E-Cigarette Guideline Citation Network Analysis Plan

## Objectives

1. To use network analysis to explore common citations across e-cigarette public health guidelines across four diverse jurisdictions.
2. To explore whether the citations and conflicts of interest are related to differing recommendations.
3. To explore patterns over time of funding and conflicts of interest in papers cited.

## Research Questions

1. What are the influential sources of evidence drawn upon by public health bodies when making e-cigarette policy recommendations and how do guidelines differ in their use of them?
2. Are Public Health guidelines with similar e-cigarette policy recommendations drawing upon similar citations?
3. Are conflicts of interest changing over time?

## Analysis plan

#### RQ 1: what are the influential sources of evidence?

Where did the guideline documents come from?

##### 1.Extraction of all references from guideline documents

Extract all reference information from each document (HOW) into an Excel table. Import into R.

##### 2.Tidying and coding to network matrix

De-duplicate references, assigning each a unique ID (Author, Year), and construct a matrix recording each reference’s use across guideline documents.

Insert an empty PRISMA flow chart here with the final format e.g. data sources, de-duplications. Final records.

Determine number of references, determine number of documents cited in 1,2,3,…..all guidance documents.

What is your operationalisation of “most influential sources of evidence?” 10 n% most frequently cited? This will determine what table and what visual you present.

Insert descriptive table here e.g. Number of guidance citations column, paper title as two columns. Are you going to show all the 18s? all the 17s? Only the most recent 18s? 17s? Top 10%, 20%, n%? Appendix table with them all, sorted by number of citations?

##### 3.Visualisation of data

Plot network diagrams of guideline documents connected by all references, coloured by number of times cited, using igraph.

##### 4.Analysis and visualisation of most influential

Filter for highly cited and colour references by number of times cited in igraph plot.

Graph with date of publication on the X axis would be interesting, see the time lag in the papers and when they’re cited (or not)

##### 5. Analysis of study design/conflicts of interest

Extract from highly cited references study designs and statements of conflicts of interest, form groupings and colour network graphs.

#### RQ2: Do guideline documents with similar conclusions cite the same sources?

##### 1.Likert scale for strength/direction of recommendation

Define a scale rating each guideline document 1-5 on negative-neutral-positive recommendations regarding e-cigarettes (moderated by hypothesised effect size and confidence of evidence).

Double-coding of all documents by two researchers. Disagreements resolved by agreement across team.

What’s the independent and cross referral and review process? Kappa stat for inter-rater reliability? How disagreements are resolved. By agreement? Take mean score? Use one as a sensitivity analysis? Robustness test, what happens if you reverse score one of the documents?

##### 3.Block modelling – grouped by common citations, coloured by recommendation

Run a block model procedure on the two mode paper by guidance document affiliation matrix

Determine which papers & documents are assigned to each block

Insert table – ‘Block number’, ‘Documents in block’, ‘ N papers in block’, ‘N influential papers in block’ , mean (sd) document rating per block.

##### 4.Visualisation of grouped network

Plot network graph with guideline points coloured by recommendation and clustered by documents in common.

#### RQ3: Are conflicts of interest changing over time?

##### 1.Screen all referenced documents for published reports and articles

Categorise all evidence documents according to type to extract relevant articles and reports (excluding news items, blog posts, campaigns etc.)

##### 2.Get full text for all included

Through Shiny app, link to Scopus record and retrieve title and DOI. Use Endnote to retrieve full text

##### 3.Extract conflicts of interest/funding sources from meta-data/article text

Extract all text from pdf documents and search for “conflicts of interest”, “funding” and other key words to extract relevant statements.

##### 4.Code into conflicts categories

For all documents presenting conflicts/funding statements, categorise by type (cancer charity, medical research group, tobacco company etc.)

*5.* *Visualisation of change of conflicts distribution over time*

Create a graph illustrating the pattern of declared conflicts of interest over time. Conflicts of interest will be grouped and categorised. Data will be binned by single year and plotted by density of each group across time.

What’s on which axis? Data binned year by year?

Something missing on whether or not the cited papers are associated with the positive/negative ratings of the guidance

Are the ‘most influential’ papers missing or absent from the most positive/ most negative guidance?

Table of guidance rating by n of influential papers cited