





# BMJ Open Mapping precision public health definitions, terminology and applications: a scoping review protocol

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## ABSTRACT

**Introduction** Precision public health is an emerging and evolving field. Academic communities are divided regarding terminology and definitions, and what the scope, parameters and goals of precision public health should include. This protocol summarises the procedure for a scoping review which aims to identify and describe definitions, terminology, uses of the term and concepts in current literature.

**Methods and analysis** A scoping review will be undertaken to gather existing literature on precision public health. We will search CINAHL, PubMed, Scopus, Web of Science and Google Scholar, and include all documents published in English that mention precision public health. A critical discourse analysis of the resulting papers will generate an account of precision public health terminology, definitions and uses of the term and the use and meaning of language. The analysis will occur in stages: first, descriptive information will be extracted and descriptive statistics will be calculated in order to characterise the literature. Second, occurrences of the phrase ‘precision public health’ and alternative terms in documents will be enumerated and mapped, and definitions collected. The third stage of discourse analysis will involve analysis and interpretation of the meaning of precision public health, including the composition, organisation and function of discourses. Finally, discourse analysis of alternative phrases to precision public health will be undertaken. This will include analysis and interpretation of what alternative phrases to precision public health are used to mean, how the phrases relate to each other and how they are compared or contrasted to precision public health. Results will be grouped under headings according to how they answer the research questions.

**Ethics and dissemination** No ethical approval will be required for the scoping review. Results of the scoping review will be used as part of a doctoral thesis, and may be published in journals, conference proceedings or elsewhere.

## INTRODUCTION

The term precision public health emerged in 2013, and its scope and definition are evolving.<sup>1</sup> Precision public health stems from precision medicine and personalised medicine.<sup>1 2</sup> These are individualised approaches to medicine that consider how factors such

## Strengths and limitations of this study

- This is the first study of precision public health definitions, terminology, uses of the term and concepts in current literature, as few studies have attempted to collate and examine existing precision public health literature in a systematic way.
- Because the primary purpose of scoping reviews is to gather information from a wide variety of sources, this study will not evaluate quality of evidence.
- The inductive approach of the search strategy may potentially result in key phrases or search terms being missed in the search; however, the search strategy we described is the most robust to answer our research questions.
- Authors will use inter-rater reliability during both phases of the search strategy, and apply reflexivity throughout the research process to monitor progress of the search and to minimise bias. These measures are designed to increase replicability of results. However, the analysis relies on human judgement and interpretation so will, to some extent, reflect the knowledge and experience of the researchers.
- This study hinges on the use of the term precision public health. It is unlikely but possible that some authors are writing about something similar to precision public health without using that term, and that they are not being cited by the authors we will find using our search strategy. This is unavoidable; the searching and analysis strategies we have devised are, in our view, the best way of scoping the relevant literature.

as genetics, environment and lifestyle can contribute to an individual’s health or ill health.<sup>1 2</sup> The goals of precision medicine are accurate and timely diagnosis, prevention and treatment based on individual needs, facilitated by technologies to process, analyse and store large volumes of data, such as electronic health records.<sup>1–3</sup> Similarly, precision public health often relies on the use of technologies to collect, analyse and store precise genetic, environmental, social, behavioural and economic information.<sup>4 5</sup> Broadly speaking, what distinguishes precision medicine from

precision public health is a focus on individualised or tailored treatment for individuals on one hand, and targeted approaches that address population level health on the other.<sup>6,7</sup>

The most current approaches to precision public health leverage data from a wide variety of sources, include linked phenotype data, and use existing and new technologies and types of computation.<sup>7</sup> This facilitates the collection and synthesis of massive amounts of data, which can be continuously updated and analysed.<sup>7,8</sup> In comparison to traditional public health approaches, the promise is that this will enable more speedy and precise diagnosis of a public health issue.<sup>7-9</sup> An example of this is geospatial risk modelling, which uses remote sensing technology to collect environmental data like rainfall or temperature to model distribution of an infectious disease.<sup>9</sup>

While the exact origins of the term precision public health are unclear, it appears to have emerged sometime in the 2010s. Dr Tarun Weeramanthri proposed use of the term in 2013, and several key conferences used the term around that time.<sup>110-12</sup> There is an ongoing debate around what the scope, parameters, goals and definitions of precision public health should be.<sup>110-12</sup>

The ambiguities surrounding inconsistent definitions and use of terminology in precision public health may impact the progress of research.<sup>13</sup> Vague definitions and concepts have also led to questions regarding the value of precision public health, including whether it is just a buzzword for what is already being achieved via conventional public health approaches.<sup>13-16</sup> Some authors have proposed doing away with the term altogether.<sup>17-20</sup> While debates have proliferated regarding precision public health, few studies have attempted to collate and examine existing relevant literatures in a systematic way.<sup>7</sup>

This scoping review will make a significant original contribution to the literature by mapping, synthesising and critiquing the growing body of knowledge on the definitions and terminology of precision public health and how these have evolved over time. It will also be useful for identifying emerging trends and patterns in the literature, and to systematically document and categorise uses of the term precision public health.

## Objectives

The overarching aims of this scoping review are to identify and analyse the definitions of precision public health, uses of the term and adjacent or overlapping terminology, use of terms and concepts in the peer reviewed literature. We will answer the following research questions:

1. How has the term precision public health been used in the existing literature?
2. How have definitions and terminology of precision public health evolved over time?
3. What claims are made about precision public health?

Systematically mapping definitions, terminology and uses of the term precision public health reported in existing literature could support future work to develop an agreed definition of precision public health, and to further conceptualise its goals, scope and parameters. It will also be useful to identify emerging trends and patterns in current literature.

## METHODS AND ANALYSIS

This scoping review protocol adapts the approaches of McGowan *et al*<sup>21</sup> and Aromataris and Riitano,<sup>22</sup> who developed evidence-based guidelines for systematic reviews, and Tricco *et al*,<sup>23</sup> who developed the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

### Data management

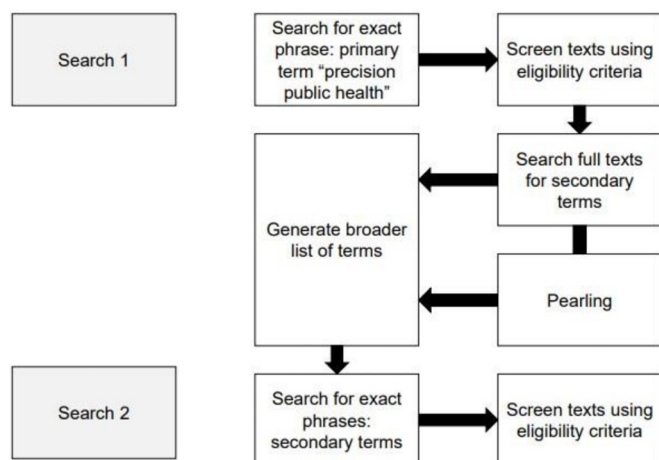
Citations will be downloaded into Endnote, and data cleaning will be performed using Endnote and SysRev.<sup>24</sup> Data management will be done using NVivo<sup>25</sup> and Microsoft Excel.

### Search strategy

The scoping review will be conducted between December 2021 and December 2022. The search strategy will comprise two phases, a narrow search and a wide search. In phase one, we will search for the exact phrase 'precision public health' in CINAHL, PubMed, Scopus, Web of Science and Google Scholar. We checked sites for relevant protocols, and selected these databases based on their relevance and appropriateness as a source for scoping reviews. Inclusion criteria will be: (1) studies published in English; (2) use of the exact phrase 'precision public health' (as a complete phrase). Exclusion criteria will be: (1) words 'precision' 'public' or 'health' used but not as the exact phrase 'precision public health'; (2) exact phrase used but only in the references or author affiliations. We will not apply publication date limits. Addressing our aim to identify and describe terminology and definitions, this search will allow us to determine precisely how the term is being used, where it originated from and what other terms and definitions are used in association with it.

RB will search for the exact phrase 'precision public health' and download citations into Endnote. Full texts will be obtained and screened using the inclusion/exclusion criteria. The full texts will then be reviewed to identify alternative terms to precision public health. Alternative terms will include anything that:

- Authors advocate as an alternative to precision public health
- Authors use interchangeably with precision public health
- Authors use commonly in association with precision public health



**Figure 1** Flow chart of the scoping review search strategy.

This will contextualise the definition, and provide alternative or adjacent terminology, synonyms or overlapping concepts. RB will also search the reference lists of included articles to identify other citations that include alternative terms.<sup>26–28</sup> All alternative terms identified in the results of the narrow search will be entered into a datasheet in Microsoft Excel, in order to catalogue their occurrence in citations. This will then be used to generate a broader list of search terms for phase two, which involves a wide search of the literature. Hereafter, precision public health will be referred to as the ‘primary term’, and alternative terms will be referred to as ‘secondary terms’.

The second phase will involve a wide search of the literature to identify any additional citations that use secondary terms. RB will search for each secondary term as an exact phrase, combine the results and remove duplicates. Inclusion criteria will be: (1) documents published in English; (2) and mention of at least one of the secondary terms identified during search one. Exclusion criteria will be: (1) false drops, where words from the target term are used, but not in that exact phrase; (2) target term is mentioned only in the references or author affiliations.

The search strategy will be piloted in PubMed.<sup>29</sup> The authors will collaborate on the progress of the search and resolve any issues that arise. The search strategy can also be updated if new terms are discovered. A summary of the search strategy can be seen in figure 1.

### Article screening and selection

All citations retrieved using the search strategy will be downloaded into Endnote. Automatic and manual searches of citations will be conducted to identify and remove duplicate references. Full texts will be then be retrieved through Endnote or via manual search and imported into SysRev for document screening. RB will scan full texts to determine if eligibility criteria has been met, and results will be discussed with the other authors. The final sample of documents will

be imported into Microsoft Excel and NVivo for data extraction.

### Data extraction

Descriptive variables will be extracted in Microsoft Excel. A coding framework for descriptive variables will be developed by the authors, adapted from other similar scoping review methods and standardised data extraction forms.<sup>21 30 31</sup> The framework will be updated as new information is uncovered, and already-coded articles recoded to ensure completeness. Articles will be imported into NVivo for data extraction.

### Data analysis

The analysis will draw on critical discourse analysis, particularly drawing on the works of Ruth Wodak, Michael Meyer, Norman Fairclough, Siegfried Jäger and Teun van Dijk.<sup>32–38</sup> It will also be informed by thematic synthesis and thematic discourse analysis methods, drawing on the works of Harden,<sup>39</sup> Rozbroj *et al*<sup>40 41</sup> and Botelle *et al*<sup>42</sup>

The analysis will contain both quantitative and interpretative stages. The first two stages of the analysis will be quantitative. First, we will extract data on descriptive variables, to enable analysis using descriptive statistics. RB will review articles to gain a preliminary understanding of their content, then extract descriptive information in Microsoft Excel. Variables will include author details, publication year, country of origin, country level of income, sector the article originates from (eg, public health), study type (eg, randomised control trial), study length, methods of data collection and analysis, funding and number of times the article has been cited. Descriptive statistics will include frequency counts of nominal variables and relative frequency distribution of nominal variables.

Articles will then be imported into NVivo and the data will be coded inductively using line-by-line coding, to enumerate occurrences of the phrase ‘precision public health’ and to collect and count secondary terms.<sup>39–42</sup> This stage of analysis will count the use of primary and secondary terms, including use of the terms and definitions, and analyse how dominant terms are in each article for example, if the article is about precision public health, or if it is mentioned as an aside.

Stages one and two of analysis will be piloted prior to data extraction. A subset of 10% of documents will be selected using a random number generator in Microsoft Excel. To ensure reliability and accuracy of coding, two authors will code this subset, results will be compared and the coding frame finalised through discussion.<sup>39–44</sup> A second subset of 10% of documents will then be extracted using the same method for inter-rater reliability testing, with coding again by two authors. Inter-rater reliability will be tested using the kappa statistic, or k Fleiss statistic.<sup>43 44</sup> This will be calculated in Microsoft Excel and used to measure the extent of agreement between the two reviewers.<sup>43 44</sup> Once the coding strategy has been finalised and inter-rater reliability is acceptable,



RB will perform data extraction and analysis on all documents and the authors will review results. Any disagreements will be resolved by discussions with the authors and documented.

These first two stages of analysis will establish a timeline of how the phrase precision public health came into existence and developed, characterise terminology, definitions and uses of the term precision public health, as well as secondary terminology, definitions or concepts reported in literature.<sup>32 34–36 45 46</sup>

The next stage of analysis will be interpretive and will focus on the analysis and interpretation of how the phrase 'precision public health' is used in literature, and the composition, organisation and function of discourses surrounding precision public health.<sup>32 34 35 47–54</sup> Discourses will be analysed from the macro to micro level.<sup>32 34 35 47–52</sup>

Data will be coded in NVivo using line-by-line coding to group data into themes that reflect the content of each document.<sup>39–41 55 56</sup> We will undertake a qualitative analysis using the following framework:

- ▶ Intertextuality (macro): relationships between documents, such as how authors reference other sources, what other sources are referenced, how authors position their work in relation to other work, or how a document might influence new research.<sup>24–32 32–36 50 52–54 57–59</sup>
- ▶ Context (meso): how context informs a discourse for example, the background of the authors, where the document was published, who the target audience is.<sup>32 34–36 46 50 54</sup>
- ▶ Structure of documents (micro): how headings, subheadings and formatting shape themes or discourses, and the role of the introduction and conclusion.<sup>32 50 53 57</sup>
- ▶ Linguistics (micro): how discourses function as language and inform the logic of an argument.<sup>32 32–36 50 51</sup> This will include the context of language, grammar, literary phrases, modalities and evidentiary language.<sup>32 34–36 46 50 51</sup>

The final stage of analysis will be interpretive and will focus on the analysis and interpretation of what secondary terms are used to mean, how the terms relate to each other, who is using them and how they are contrasted or paralleled with precision public health. Data will be coded inductively by grouping sentences or whole sections of text into themes that reflect the content of each document.<sup>39–41 55 56</sup>

The authors will apply reflexivity throughout the research process to improve transparency of methods and validity of results.<sup>39–41 60</sup> This will include reflection on how personal experiences, biases, beliefs and attitudes may have affected study design, and methods of analysis and interpretation.<sup>39–41 60–63</sup> Reflexivity will also be addressed in any literature published from this research.<sup>39–41 45 63</sup>

#### Patient and public involvement statement

No patient involved

#### CONCLUSION

This protocol summarises the procedure for a scoping review which aims to identify, describe and analyse definitions, terminology, uses of the term precision public health and emerging trends or patterns in current literature. Our findings will add to the growing body of knowledge on precision public health and aid conceptualisation of its goals, scope and parameters, and help guide the future of this emerging sub-discipline of public health.

**Contributors** RB designed and drafted the scoping review protocol. AB-M and SC each contributed by reviewing, editing and consulting on protocol design, and made substantial contributions to the drafting and critical revision of the work. EF contributed by reviewing, editing and consulting on protocol design. All authors contributed to subsequent revisions and approved the protocol prior to its submission.

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## Search Strategy

Alternative terms refer to anything that:

- Authors advocate as an alternative to precision public health
- Authors use interchangeably with precision public health
- Authors use commonly in association with precision public health

### I. CINAHL

#	Query	Limiters/Expanders	Last Run Via	Results
S5	S1 OR S2 OR S3 OR S4		Limiters – English Language; Language: English	
Expanders - Also search within the full text of the articles				
Search modes - Find all my search terms Interface – EBSCOhost Research Databases				
Search Screen – Advanced Search				
Database - CINAHL Plus with Full Text ( <i>insert number of results</i> )				
S4	TX "alternative term 3"		Limiters – English Language; Language: English	
Expanders - Also search within the full text of the articles				
Search modes - Find all my search terms Interface – EBSCOhost Research Databases				
Search Screen – Advanced Search				
Database - CINAHL Plus with Full Text ( <i>insert number of results</i> )				
S3	TX "alternative term 2"		Limiters – English Language; Language: English	
Expanders - Also search within the full text of the articles				
Search modes - Find all my search terms Interface – EBSCOhost Research Databases				
Search Screen – Advanced Search				
Database - CINAHL Plus with Full Text ( <i>insert number of results</i> )				
S2	TX "alternative term 1"		Limiters – English Language; Language: English	
Expanders - Also search within the full text of the articles				
Search modes - Find all my search terms Interface – EBSCOhost Research Databases				
Search Screen – Advanced Search				
Database - CINAHL Plus with Full Text ( <i>insert number of results</i> )				
S1	TX "precision public health"		Limiters – English Language; Language: English	
Expanders - Also search within the full text of the articles				
Search modes - Find all my search terms Interface – EBSCOhost Research Databases				
Search Screen – Advanced Search				
Database - CINAHL Plus with Full Text ( <i>insert number of results</i> )				

### II. Google Scholar (first 1000 results will be considered)

1. "Precision public health"  
Limiters – English Language  
Expanders – Collections: search articles, results per page: 20, bibliography manager: show links to import citations into Endnote  
Advanced Search – Find articles: with the exact phrase, where my words occur: anywhere in the article
2. "Alternative term 1"  
Limiters – English Language  
Expanders – Collections: search articles, results per page: 20, bibliography manager: show links to import citations into Endnote  
Advanced Search – Find articles: with the exact phrase, where my words occur: anywhere in the article
3. "Alternative term 2"  
Limiters – English Language  
Expanders – Collections: search articles, results per page: 20, bibliography manager: show links to import citations into Endnote  
Advanced Search – Find articles: with the exact phrase, where my words occur: anywhere in the article



## 4. "Alternative term 3"

Limiters – English Language

Expanders – Collections: search articles, results per page: 20, bibliography manager: show links to import citations into Endnote

Advanced Search – Find articles: with the exact phrase, where my words occur: anywhere in the article

## 5. "Precision public health" OR "Alternative term 1" OR "Alternative term 2" OR "Alternative term 3"

Limiters – English Language

Expanders – Collections: search articles, results per page: 20, bibliography manager: show links to import citations into Endnote

Advanced Search – Find articles: with the exact phrase, where my words occur: anywhere in the article

## III. PubMed

Search number Query Filters Results

5 ((("precision public health" AND (english[Filter])) OR ("alternative term 1" AND (english[Filter]))) OR ("alternative term 2" AND (english[Filter]))) OR ("alternative term 3" AND (english[Filter])) English ("precision public health"[All Fields] AND "english"[Language]) OR ("alternative term 1"[All Fields] AND "english"[Language]) OR ("alternative term 2"[All Fields] AND "english"[Language]) OR ("alternative term 3"[All Fields] AND "english"[Language])) AND (english[Filter]) (insert number of results)

4 "alternative term 3" English ("alternative term 3"[All Fields] AND (english[Filter]) (insert number of results))

3 "alternative term 2" English ("alternative term 2"[All Fields] AND (english[Filter]) (insert number of results))

2 "alternative term 1" English ("alternative term 1"[All Fields] AND (english[Filter]) (insert number of results))

1 "precision public health" English ("precision public health"[All Fields] AND (english[Filter]) (insert number of results))

## IV. Scopus

ID Name Query Documents

#5 All search terms  
( ALL ( {precision public health} ) OR ( ALL ( {alternative term 1} ) ) OR ( ALL ( {alternative term 2} ) ) OR ( ALL ( {alternative term 3} ) ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) ) (insert number of documents)

#4 Alternative term 3  
ALL ( {alternative term 3} ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) (insert number of documents)

#3 Alternative term 2  
ALL ( {alternative term 2} )  
AND ( LIMIT-TO ( LANGUAGE , "English" ) ) (number of documents)

#2 Alternative term 1  
ALL ( {alternative term 1} ) AND ( LIMIT-TO ( LANGUAGE , "English" ) ) (insert number of documents)

#1 Precision public health  
ALL ( {precision public health} AND ( LIMIT-TO ( LANGUAGE , "English" ) ) ) (insert number of documents)

## V. Web of Science

#5 #4 OR #3 OR #2 OR #1

Search language=Auto

#4 TOPIC: ("alternative term 3")



Search language=Auto  
#3 TOPIC: ("alternative term 2")  
Search language=Auto  
#2 TOPIC: ("alternative term 1")  
Search language=Auto  
#1 TOPIC: ("precision public health")  
Search language=Auto