

## Cochrane Update

# Predicting sustainability of intervention effects in public health evidence: identifying key elements to provide guidance

Jillian Whelan<sup>1</sup>, Penelope Love<sup>1</sup>, Tahna Pettman<sup>1,2</sup>, Jodie Doyle<sup>2</sup>, Sue Booth<sup>1,3</sup>, Erin Smith<sup>1</sup>, Elizabeth Waters<sup>1,2</sup>

<sup>1</sup>The CO-OPS Collaboration, WHO Collaborating Centre for Obesity Prevention, Population Health SRC, Deakin University, Geelong, Australia

<sup>2</sup>Cochrane Public Health Group, Jack Brockhoff Child Health and Wellbeing Program, Melbourne School of Population and Global Health, University of Melbourne, Melbourne, Australia

<sup>3</sup>Department of Public Health, Flinders University, Bedford Park, Australia

Address correspondence to Jillian Whelan, E-mail: jill.whelan@deakin.edu.au

## Introduction

Sustainability in the context of interventions is very broadly defined, referring to the general phenomenon of the continuation of the intervention or of its effects.<sup>1,2</sup> The need for long-term viability of interventions is likely to increase as policy-makers, practitioners and funders become increasingly focussed on the need to allocate scarce resources effectively and efficiently.<sup>1</sup> Whilst the realities of intervention research and implementation funding produce and assess relatively short-term outcomes, there is a need to identify, at the very least, indicators of longer term effects. Assessing the likelihood of sustainability is crucial for users of public health evidence (practitioners, policy-makers and funders). Stakeholders want to know whether the health benefit (or otherwise) of the interventions under review are going to be sustained beyond the funded period and perhaps beyond the life of the intervention itself (if both cease). This paper reports upon a scoping review that aimed to understand key elements of sustainability in public health and health promotion interventions, using community-based obesity prevention as an example. These elements aim to offer a useful guide to both researchers undertaking systematic reviews and end-users of public health evidence.

## Sustainability

Historically, the literature on sustainability has been broad and fragmented, discussing sustainability at the programme or project level only<sup>3</sup> and referring to programme continuity, duration, and institutionalization.<sup>4</sup> Recently, the focus has been refined to include concepts such as: ‘sustainable programmes’, ‘sustainable practice’, ‘sustainable capacity’ and ‘sustainable outcomes’.<sup>2,3,5,6</sup> These concepts have evolved in acknowledgement that any assessment of ‘sustainability’ is linked to what factors actually engage communities in actions

to take greater control over their health and determinants.<sup>3</sup> Agreement has emerged in the literature around general domains of sustainability, extending to factors such as ensuring supportive context (e.g. political, organizational/environmental), capacity building (e.g. stakeholders, community), effective partnerships and relationships and rigorous decision-making and planning.<sup>3,7</sup>

## Sustainability: does it matter?

It is useful to reiterate that a sustained or sustainable intervention does not necessarily result in sustained outcomes and not all interventions need to be sustained in order to be useful or effective.<sup>1,2</sup> A critical question to ask is, ‘Is the sustainability of the outcomes relevant to the objectives of the intervention?’ If it is, review authors should consider what outcomes have (or should have) been measured, over what period, and what the pattern of outcomes is over time.<sup>8</sup>

## Determining sustainability of intervention effects: community-based obesity prevention interventions

Using the example of community-based obesity prevention, recent systematic reviews suggest that community-based

Jillian Whelan, Research Fellow

Penelope Love, Knowledge Broker

Tahna Pettman, Research Fellow: Public Health Evidence & Knowledge Translation

Jodie Doyle, Managing editor, Cochrane Public Health Group

Sue Booth, Research Fellow

Erin Smith, Senior Research Fellow

Elizabeth Waters, Coordinating editor, Cochrane Public Health Group; and Director, The Jack Brockhoff Child Health & Wellbeing Program

interventions involving multiple strategies (e.g. capacity building, policy, workforce development), applied across multiple settings (e.g. early childcare, education, other community settings), are most likely to be effective at preventing unhealthy weight gain in children<sup>9–11</sup> and adults.<sup>12</sup> To ensure that the impact of these investments last beyond funding cycles, available guidelines for ‘best practice’ recommend that interventions: engage with multiple sectors and settings; use evidence and theory in programme design and work at multiple levels from individual, interpersonal and organizational<sup>13</sup> through to broader community and policy-environment approaches, tailoring interventions to the local context.<sup>14–17</sup> Consistent with the obesity prevention evidence is the sustainability literature which emphasizes the importance of addressing sustainability during intervention planning, implementation and evaluation.<sup>2,18,19</sup>

Although obesity prevention practice and evidence is evolving to acknowledge the need for multi-component initiatives (multi-strategy, multi-sector, multi-level), evidence is still limited on what components are associated with long-term sustainability. A set of measures that may be used to assess programme sustainability has recently become available (<https://sustaintool.org>). Developed from a literature review and concept mapping, this interactive tool provides a process which practitioners can use to measure and assess their programme, inform sustainability planning and track progress towards sustainability goals.<sup>7</sup> Although focused upon public health ‘programmes’, it is possible that the same tool may be applicable to broader public health interventions such as policy, system change and capacity building. However, different methods may be necessary for assessing sustainability of different types of interventions found in primary research and current practice.<sup>18</sup> Further, although designed for practice settings, the components described may also have relevance for reviewers, but at present this is not made explicit.

## Project to determine important sustainability elements for community-based interventions

A scoping review of empirical literature was undertaken in 2013 to explore sustainability in health promotion and public health, with a focus on the more specialized field of community-based obesity prevention. The review aimed to explore the breadth of definitions of sustainability and identify commonalities reported regarding key elements (i.e. essential/core components of interventions) that have been reported to promote sustainable outcomes. The review was undertaken to inform a broader capacity-building project for community-based practitioners and decision-makers in intervention planning. Key elements of sustainability were considered to have

relevance for review authors working with public health intervention research.

A keyword search was conducted through several electronic databases (PubMed, EbscoHost, Web of Science, Science Direct) in January 2014. No other date limits were applied. Abstracts were screened to detect where ‘sustainability’ of health-related interventions was mentioned, then full-text publications were read by two reviewers (J.W. and P.L.). Any elements that were reported in studies as contributing to sustainability were recorded. The final list of elements was able to be reduced into key descriptive categories by coding thematically, after which, 10 themes remained.

The 10 key themes, or elements, were tabulated and a matrix was produced for comparison against similar domains of sustainability extracted from frameworks reported in systematic reviews and concept mapping studies of public health intervention sustainability.<sup>4,19</sup> Finally, included in the comparison were elements from the only detailed guidelines available internationally for implementation and sustainability in community-based obesity prevention.<sup>20</sup> This comparison verified the selected key elements from the scoping review, and confirmed that these elements addressed sustainability more broadly than programmatic responses.

## Ten ‘key elements’ of sustainability

While the key elements were synthesized to guide decision-making in intervention planning and practice, these elements may be useful in considering the extent to which primary studies address sustainability of interventions. These elements could be used during data extraction, reported within sections on intervention description or ‘characteristics of included studies’, and discussed in review findings (Table 1).

Element 1: **Planning** for sustainability early in implementation is important and the evidence points towards considering intervention direction, programme logic, goals, strategies and resourcing.<sup>19</sup> Identifying relevant existing public health policies and frameworks may facilitate links to complementary initiatives.<sup>20</sup> At this time, sustainability of the initiative, in part or as a whole,<sup>21</sup> should be considered in evaluation planning.

Element 2: Using **evidence** to identify the issue, its determinants and potential responses or interventions is essential to determine allocation and reallocation of resources.<sup>20</sup> As a key element of sustainability, ‘evidence’ links strongly to evaluation (element 7) to ensure that appropriate information is generated on impact upon effectiveness and to appropriately identify targeted efforts towards sustainability, within the initiative.<sup>22</sup>

**Table 1** Ten key elements related to sustainability of public health interventions

<i>Key elements of sustainability</i>	<i>Rationale and questions related to sustainability</i>	<i>Characteristics of interventions to report for included studies in a systematic review</i>
1. Planning for sustainability	What to sustain—the whole intervention, or parts of it? Timely planning, not when funding is almost finished	Is there evidence of an intention for the intervention effect to be sustained beyond the life of the intervention/study?
2. Gathering the evidence	What is the local issue or problem? What is the evidence for the best response or solution? Involvement of the community	Is there evidence that the intervention was identified as a solution to a problem that was identified by the community/participants involved?
3. Seeking commitment and support	Management support Examine strategic plans, frameworks, projects that add value and align with the intervention Understand the power to act, local government role etc.	Is there evidence that the intervention was supported by leaders/managers in the community and was it congruent with other policy objectives/political contexts at the time/future?
4. Engagement and partnerships	Build strategic community alliances Find common language Strategic use of media Use of tools	Is there evidence that appropriate and influential community members were accepting/supportive of the intervention, including local media?
5. Programme champions	Use of programme champion Importance of strong project leader Attracting and recruiting the right high-profile identity	Is there evidence that there was a local 'champion' to promote the value of the intervention and is interest likely to be ongoing?
6. Building capacity—organizational and community	An approach to the development of sustainable skills, organizational structures, resources and commitment to health improvement in health and other sectors to prolong and multiple health gains Extent that interventions can continue to be delivered over time, institutionalized within settings, and have necessary capacity built to support their delivery	Is there evidence that the intervention was supported by capacity building opportunities (for individuals and/or the community) that will ensure the skills necessary to continue implementation exist/remain after the initial research period?
7. Embed into core policy	Organizational—internal policies and procedures Local, state/territory/province, Federal government Health in all policies	Is there evidence that crucial elements of the intervention have been embedded into long-term/institutional policy?
8. Evaluation	Importance of evaluation Reporting to funding bodies, host organization(s), to understand what works, where to concentrate effort Shared learnings—dissemination	Is there evidence that information was collected to continue to develop and improve intervention implementation in the future?
9. Evolve and adapt	Adaptation and responsiveness Health promotion agency or programme	Is there evidence that structures and policies exist to allow adaptation and evolution of the intervention, as required to maintain or improve outcomes?
10. Funding	External funding is often time limited Sustainability will require funding to some extent Diversity of funding sources should be investigated	Is there evidence that funding will be available to support implementation to a level that effects are maintained (or increased)?

Element 3: Creating leadership, advocacy and strategic communications through **commitment and support** from host and stakeholder organizations is critical for success, specifically from multiple levels of management.<sup>4,20,23</sup> Organizational leadership, ownership and support exist where relevant organizational policies and procedures are identified to support the intervention.<sup>4</sup>

Element 4: **Engagement** with community and other strategic partnerships is often cited.<sup>2,3,19</sup> Consideration of the characteristics, assets and interests of the community,

stakeholders and partners requires ongoing connections and good communication, and is valuable in creating ownership and minimizing unintended effects.<sup>20</sup>

Element 5: The use of programme **champions** has been reported to contribute to sustainability<sup>4,19,24,25</sup> but its relative importance is unclear.<sup>5</sup> In community development, local champions (e.g. project leader) and heroes (e.g. recipients of the intervention) are reported to play an important role in promoting the value of the intervention.<sup>20</sup>

Element 6: **Capacity building** is supported widely, both at the level of community<sup>26,27</sup> and organizations.<sup>19,28</sup> Capacity building may be defined as building leadership, resources, organizational structures and relationships, skills and knowledge<sup>20</sup> to enable the organization or community to continue and maintain the intervention (or parts thereof).

Element 7: **Evaluation** of intervention process and impact is essential and begins during planning (element 1) to ensure that evaluation indicators are appropriately aligned to intervention goals and objectives. To support sustainability, evaluation results should: inform adaptation and evolution of interventions; generate practice-based evidence; be disseminated and communicated to relevant audiences.<sup>19,20</sup>

Element 8: Although **policy** is not always identified in the sustainability literature,<sup>7,19</sup> contemporary evidence suggests the importance of embedding programmes, initiatives or processes into organizational policies and systems.<sup>28</sup> Aligning with 'environmental/political support',<sup>19</sup> this element is complementary to 'planning (element 1) and 'commitment and support' (element 3) where policies, frameworks and organizational procedures are identified within which the intervention can be embedded to attract ongoing funds or resourcing.<sup>20</sup>

Element 9: A sustainable initiative is one that is responsive to the needs of the community and **evolves** and adapts as evidence emerges.<sup>16</sup> This feature is evident in the sustainability literature.<sup>4,5,7,19</sup> Responding and changing to additional opportunities is a sign of quality programme management and can create possibilities to multiply the intervention impacts and engage additional interest groups.<sup>20</sup>

Element 10: Many suggest that **funding** for public health interventions should be from 'secure sources'<sup>19</sup> or 'diverse' sources.<sup>4</sup> Many health promotion efforts fail to become sustainable because insufficient resources are provided in a short- to medium time frame.<sup>2</sup> Creative funding strategies should be explored.<sup>2</sup>

## Conclusion

In the absence of evidence from long-term intervention evaluations, it remains crucial to understand what key elements may lead to longer term sustainability of intervention effects. Sustainability has remained an elusive concept, escaping precise definition; however, contemporary evidence is helping to address this. This scoping review revealed advancement in how sustainability is defined, conceptualized and understood. From the recent developments in the literature 10 key elements for sustainability in public health were distilled, and checked for consistency with emerging frameworks and existing guidelines for community-based obesity prevention.

The 10 key elements have relevance for public health practice, research and synthesis. In practice, the elements could inform decision-making processes regarding the investment in public health interventions, and are currently being incorporated into a tool for assessing and planning for sustainability of interventions by a national knowledge translation and exchange initiative, the CO-OPS collaboration (<http://co-ops.net.au>). In systematic reviews, it is important to extract and report the factors in primary studies which may provide clues as to the sustainability of interventions and their effects. Attention towards how previous studies have (or have not) addressed issues of sustainability should be given if we are to increase our understanding in reviews. In turn, this should also encourage improved design for addressing and assessing sustainability in future research and evaluation.

## Funding

CO-OPS is funded by the Commonwealth Department of Health ITA 112/1112 Chronic Disease Prevention and Service Improvement Fund. The Cochrane Public Health Group (CPHG) acknowledges the support of the Australian Government Department of Health, the Brockhoff Foundation, and the Victorian Health Promotion Foundation (VicHealth).

## References

- 1 Shediach-Rizkallah MC, Bone LR. Planning for the sustainability of community-based health programs: conceptual frameworks and future directions for research, practice and policy. *Health Educ Res* 1998;**13**(1):87–108.
- 2 Swerissen H, Crisp BR. The sustainability of health promotion interventions for different levels of social organization. *Health Promot Int* 2004;**19**:123–30.
- 3 Harris N, Sandor M. Defining sustainable practice in community-based health promotion: A Delphi study of practitioner perspectives. *Health Promot J Austr* 2013;**24**(1):53–60.
- 4 Savaya R, Spiro SE. Predictors of sustainability of social programs. *Am J Eval* 2012;**33**(1):26–43.
- 5 Wiltsey Stirman S, Kimberly J, Cook N *et al*. The sustainability of new programs and innovations: a review of the empirical literature and recommendations for future research. *Implement Sci* 2012;**7**(1):17.
- 6 Chambers D, Glasgow R, Stange K. The dynamic sustainability framework: addressing the paradox of sustainment amid ongoing change. *Implement Sci* 2013;**8**(1):117.
- 7 Luke DA, Calhoun A, Robichaux CB *et al*. The program sustainability assessment tool: a new instrument for public health programs. *Prev Chronic Dis* 2014;**11**:E12.

- 8 Armstrong R, Waters E, Jackson N *et al.* Guidelines for systematic reviews of health promotion and public health interventions. Version 2. Melbourne, Australia: Melbourne University, 2007.
- 9 Waters E, deSilva Sanigorski A, Hall B *et al.* Interventions for preventing obesity in children. *Cochrane Database Syst Rev* 2011;(12). <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD001871.pub3/abstract>.
- 10 Nixon CA, Moore HJ, Douthwaite W *et al.* and g. ToyBox-study. Identifying effective behavioural models and behaviour change strategies underpinning preschool- and school-based obesity prevention interventions aimed at 4–6-year-olds: a systematic review. *Obes Rev* 2012;13:106–17.
- 11 Bleich SN, Segal J, Wu Y *et al.* Systematic review of community-based childhood obesity prevention studies. *Pediatrics* 2013;132(1):e201–10.
- 12 Luckner H, Moss JR, Gericke CA. Effectiveness of interventions to promote healthy weight in general populations of children and adults: a meta-analysis. *Eur J Public Health* 2012;22(4):491–7.
- 13 Golden SD, Earp JAL. Social ecological approaches to individuals and their contexts: twenty years of health education & behavior health promotion interventions. *Health Educ Behav* 2012;39(3):364–72.
- 14 McLeroy KR, Bibeau D, Steckler A *et al.* An ecological perspective on health promotion programs. *Health Educ Q* 1988;15(4):351–77.
- 15 Egger G, Swinburn B. An ‘ecological’ approach to the obesity pandemic. *BMJ* 1997;315:477–80.
- 16 King L, Gill T, Allender S *et al.* Best practice principles for community-based obesity prevention: development, content and application. *Obes Rev* 2011;12(5):329–38.
- 17 World Health Organisation. *Population-based Approaches to Childhood Obesity Prevention*, 2012. <http://www.who.int/dietphysicalactivity/childhood/approaches/en/> (01 March 2014, date last accessed).
- 18 Scheirer MA. Linking sustainability research to intervention types. *Am J Public Health* 2013;103(4):e73–80.
- 19 Schell SF, Luke DA, Schooley MW *et al.* Public health program capacity for sustainability: a new framework. *Implement Sci* 2013;8:15 (1 February 2013) doi:10.1186/1748-5908-8-15.
- 20 King L, Gill T. *Best Practice Principles for Community-Based Obesity Prevention*. Geelong: Deakin University, 2009.
- 21 Gruen R. Sustainability science: an integrated approach for health-programme planning. *Lancet* 2008;372(9649):1579.
- 22 Edvarsson K, Garvare R, Ivarsson A *et al.* Sustainable practice change: professionals’ experiences with a multisectoral child health promotion programme in Sweden. *BMC Health Serv Res* 2011;11:61.
- 23 Allender S, Gleeson E, Crammond B *et al.* Moving beyond ‘rates, roads and rubbish’: How do local governments make choices about healthy public policy to prevent obesity? *Aust New Zealand Health Policy*, BioMed Central 2009;6(20). doi:10.1186/1743-8462-6-20.
- 24 Elder JP, Lytle L, Sallis JF *et al.* A description of the social–ecological framework used in the trial of activity for adolescent girls (TAAG). *Health Educ Res* 2007;22(2):155–65.
- 25 Aoun S, Shahid S, Le L *et al.* Champions in a lifestyle risk-modification program: reflections on their training and experiences. *Health Promot J Austr* 2013;24(1):7–12.
- 26 Hawe P, King L, Noort M *et al.* *Indicators to Health with Capacity Building in Health Promotion*. Sydney: NSW Health Department, 2000.
- 27 Swinburn B, Malakellis M, Moodie M *et al.* Large reductions in child overweight and obesity in intervention and comparison communities 3 years after a community project. *Pediatr Obes* 2013. (6 Nov 2013) doi:10.1111/j.2047-6310.2013.00201.x.
- 28 Stirman S, Kimberly J, Cook N *et al.* The sustainability of new programs and innovations: a review of the empirical literature and recommendations for future research. *Implement Sci* 2012;7(12) (14 March 2012) doi:10.1186/1748-5908-7-17.