A Review of Evaluation Guidance Relevant to Public Health Interventions.

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Abstract

Objective: To identify accessible high-quality, evaluation guidance, available to researchers and practitioners and to catalogue, summarise and categorise the content of a subset of accessible, quality guides to evaluation.

Methods: We systematically reviewed the literature for documents providing support for evaluation of complex health interventions.

Results: Our initial search identified 402 unique documents that were screened to identify those that were (1) developed by or for a national or international organization (2) freely available to all (3) published during or after 2000 (4) specific to public health. This yielded 98 documents from 43 organisations. Of these, 48 were reviewed in detail. This generated a detailed catalogue of quality evaluation guidance.

Conclusions: A wide range of guidance on evaluation of public health initiatives is available. Time and knowledge constraints may mean that busy practitioners find it challenging to access the most, up-to-date, relevant and useful guidance. This review presents links to and reviews of 48 quality guides to evaluation as well as categorising their content. This facilitates quick and easy access to multiple selected sources of specific guidance.
Evaluation is foundational to identification, implementation and dissemination of effective and cost effective interventions. There have been many calls to ensure and improve evaluation of interventions and initiatives designed to improve public health. For example, the US Centre for Disease Control and Prevention note that in order to improve the health of the public, “we must devote our skill - and our will – to evaluating the effects of public health actions” (Centres for Disease Control and Prevention, 1999). In the UK, the 2011 House of Lords report on Behaviour change recommend that “a lot more could and should, be done to improve the evaluation of interventions (House of Lords Select Committee, 2011) and Public Health England have called for improved evaluation; stating that “whilst interventions are being commissioned by a variety of organisations, data informing the relative ‘success’ of the interventions, in terms of the intended health outcomes, was patchy and inconsistent” (Public Health England, 2016). Evaluation is essential to understanding what does and does not work and robust demonstration of effectiveness may be crucial to securing future funding.

Evaluation of public health interventions may be complex and expensive, in part, because such interventions are themselves complex (Craig et al., 2013). Public health interventions may, for example, attempt to engage and multiple individuals, organisations, and / or communities and target changes in knowledge, attitudes, and practices at multiple levels over long periods of time. They also operate in complex demographic and socio-economic contexts (Craig et al., 2013). These “real life” complexities render evaluation challenging. Nonetheless, when financial resources are scarce, it is crucial that evidence of effectiveness directs selection of interventions. Repeatedly funding ineffective programs not only squanders valuable resources but has opportunity costs resulting from failure to implement potentially beneficial interventions. Without good evaluation, it is impossible to distinguish between programs that are having a substantial health impact, those that need to be adapted for different populations, those that need to be withdrawn, and those that may be harmful (UK National Institute for Health and Care Excellence, NIHR, 2010). Despite this, programs are often implemented with poor, incomplete or no evaluation.

Evaluability assessment facilitates decisions by practitioners, commissioners and researchers about what programs most need to be evaluated. Ogilvie et al. (2011) identify
five key questions that should be answered before investing in an evaluation. These focus on the stage of development or intervention implementation, whether or not the results of the evaluation are likely to lead to changes in policy or practice, how widespread or important effects of an intervention are likely to be (i.e., is it likely to have a large effect on a large number of people), and how will findings of the evaluation contribute to existing evidence? Such guidance enables evaluation priorities to be identified when funds for evaluations are limited.

When evaluation is undertaken it is vital that it is conducted in a manner that will produce robust answers to the questions addressed. This requires expertise and, not all practitioners may have had adequate training to enable them to undertake evaluations without support. Consequently, public health practitioners and commissioners may feel under-skilled to conduct evaluations (Denford et al., 2016). This highlights the need for high-quality, useable, freely available and practical evaluation guidance on how to evaluate public health programs.

Appeals for better evaluation practice led to a proliferation of guidance and advice to support evaluation of public health programs (Ogilvie et al., 2011; Craig et al., 2013). For example, the US Centres for Disease Control and Prevention (CDC) developed a framework to guide public health professionals perform evaluations. The framework includes a series of steps; from engaging stakeholders through to dissemination of findings. Many of these activities are part of routine practice but others are not. This framework includes a series of standards that are intended to ensure that evaluations are well designed, rigorous, and suitable for purpose. Different guidance is provided by the revised UK Medical Research Council (MRC) framework (Craig et al., 2013), aimed mainly at academic researchers. This provides an overview of the phases and processes involved in the development, implementation and evaluation of complex interventions and, in contrast, to an earlier MRC framework (MRC 2000), this revised guide provides advice on how to evaluate highly complex programs using a variety of methods – not just controlled clinical trials. These are just two of many guides to public health evaluation (see too, for example, Centres for Disease Control and Prevention, 1999; Better Evaluation, 2002; Moore et al., 2015; Cavil, Roberts, & Rutter 2012).
Such guidance has the potential to facilitate the quality of evaluations and increase the number of programs with strong evidence for their effectiveness which, in turn would allow withdrawal of programs that are ineffective or lack evidence of effectiveness. However, to be useful such guidance has to be accessible to practitioners and commissioners; they need to know which guides to evaluation to use for what purpose. Unfortunately, the many different guides available may be a barrier to identification of relevant guidance. Novice evaluators who turn to the internet for guidance are faced with many choices and have no map describing the content of available evaluation and so may find it difficult to know what guidance to follow. Some guides provide generic advice on evaluation generally, others on particular types of evaluation (e.g., process or economic evaluation). Some documents are written for academics, or policy makers, or funders, or experienced evaluators. Other guides are topic specific; such as the UK Public Health England frameworks for obesity prevention. This can be overwhelming for novice evaluators who have no easy way to select appropriate high-quality guidance for particular evaluation projects (Denford et al). This lack of guidance on how to access and use guidance on public health guidance is clear from conversations with practitioners. For example, in a qualitative study of UK public health practitioners’ views of evaluation on practitioner commented, “If I were to begin evaluation tomorrow and I did a search on evaluation I’d probably… come up with about 500 hits - but actually they aren’t all equal and some are more appropriate than others and understanding which is the best one to use would be difficult for me. So some advice about quality and/or types of tools or particular types of evaluation would be helpful”

The Present Study

We aimed to review this literature in order to assess the extent of available guides to evaluation relevant to public health interventions and to identify the content of such guidance. We also planned to provide a catalogue of high-quality, readily-accessible guides that would help practitioners navigate this literature. We had two specific aims.

Specific Aims

1. To identify accessible high-quality, evaluation guidance, available to public health researchers and practitioners
2. To summarise and categorise the content of a subset of accessible, quality guides to evaluation.
Methods

Search strategy

Evaluation guidance documents were identified using five strategies: (1) searching electronic databases (2) hand searching of identified guides and journals (3) searching internet resources (4) citation searching and (5) contacting key authors and professionals in the field.

EMBASE, MEDLINE, MEDLINE-in-process, Health management information consortium (HMIC), Social Policy and Practice (SSP), Web of Science, and PsycINFO were searched using the search strategy presented in Supplementary Document 1. Reference lists of identified papers, and key journals were also scrutinised.

It was anticipated that a substantial proportion of guidance documents would not take the form of academic papers and so would not be identified using a traditional literature search. To identify as many non-academic documents as possible, we searched the four main internet search engines (Google, BING, Yahoo, WebCrawler) using a modification of the search strategy (Supplement 1). The first 30 pages that were retrieved from each database using each term were screened. We then searched a series of health and evaluation websites (Supplement 1) using the term “evaluation.” Websites were identified through discussions with academics and public health professionals. Finally, key authors and experts in the field were asked to suggest documents/ websites/ policies that we missed.

The search was conducted by two authors (author one and three) with guidance and support from author 2. We included websites, books, journal articles, policy recommendations, educational resources, tools and frameworks that provide support to public health practitioners undertaking evaluations of public health interventions.

We excluded all documents and articles in which the aim was to evaluate a specific intervention (as opposed to offering advice on how to undertake evaluations). Papers reporting on the development of questionnaires or assessment scales for specific interventions were also excluded.

Selecting a Subset of Evaluation Guidance Documents
Our search identified 402 guidance documents that can be used to support the evaluation of public health programs. This list included books, reports, webpages, and academic articles. These documents had a range of aims including: (i) elucidating the principles that practitioners should follow when conducting evaluations, (ii) specifying standards of good evaluation practice, (iii) offering advice on how and when to undertake evaluations, (iv) offering instruction on particular type of evaluation e.g., economic or process evaluations, (v) providing online support and advice to practitioners, including tools to support evaluation.

From this list of 402 documents, we selected a subset to review and catalogue in detail. Through discussion the authors agreed four selection criteria. First, that documents were free and readily available to public health practitioners. Second, given the changing nature of public health practice, we focused on documents written in or after the year 2000. Third, to provide a quality indicator we selected documents sourced or created by national or international organisations. Fourth, and finally, we assessed the relevance of each document to public health.

This resulted in a reduced list of 98 documents produced by 25 organisations. We then reviewed the documents produced be each of these organisations and selected the most comprehensive or recent evaluation guidance, resulting in 25 guides. A further 23 guides were added because the authors agreed that documents provided by the US Centers for Disease Control and Prevention, the UK Medical Research Council, the UK National Health Service, and Public Health England were complementary to the initial selection of 25 and judged to be equally valuable to practitioners. So, for these four organisations, more than one guide to evaluation was retained for detailed examination. The final list of these 48 evaluation guidance documents is provided in Supplementary Document 2.

**Summarising the Content of Selected Guides to Evaluation**

Each of the 48 guides were read by two authors. A content template was developed through discussion and short one-page summaries of each of the 48 guides were produced independently by each reviewer. Each summary provided information on the target audience of the guide, its main aim, a short overview of the guide, and strengths and limitations. Links to the resource and associated resources were also included. The two reviews of each guide were then combined, retaining content from each review and
resolving any discrepancies through discussion. The final (integrated) review was then sent to the original author of the document for verification. Authors were asked if they (i) considered the summary to be an accurate and good reflection of their document (ii) if anything was missing and (iii) if they thought this would be useful to practitioners.

Content Categorisation of Evaluation Guidance Documents

Once summaries had been completed, two authors independently coded the content of the 48 guides. Initially, a selection of 5 documents were read by each reviewer and their content listed. Merging of these two content lists through discussion resulted in a set of 44 content categories. The two authors then jointly coded a further 5 documents, and discussed and refined the list accordingly. The final list contained 37 content categories generated by the initial two-stage coding of 10 guides; which was then used to categorise the content of the remaining 38 guides.

Results

Overview of 98 Guides to Evaluation

While we identified 402 guides to evaluation only 98 were relevant to public health, free and readily available and produced since 2000 by a national or international organisation. These 98 varied in terms of purpose, topic or condition, and audience. The large majority were general overviews of evaluation focusing on principles of evaluation and how to assess evidence to support evaluation. A variety of evaluations were considered including, trials, naturally-occurring experiments, process evaluations and economic evaluations and various advice and instructions were provided on how to plan prepare for and conduct such evaluations. The guides were mainly generic but some focused specifically on evaluating international development, obesity, asthma, sexual health, mental health and physical activity. One focused on children and families, one on healthy eating and one on drugs and one on violence on women and girls. However, even condition-specific guides provided instruction and support that relevant to evaluations of other types of interventions. For example, some guides, focused on evaluating interventions relevant to particular health problem (asthma, smoking and obesity) to illustrate more general lessons. Documents ranged from targeting those with no knowledge of evaluation, to sophisticated guides for those experienced in evaluation practice with target audiences including novices, evaluation
experts, program managers, health care professionals, government officials and academics/researchers.

**Response from authors**

Of the 48 documents we reviewed, copies of our review were sent to the lead authors of each guide. If we were unable to find contact details for the main author, or there was no named author, we contacted the chair of a research group or a general enquiries email. In some cases contacts passed us on to someone else. We sent reminders up to three times, in some cases trying alternative addresses. Fourteen authors did not respond. Two organisations (representing a total of seven documents) sent standard replies stating that they did not respond to such requests. Twenty seven authors replied to state that they were happy with the summary or to suggest minor changes.

**Content Categorisation**

Merging categories identified by two researchers independently coding the content of two sets of five guides resulted in a list of 37 content categories that were used to describe the content of 48 selected guides. These categories were grouped into 1) Background to evaluation 2) Pre-evaluation preparatory work 3) The Evaluation process 4) Types of evaluation and 5) Additional support. Tables 1-5 list content categories within each of these five groupings. The tables also lists each of the 48 documents that contained content corresponding to each of the 37 categories. Thus these tables can be used by readers to find guides (among the 48) with particular content. These tables can be used in conjunction with the 48 brief summaries of these guides which are provided in Supplementary Document 3. Each of the 48 guides was been given a brief title that is listed below and used both in Tables 1-5 and in Supplementary Document 3.

1. **Background to evaluation**

Seven content categories were grouped as “background to evaluation” (see Table 1). These were: Evaluation overview; assessing the evidence; evidence based practice; evaluability; common evaluation challenges; policy and evaluation; and using theory in evaluation.

Eighteen guides provided an overview of evaluation. This included explanation of the nature of evaluation and how it differs from other types of research; why evaluation is needed and
what it can tell us; and the benefits of conducting evaluation. These documents usually targeted practitioners who were new to evaluation.

Eight guides informed readers how to identify and assess the quality and relevance of existing research and evaluations. This frequently included links to quality assessment scales such as CONSORT and the Equator network. Four of these eight guides also discuss evidence based practice (EBP); what EBP is, why it is important, and how to conduct evaluations within an evidence based framework. The importance of choosing “best available” methods, even if they are not optimum, are highlighted.

Theory is a critical part of intervention development. Theory driven evaluation aims to examine hypothesised causal processes. Nine guides discuss the use of theory in program development and evaluation and two UK Medical Research Council documents (MRC1 Framework and MRC2 Process evaluation- see below) were found to be particularly useful in this regard.

Challenges inherent in evaluation of public health initiatives are numerous. It is not always possible or practical to conduct a high quality evaluation, and five documents present sections on methodological and practical challenges and ways of overcoming such challenges. Just one document (Evaluability Assessment) focused on evaluability; which is defined as “the extent to which an activity or project can be evaluated in a reliable and credible fashion.” The authors review the literature on evaluability, and provide an overview of what it is, its purpose, what it includes, and how it can be completed.

Four guides (including the UK Government Magenta book and The Green book) focus on the evaluation of policy. These books are intended to be used by policy makers working in or with the UK government in order to support evidence for policy making.

2. Pre-evaluation work
Nine content categories were used to identify information on the steps prior to launching an evaluation (see Table 2). This included: completing a needs assessment; developing a logic model; planning the evaluation; developing a protocol; budgeting; developing contracts and establishing communications; pilot testing; obtaining ethical approval; and involving stakeholders.

Thirteen guides provide information and resources to support needs assessments; including how to collect data about a population or community to inform the intervention, how to identify issues and problems, how to assess whether or not issues and problems are shared by the target population, and how to assess populations or communities at the start of an intervention or program. A needs assessment may feed into the development of a logic model. These are diagrammatic representations of the program, describing delivery mechanisms, intervention components, mechanisms of impact, and intended outcomes.

Logic models were discussed in twenty guides. A logic model is part of the evaluation plan; a written document specifying the direction the evaluation should take based on priorities, resources, time, and skills needed to complete the evaluation. These guides recommend that all stakeholders should be involved in the development of such a plan to ensure that the process is clear, and to establish consensus on the purpose and procedures of the evaluation. Twenty one guides discuss the process of developing an evaluation plan; including one document by the CDC which focuses exclusively on planning (CDC2 Evaluation Plan). Only three documents specifically discussed the processes involved in the development of an evaluation protocol (Better Evaluation, MRC2 Process Evaluation and APCRC). Of particular note is the UK NHS document (APCRC) in which a protocol template is provided.

Once developed, guides recommend that evaluation methods, materials, and procedures should be piloted testing for feasibility. It is important to know, for example, if it is possible to recruit participants, if the data collection tools are suitable, if the outcomes measured are appropriate. Five guides discuss pilot testing. Evaluation can be costly and when designing an evaluation, the questions asked and methods chosen must reflect the funds available.

Fifteen guides provide information and support on how to budget for an evaluation. A range of ethical issues need also be considered when planning an evaluation of public health initiatives. For example, in some cases, it may not be ethical to withhold an intervention
from a group of people. In such cases, randomised controlled trials would not be suitable. There are also ethical issues surrounding informed consent and data collection, and issues surrounding health inequalities. Ten guides discuss such ethical issues. Seventeen guides discuss the importance of stakeholder involvement, or strategies for involving stakeholders in the evaluation process. Many of these documents also provide advice about facilitating healthy communications between stakeholders, or developing evaluation contracts so that each party has a clearly specified role.

3. Evaluation processes and procedures

Eight content categories relate to the processes and procedures of completing an evaluation (see Table 3). Eighteen guides include an overview of the processes involved in evaluation. This frequently took the form of a checklist of activities involved in evaluation. In some instances, the checklist was structured in terms of essential and desirable features. Other evaluation process content categories include defining an evaluation question; specifying outcomes; describing the intervention; choosing research design and methods; collecting data; managing, analysing and interpreting data; and learning and reporting.

A total of nineteen guides provide information on developing a research question. Such documents highlight the need to choose a question that can be answered within the confines of the time, resources, and skill sets that are available; and note the importance of designing a question which is important and useful to all key stakeholders, and can feasibly be answered. Defining the research question is intricately linked to understanding the program, and understanding the outcome. Specifically, how to describe the goal of the program, any activities, and what is and is not part of the program, and how to choose, define, and develop outcomes and outcome measures. Nineteen guides include a section describing how programs should be described, and twenty four guides discuss factors including what makes a good indicator, and suggest a number of considerations when selecting indicators. In some cases outcome indicators or measures are suggested, or objective or validated measures provided. Twenty six guides discuss different research designs and methodological approaches that may be used when evaluating a program. This includes describing qualitative and quantitative methods, as well as discussing particular trial designs (e.g., randomised
controlled trials). The majority of these documents discussed data collection approaches (i.e., observations, surveys, focus groups, interviews, existing records etc), and how to manage, analyse and interpret data. They also discuss the importance of methodological rigor, cost effectiveness and validity, reliability and credibility. However, the level of detail provided was limited. Often, guides include a brief overview of types of analyses, or the importance of matching the type of analyses to the study design and research question. Statistical advice was not provided – although links to statistics books were frequently included. Twenty two documents discuss how to learn from and disseminate findings once data has been analysed.

4. Types of evaluation

Seven content categories were used to identify guidance on types of evaluation (see Table 4). Five documents provide a brief overview of different types of evaluation (i.e., process evaluation, outcome evaluation, economic evaluation). These documents briefly compare and contrast these forms of evaluation, but do not provide any real detail. Other documents either focus exclusively or in part on specific types of evaluation including; process evaluation; outcome evaluation; economic evaluation; natural experiments; community projects; and fidelity.

Fourteen guides discuss process evaluations, and especially, the UK Medical Research Council (UK MRC) document, dedicated entirely to the conduct of process evaluation. Fifteen guides discuss outcome evaluations in terms of what they are and how they differ to other types of evaluations, and eight guides include a discussion of economic evaluation. This includes two documents by Gov.UK and the World Health Organisation (The Green Book and WHO2) which focus exclusively on economic evaluation. Other documents provide a definition and explanation of economic evaluations, and discuss the importance of considering cost effectiveness of programs. A separate UK MRC document provides detailed consideration of evaluating natural experiments, and two documents were developed specifically to aid the evaluation of community projects. These two documents note the challenges associated with community projects, and provide suggestions for overcoming such problems. Eight guides focus on fidelity, specify the importance of assessing fidelity, and provide suggestions regarding how it may be achieved.

5. Additional support

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Six content categories were used to identify guidance on supporting the conduct of evaluations (see Table 5). For example, one of the reviewed guides was a website (UKES) offering support and forum for communication for all involved in evaluation. Four guides provide recommendations for achieving high quality evaluations. For example, the National Institute for Health Care and Excellence (NICE) lists a number of recommendations for evaluation. Twenty one guides include tools or tool kits to support the evaluation process. Frequently, tools were included as an appendix, and include tools such as checklists, templates, outcome indicators and surveys. Nine guides provide links to other resources in which further information is detailed. Six documents include information and support to ensure evaluations are of the highest quality. For example, the Centres for Disease Control and Prevention (CDC) framework include a series of standards that evaluations should adhere to. Six documents discussed factors to consider when hiring an external evaluator to complete the evaluation. Finally, eleven guides provide either links to training courses, or online training in evaluation.

Discussion

We have presented findings from a systematic and comprehensive search of documents providing guidance on evaluation of public health initiatives. We identified 402 guides on a range of topics created for a variety of different types of users with different initial expertise. In order to render this literature more accessible we have suggested a series of five criteria that reduced our list to 98 guides. Then by selecting non-overlapping guides from national and international organisations to just 48. We have provided a brief summary of each of these guides and categorised the content of each across 37 categories. We believe that this will make the evaluation guidance literature much more accessible for public health practitioners and commissioners.

Despite the abundance of evaluation guidance, many practitioners claim that they do not use guidance documents and do not find them useful (Denford et al., 2016). This may be in part due to an inability to easily understand the purpose, content and target audience of available guides. For example, a simple guide may not be of much use to an experienced evaluator, but could be ideal for a novice. Whilst generic guides may be used to support evaluators in any situation, they may also be lacking the necessary detail to support specific activities such as choosing outcomes. The complexity of public health evaluation makes it
impossible to develop a guide that suits all needs. Our project was to begin to map out what
guidance is available for whom and to provide a guide to a limited range of easily-accessible,
quality-assured guidance to evaluation.

**Strengths and limitations**

We have provided researchers and practitioners with a tool to identify and use relevant
evaluation guidance documents. We will have undoubtedly missed some guidance in this
wide-ranging and desperate literature. However, every attempt was been made to be as
inclusive and transparent as possible and we are confident that the sample selected is
representative of the literature as a whole. Moreover the list of 48 reviewed and
categorised guides are recent, accessible and high-quality. Our categorisation of the content
of these guides will allow readers to identify guides that provide relevant, high quality
information.

To promote accuracy, the content of the guides, and the associated reviews were checked
and agreed by two authors and the authors of the original guidance documents whenever
possible.

Evaluation methods, tools and approaches are continuously developing and progressing.
Consequently, our review will need to be updated on a regular basis. This would be
relatively easy given the systematic and transparent search strategies.

**Conclusion**

A wide range of guidance on evaluation of public health initiatives is available. However,
time and knowledge constraints may mean that busy practitioners find it challenging to
review the range of available guidance and access the most, up-to-date, relevant and useful
guidance. This review presents links to and reviews of 48 quality guides to evaluation as well
as categorising their content. This facilitates quick and each access to multiple selected
sources of specific guidance.

**Declarations**

**Ethics approval and consent to participate**

Not applicable

**Consent for publication**
Availability of data and material
All data is available on request

Competing interests
The authors declare that they have no competing interests

Authors’ contributions
The initial idea and project design was developed by CA, SD, FD, and SA. SD, MC, and PA carried out the initial search. Data extraction was completed by SD, PA, SA, FD, and MC. Data analysis was completed by SD and MC. The paper was developed by SD with considerable input from CA, and MC. All authors read and approved the final draft.

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Abbreviations
CDC Centres for Disease Control and Prevention
EBM Evidence Based Medicine
MRC Medical Research Council
NICE National Institute for Health and Care Excellence
WHO World Health Organisation


