.
  + This aspect of my thesis has not started.
* Chapter 8: Discussion
  + This chapter a summary of the main findings of the thesis, a discussion of the strengths and limitations, a roadmap for future work, and a conclusion.

### Training

Due to the pandemic, the majority of the training courses and workshops I had planned to attend during the review period were cancelled. However, I plan to attend the next iteration of each event in the coming year, and have confirmed with my funder that this is possible.

### Presenting your research

In the review period, I presented on the preprint search tool described in Chapter 3 at the Bristol “Auto-synthesis Club” and “Methods in Evidence Synthesis” seminars.

### Public engagement and outreach

### Teaching

I have taught on the following:

* MSc Epi/Public Health “Clinical Epidemiology” module
  + Tutored a small group of several weeks
  + Marked the end-of-module presentations
* Introduction to R short course for new PhD students, Bristol Medical School short course
  + Presented a lecture on the
  + Tutor helping participants on a data manipulation practical
* Introduction to data visualisation and web applications using R, Bristol Medical School short course
  + Designed and delivered the web applications aspects of the course.
  + Tutor helping on practicals on data visualisations and Rmarkdown.

I also ran an open-door “Intro to R” session each Friday in the autumn term to help new students with questions about R.

### Summary / further comments

None

## Planning ahead

### Research objectives

January-April:

1. Finish risk of bias assessments for systematic review
2. Draft systematic review manuscript
3. Finish Chapter 4 - Systematic review
4. Finish Chapter 2 - Background
5. Clean datasets from DPUK and begin IPD analysis

April-June:

1. Perform IPD analyses
2. Plan triangulation exercise

July-October:

1. Finish Chapter 6 - IPD analysis
2. Perform triangulation exercise

November-December:

1. Finish Chapter 7 - Triangulation
2. Make final changes to thesis
3. Produce final drafts of remaining manuscripts and submit as preprints
4. Submit thesis

### Planned training and development

I am booked onto the Mendelian Randomisation (17th-19 March) and Advanced Methods for Multiple Imputation (2nd March).

In addition, as per my Fellowship training scheme, I plan to attend the Royal Society “Writing about your research” course and the “Causal Inference in Epidemiology: Recent Methodological Developments” short course at LSHTM.

### Communicating your research

I plan on producing the following outputs from the coming 12 months:

* Comprehensive systematic review
  + preprint/publication
* Primary analysis of the CPRD
  + preprint/publication

It’s only in writing this report that I realized that I am yet to publicly present on the some parts of my thesis, and so this is a particular aspect of my PhD that I would like to develop. As such, I aim to present at more diverse events in the coming year, including at an IEU monthly meeting and the Faculty of Health Sciences research showcase. In addition, I plan to submit an abstract to the Alzheimer’s Association International Conference in July (deadline 25th January).

## Further comments

None.