Report

Implementation best practice: A rapid evidence assessment

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Prepared by the Parenting Research Centre for the Royal Commission into Institutional Responses to Child Sexual Abuse

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raising children well

Prepared by:

Bianca Albers*
Robyn Mildon*

Contributors:

Michelle Macvean, Anastasia Pourliakas, Ben Devine, Sophia Rinaldis, Sally Kanno, Natalie Pill – Parenting Research Centre

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Parenting Research Centre
Level 5, 232 Victoria Parade
East Melbourne
Victoria 3002
Australia
p + 61 03 8660 3500
www.parentingrc.org.au

* Bianca Albers and Robyn Mildon are now based at the Centre for Evidence and Implementation, Save the Children.

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Key definitions

Climate [of an organisation]	The properties of a work environment – the prevalent norms, attitudes, feelings and behaviours – that distinguishes it from other work environments and affects employee behaviour (Dastmalchian et al., 2015).
Continuous quality improvement (CQI)	A process for planning improvements to a practice, program or policy, including how the improvements will be implemented; comparing expected and actual results, and taking corrective action where actual results are lacking (Lorch & Pollak, 2014, p e97066).
Fidelity	The extent to which a practice, program or policy is implemented as intended by its developers.
Implementation	A set of intentional and planned strategies to change or introduce empirically supported practices, programs or policies in real-world settings.
Implementation framework	A coherent set of interlinked strategies that together constitute a generic structure for describing, understanding or guiding implementation processes.
Implementation strategy	A single method or technique 'used to enhance the adoption, implementation and sustainability of a clinical program or practice'. (Proctor, Powell & McMillen, 2013, p 2).
Implementation stage	A delineated phase of an implementation process. Commonly recognised implementation stages are exploration, installation, early implementation, full implementation and sustainment.
Implementation readiness	'A shared psychological state in which organisational members feel committed to implementing an organisational change and confident in their collective abilities to do so.' (Weiner, Lewis & Linnan, 2009, p 1).
Inner context	The intra-organisational context into which the implementation of a practice, program or policy is embedded. It may include the staff, structures, resources, culture and climate of an organisation.
Intervention	A practice, program or policy being implemented by an organisation.

Needs assessment	When an organisation defines a problem to be solved through the implementation of an intervention (practice, program or policy), gathers knowledge about available solutions and assesses the fit of these solutions with the organisational context. The goal of a needs assessment is to decide whether to implement a program, practice or policy.
Outer context	The external environment of an organisation that is implementing an intervention. It may include external stakeholders, and the political, legislative, fiscal and social environment in which the organisation works.
Sustainability	The degree of stability and maintenance after an implementation process is finalised and a practice, program or policy is transferred into routine practice.

1. Executive summary

1.1 Background

An implementation is a set of intentional and planned strategies to change or introduce empirically supported practices, programs or policies in real-world settings (Fixsen, Naoom, Blase, Friedman & Wallace, 2005; Mitchell, 2011).

Durlak and DuPre (2008) extensively reviewed implementation studies on prevention and health promotion programs targeting children and adolescents. The studies showed that effect sizes were at least twice as high for programs that were implemented well with few problems, such as poor adherence to content or high staff turnover. In other words, implementation matters.

To effectively implement practices, programs or policies, organisations must consider not only *what* changes to implement, but also *how* to implement them. Knowledge of the barriers to, and facilitators of, implementation can support this process.

On 11 January 2013, the governor-general of Australia appointed a six-member Royal Commission to investigate institutional responses to child sexual abuse. Included in this work is a process for developing recommendations to prevent institutional child sexual abuse and improve institutional responses to this type of abuse. Research commissioned by the Royal Commission recently examined the implementation of relevant recommendations arising from previous inquiries. This research found that particular factors either promoted or impeded the implementation of recommendations in government, systems and institutional contexts (Parenting Research Centre, 2014). This finding is consistent with other research into factors impeding the implementation of practices, programs and

policies (Dunst, Bruderm & Hamby, 2015; Joyce & Showers, 2002; Parenting Research Centre, 2015).

As a consequence, the Royal Commission commissioned this review of current evidence regarding best practice in implementation.

1.2 Objectives

The purpose of this review is to support the Royal Commission's work in developing recommendations for both preventing institutional child sexual abuse and improving institutional responses to this type of abuse.

To do this, the review summarises the evidence for characteristics of implementation best practice. With an understanding of best practice in implementation, the Royal Commission will be able to develop recommendations with the greatest chance of being implemented and having their intended effect.

1.3 Research questions

Research questions designed to address the review objectives included:

1. What is best practice in implementation, including implementation planning, oversight, monitoring and evaluation?
2. What is known about the barriers to, and facilitators of, implementation? And how do these vary across different settings, including institutional settings?
3. How do best-practice approaches or models apply in the context of implementing reforms aimed at preventing institutional child sexual abuse and improving institutional responses to this type of abuse?

1.4 Methods

This review used a rapid evidence assessment (REA) methodology to streamline the typical systematic review process, while retaining the rigour of search and selection processes.

'Active implementation' is a multi-component approach to facilitating change in organisations and systems. Its success depends on the simultaneous use of multiple strategies – that is, it cannot rely on a single method or technique, such as training or guidance.

In recent years, implementation scientists have begun to package these strategies into 'implementation frameworks'. An implementation framework is a coherent set of interlinked strategies that together constitute a generic structure for describing, understanding or guiding an implementation process.

These frameworks have gained broad attention in both research and practice. At this early developmental stage of implementation science they are regarded as best-practice techniques for guiding and supporting the implementation of

programs, practices and policies across human services sectors. This review focuses on evidence related to these implementation frameworks.

1.4.1 Data sources, study eligibility and study appraisal

We searched 12 academic databases and 24 key organisation websites relevant to implementation for this research. Additional studies were sought via recommendations from expert colleagues, by checking the references of included studies, and through targeted searches of a key journal, *Implementation Science*.

Studies of any design were eligible for consideration in this REA, including conceptual, theoretical and empirical studies of implementation frameworks, as defined in the 'Key definitions' section of this report. Studies may have addressed the implementation of programs, practices or policies across a broad range of sectors (such as social care, education and health) and populations (children, youth and adults). Studies of international aid programs were *excluded*.

We sought both published and unpublished studies. As implementation is a relatively new field, only studies dated *after 1970* were considered. Additionally, only English language studies were included, and books, chapters, theses and conference papers were *excluded*.

1.4.2 Data analysis

Data from the studies included in the final sample were gathered into a narrative synthesis centring on two perspectives: (a) knowledge about implementation frameworks that have been used as heuristic devices – that is, as aids or tools for categorising and analysing aspects or phases of research; and (b) knowledge about implementation frameworks used as implementation interventions to support the success of interventions aimed at benefiting people who use human services.

To further contextualise the findings, we expanded on the results of the narrative synthesis using knowledge derived from broader literature on implementation science and practice generally. This literature focused on such things as single versus multiple implementation strategies, the capacity of organisations and individuals to change, and other elements agreed upon in research as central to implementation efforts. The results of this process are presented briefly in section 1.5.2, and in more detail in section 5.

1.5 Results

1.5.1 The evidence on implementation frameworks

A systematic search identified 152 pieces of literature reporting conceptual, theoretical and empirical studies of 39 implementation frameworks.

Fifty-nine papers were of a purely conceptual nature in that they aimed to theoretically develop an implementation framework, describe a protocol for a study on the use of an implementation framework or summarise a manual for using an implementation framework. This conceptual part of the literature was left out of the analysis in this REA.

Fifty-six articles reported studies that were not based on a randomised design. These articles were excluded from the detailed analysis, which focused on the most rigorous studies identified.

Another 22 articles presented studies that were based on randomised designs and applied implementation frameworks in different ways. These articles, along with 15 literature reviews (including 13 systematic reviews), were included in this REA.

The findings are presented in brief below, in two parts. First is a summary of conclusions that can be reached from the 22 studies based on randomised designs. Findings from the literature reviews are then presented.

Only a limited number of rigorous literature reviews and randomised controlled trials have presented clear findings regarding the effectiveness of particular implementation frameworks. This means evidence about the effect of implementation strategies packaged into frameworks is inconclusive, and there is no scientific ground for pointing to specific implementation frameworks as particularly effective or applicable.

It is worth keeping in mind that implementation frameworks are still in their infancy, and while they may be effective when applied thoroughly, this has not been fully documented. Additional research needs to be conducted to build an evidence base for the effectiveness of such frameworks.

1.5.2 Implementation best practice

Literature on implementation frameworks, and on core aspects of implementation more broadly, shows that although evidence of the effectiveness of implementation frameworks is limited, a growing body of evidence shows that implementation in itself is important (Durlak & DuPre, 2008; Francke et al., 2008; Boaz et al., 2011; Powell et al., 2014; Boersma et al., 2015). The potential for the success of a carefully planned and sufficiently resourced implementation should not be underestimated.

The literature and the practical results of the vast number of implementation strategies point to certain factors that would constitute implementation best practice. These are listed below.

- Good implementation requires attention to the competencies and skills of both the individuals *and* the organisations involved. Both individual and organisational capacity must be built for implementation.
- Individual behavioural change is an important driver of effective implementation.
- Implementation is a complex endeavour that can be influenced by the nature of the practice, program or policy being introduced; the individuals involved; the inner and outer context of the organisation implementing an intervention; and the quality of the implementation process. Hence, changes should be well planned and considered.
- Implementation takes place in stages, and the effective implementation of practices, programs and policies takes time.

- Implementation quality can be improved by:
    - assessing the needs and readiness of organisations implementing change
    - training and continuously supporting relevant staff members
    - continuous quality improvement processes
    - an early focus on sustainability.
- The implementability of practices, programs and policies should be taken into account during their selection and development.

1.5.3 Implications

The Royal Commission, governments and other organisations developing recommendations for preventing institutional child sexual abuse and improving institutional responses to this abuse need to consider the implementability of the recommendations. Implementability in this context refers to the characteristics of a recommendation that make success more likely.

It is important to acknowledge that the Royal Commission works in a complex policy environment that is rarely addressed in literature on implementation science. Given this, the continual scanning of the policy, funding and legislative climate in which the Royal Commission's reform work will be embedded is important to the successful and sustainable implementation of its recommendations.

Previous research commissioned by the Royal Commission (Parenting Research Centre, 2015) identified a number of strategies for developing clear, realistic and implementable recommendations, and for sustainably anchoring reform efforts and related implementation work at the central level of the child welfare system. These findings are relevant to the future work of the Royal Commission in developing implementable recommendations.

Leaders of organisations responsible for implementing the Royal Commission's recommendations need to focus on four domains in the implementation process:

- An organisation must assess what it needs to better prevent and respond to child sexual abuse, and its readiness to implement specific interventions. This will ensure the organisation does what it sets out to do. It will also enable adequate preparation for effecting change at the individual, team and organisational levels.
- Organisations must also use the right mix of implementation strategies. A single implementation strategy will not enable the full implementation of organisational change.
- In the inner context, factors such as organisational structure, climate and culture may affect implementation. Therefore, organisational infrastructure must be built around the specific implementation. In the outer context, influencing factors include the capabilities and needs of

partner organisations, the nature of the intervention, available funding, and the legislative climate.

- Successful implementation also depends on the engagement of individuals and teams within an organisation, and their behaviours, beliefs and attitudes.

Given that individuals or organisations at any level of a reform system can be given responsibility for implementing a new practice, program or policy, both those who develop recommendations for change and those who lead organisations that will implement the changes must consider whether support is required either within or outside the organisation. At a minimum, targeted implementation planning is essential.

The use of an implementation framework is likely to be helpful. Another option may be to engage 'implementation brokers' – that is, individuals or teams, internal or external to the organisation, with a designated responsibility for facilitating an implementation.

1.6 Conclusions

It is important that individuals, organisations and systems consider not only the nature of the interventions they intend to implement (the 'what') but also the quality of the implementations (the 'how'). High-quality implementation increases the chances that practices, programs and policies will yield their intended outcomes.

When selecting practices, programs and policies for implementation, those that have been previously evaluated with rigour and implemented with quality should guide the selection process. Otherwise, the relative value and cost-effectiveness of alternative interventions cannot be determined (Durlak, 2013).

Both those who develop recommendations for change and those who make those changes happen should consider implementation best practices to ensure the best chance of success.

These best practices are often imbedded in the use of implementation frameworks. However, given the early stage in the development of these frameworks, studies using rigorous research designs include only small indications of their effectiveness when applied as packages. The active planning, support and monitoring of implementation processes may improve both practitioner capacity and clinical program performance – but indications of this are not conclusive or clear. Further research on the effectiveness of implementation frameworks is required.

1.7 Limitations

This REA has a number of limitations. It focuses solely on implementation frameworks and does not include the literature on single implementation strategies. It also does not take into account studies on implementation

frameworks that may have been used in sectors outside human services, such as corporate or international development.

In addition, this review excludes studies on implementation frameworks written in languages other than English.

Finally, to establish a high level of rigour, the studies analysed in detail were all based on a randomised design. Studies using a less rigorous design were not included. Findings included in the studies that did not have a randomised design may be of interest for further investigation.

2. Introduction

2.1 Background

On 11 January 2013, the governor-general of Australia appointed a six-member Royal Commission to investigate institutional responses to child sexual abuse. The Royal Commission inquires into various matters concerning how institutions have engaged and responded to allegations and instances of child sexual abuse. This includes a process of developing recommendations for preventing institutional child sexual abuse and improving institutional responses to this type of abuse. Research recently commissioned by the Royal Commission examined the implementation of relevant recommendations arising from previous inquiries. This research found that particular factors promote or impede the implementation of recommendations in government, systems and institutional contexts (Dunst et al., 2015; Joyce & Showers, 2002; Parenting Research Centre, 2015).

As a consequence, the Royal Commission commissioned this synthesis of current evidence regarding best practice in implementation. Understanding what constitutes best practice will be critical to the Royal Commission developing recommendations with the greatest chance of being implemented. These recommendations are likely to direct change at both government and institutional levels.

An implementation is a set of intentional and planned strategies to change or introduce empirically supported practices, programs or policies in real-world settings (Fixsen et al., 2005; Mitchell, 2011).

There is wide agreement in child welfare practice and policy making that investments in the safety and wellbeing of children provide benefits to children, their families and society (Wekerle, 2011). Over the last two decades, one of the ways researchers and policy makers have worked to achieve this is by identifying and cataloguing effective practices, programs and policies (Mildon & Shlonsky, 2011). While acknowledging that this is helpful, there is widespread agreement among researchers, organisational leaders and policy makers that the health and human service systems have been slow to effectively and fully implement these practices, programs and policies (Aarons, Wells, Zagursky, Fettes & Palinkas, 2009; Garland, Hurlburt & Hawley, 2006; Godley, White, Diamond, Passetti & Titus, 2001; Stirman, Crits-Christoph & DeRubeis, 2004).

Literature on the implementation of interventions in the context of human services points to a growing consensus that passive dissemination is ineffective in changing practices and policies (Azocar, Cuffel, Goldman & McCarter, 2003; Barwick et al., 2008; Mittman, Tonesk & Jacobson, 1992) and that institutional change is not straightforward but rather the result of a dialectical process involving political contest between stakeholders (Hargrave & Van de Ven, 2006). Consequently, there is a burgeoning body of literature with an emphasis on implementation as a key variable in translating policy into practice (Fixsen, Blase, Naoom & Wallace, 2009).

There is also extensive empirical evidence that the quality of implementation has a direct impact on the desired outcomes of any policy or practice (Mildon, Dickinson & Shlonsky, 2014). Durlak and DuPre (2008) conducted an extensive review of implementation studies in the field of prevention and health promotion programs targeting children and adolescents. They found that the magnitude of mean effect was at least twice as high for programs that were implemented well with few implementation problems, such as poor adherence to content or high staff turnover. There have been many failed attempts to implement change in practice, due to problems in the implementation processes (Aarons, Hurlburt & Horwitz, 2011; Mildon & Shlonsky, 2011; Sandfort & Moulton, 2015).

To effectively change practices, programs and policies, organisations must consider not only *what* changes to implement, but also *how* to implement them. Knowledge of the barriers to, and facilitators of, implementation can support this process.

Implementation science is still a young discipline, but research over the last 15 years has led to a better understanding of what constitutes effective implementation (Durlak & DuPre, 2008). As yet, few rigorous evaluations have contributed to this growing understanding (Brown et al., 2014; Chaudoir, Dugan & Barr, 2013; Glisson, Hemmelgarn, Green & Williams, 2013) because such rigorous evaluation of implementation in real-world settings is challenging (Aberbach & Christensen, 2014; Meyers, Durlak & Wandersman, 2012; Sandfort & Moulton, 2015). As a consequence, the number of systematic reviews assessing the scientific knowledge about what works in implementation is still limited, especially in human service sectors other than health (exceptions include Greenhalgh, Robert, Macfarlane, Bate & Kyriakidou, 2004; Novins, Green, Legha & Aarons, 2013; Powell et al., 2012). Therefore, researchers often draw on high-quality case studies to increase their knowledge of implementation processes (for example, Domitrovich, Gest, Jones, Gill & DeRousie, 2010; Saunders, Ward, Felton, Dowda & Pate, 2006; Walker & Koroloff, 2007).

These joint scientific efforts have fostered a strong interest in identifying the core components of effective implementation, or 'specific actions (that is, the 'how to') that can be employed to foster high quality implementation' (Meyers et al., 2012, p 462). Researchers from various disciplines have integrated these core components into a number of different implementation frameworks, which have been described as 'windows into key attributes, facilitators, and challenges related to promoting implementation' (Meyers et al., 2012, p 465). As such, frameworks that consolidate 'constructs found in the broad array of published theories can facilitate the identification and understanding of the myriad of potentially relevant constructs and how they may apply in a particular context' (Damschroder et al., 2009 p 2).

The development of the consolidated framework for advancing implementation science was based on an analysis of 19 existing implementation frameworks (Damschroder et al., 2009). Meyers and colleagues, in a 2012 study, identified 25 frameworks. Finally, in a narrative review of models (theories *and* frameworks) used in dissemination and implementation research, Tabak, Khoong, Chambers, and Brownson (2012) explored the content of 61 different models.

At the current developmental stage of implementation science, implementation frameworks are viewed as reflecting best practice in guiding and supporting the introduction of practices, programs and policies across human service sectors. Against this background, the authors focused the research commissioned by the Royal Commission on a review of the evidence for implementation frameworks.

2.2 Objectives

The purpose of this review is to support the Royal Commission's work in developing recommendations for preventing institutional child sexual abuse and improving institutional responses to this abuse. The review summarises the evidence for characteristics of implementation best practice and will contribute to the work of the Royal Commission by informing the development of recommendations that will have the greatest chance of being implemented.

Active implementation is a multi-component approach to facilitating change in organisations and systems. To be successful it depends on the simultaneous use of multiple strategies – that is, it cannot rely on a single strategy alone. A single implementation strategy is a method or technique 'used to enhance the adoption, implementation and sustainability of a clinical program or practice' (Proctor et al., 2013). For example, training in itself will not be sufficient to change the practice of professionals – it will need to be combined with supervision on the job, performance monitoring and other strategies to ensure that theoretical knowledge will be applied and sustained in everyday practice.

Powell et al. (2015) identified 73 discrete implementation strategies, the validity of which were confirmed by an expert panel. These strategies involved such diverse activities as 'access new funding', 'facilitation' or 'work with educational institutions'. To review the effectiveness of each of the strategies would be an extensive endeavour and out of scope for an REA.

However, in recent years implementation scientists have begun to package these strategies into 'implementation frameworks'. An implementation framework is a coherent set of multiple interlinked strategies that together constitute a generic structure for describing, understanding or guiding implementation processes.

These frameworks have gained broad attention in both research and practice, and at this early developmental stage of implementation science, are viewed as reflecting best practice in guiding and supporting the implementation of practices, programs and policies across different human service sectors.

Against this background, this REA synthesised and critically analysed the evidence for best practice approaches to implementation, defined as 'implementation frameworks'. The REA focused on what characterises best practice in the planning, oversight, monitoring and evaluation of implementation processes, together with knowledge of barriers and facilitators that may either hamper or support implementation work conducted in various settings.

This report discusses the findings of the REA in the context of efforts aimed at preventing institutional child sexual abuse and improving institutional responses to this abuse.

2.3 Implementation frameworks – two examples

As can be seen in Appendix 2, a large number of implementation frameworks have been developed within the social care and health sectors of human services. Their purposes, scope and content vary widely but despite this variation, they all can be viewed as pre-packaged collections of single implementation concepts and strategies. Two examples are presented below, both of which are widely known in the community of implementation professionals. The purpose of this report is to explain the implementation framework concept to the reader.

2.3.1 The PARIHS framework

An implementation framework that is widely known in the health sector is Promoting Action on Research Implementation in Health Services (PARIHS).

The Promoting Action on Research Implementation in Health Services (PARIHS) framework was developed for implementation processes in health and describes successful implementation as a function of the relationship between the nature and type of ***evidence*** that is to be implemented, the ***context*** into which this evidence will be implemented, and the ***facilitation*** provided to support the implementation. Each of these elements consists of sub-elements (evidence: research, clinical experience, patient experience, local data; context: culture, leadership, evaluation; facilitation: purpose/role, skills/attributes), which can be positioned on different points of a high–low quality continuum. The implicit assumption is that in order to succeed in implementation there needs to be clarity around these elements and that good implementation is more likely when all elements are of high quality.

In a recent study, the developers of the PARIHS suggested the framework be extended to include the attributes of individuals participating in implementation processes (for example, practitioners, patients and clients), such as capability, motivation, resilience and beliefs. The integration of this concept into the PARIHS framework has not yet been finalised.

Rycroft-Malone (2004); Rycroft-Malone et al. (2013)

2.3.2 The Active Implementation Framework

The National Implementation Research Network (NIRN), which has strong connections to social care and community services, has been developing the Active Implementation Framework (AIF) since 2005. The current version of the AIF consists of five basic assumptions for high-quality implementation, as outlined in the box below.

1. The success of an implementation depends on ***usable intervention criteria***. New practices, programs and policies need to be fully operationalised to allow tailoring of implementation support and so that adherence to the recommended changes can be measured.

2. Implementation takes place in four ***stages***: exploration, installation, initial implementation and full implementation.

3. Implementation needs to be embedded into a strong infrastructure of implementation **drivers** to enable the development of required competencies, leadership, and organisation and system support.

4. Implementation should be driven by data-informed ***improvement cycles***.

5. ***Implementation teams*** should support and drive an implementation. They build local and system-wide implementation capacity and are accountable for moving practices, programs and policies through the different stages of an implementation process.

Metz et al. (2014)

2.4 Research questions

Research questions designed to address the REA objectives were:

1. What is best practice in implementation, including implementation planning, oversight, monitoring and evaluation?

2. What is known about the barriers to, and facilitators of, implementation and how do these vary across different settings, including institutional settings?

3. How do these best practice approaches or models apply in the context of implementation of reforms aiming to prevent institutional child sexual abuse and improve institutional responses to this abuse?

3. Methodology

While systematic reviews remain the gold standard for conducting rigorous reviews, the REA methodology used in this review is increasingly being considered a valid alternative when time and resources are limited. Like systematic reviews, REAs use systematic methodologies to protect against bias and incompleteness that can occur in traditional literature reviews. REAs, however, use methods to accelerate or streamline the processes and allow the synthesis of evidence in a shorter timeframe (Ganann, Ciliska & Thomas, 2010).

A detailed description of the methodology is given in Appendix 1.

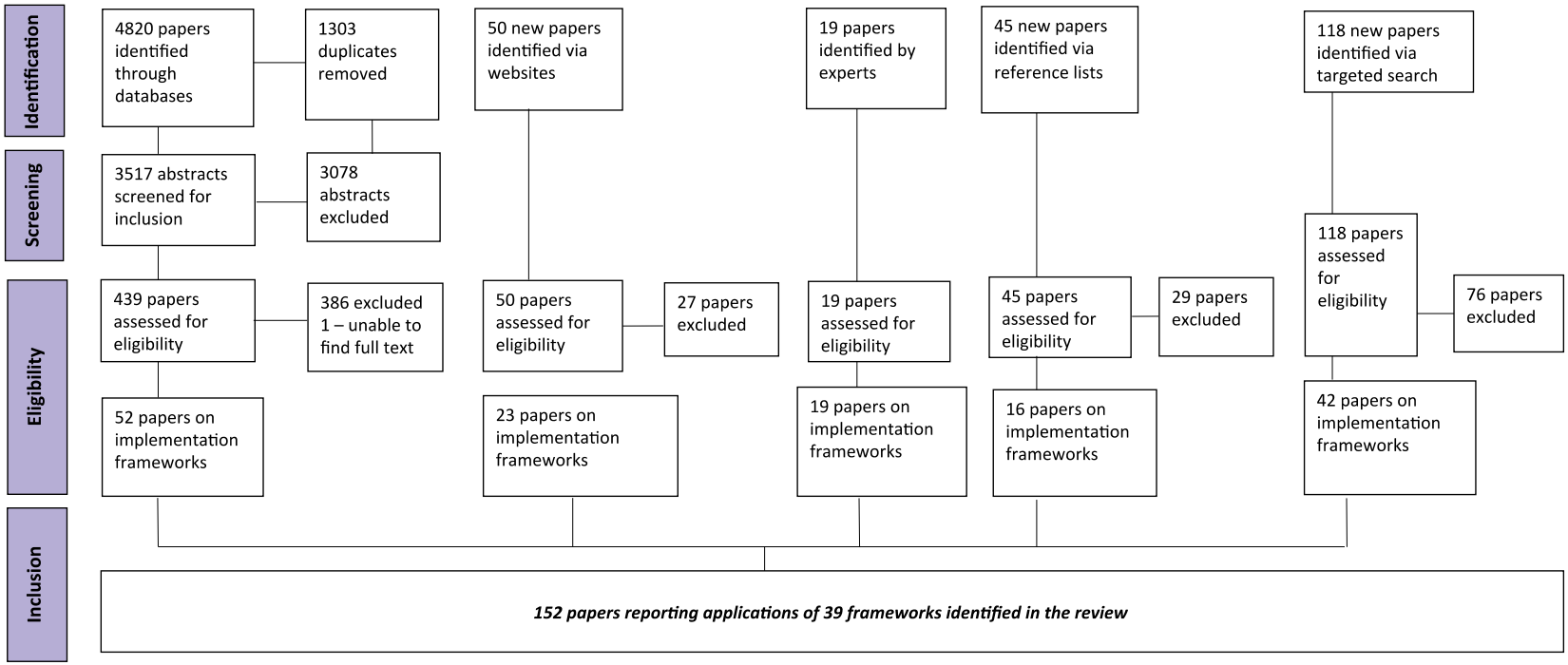
3.1 Study selection

Eligible for inclusion in this REA were conceptual, theoretical or empirical studies of implementation frameworks as defined in the key definitions section of this report. Studies may have addressed the implementation of programs, practices or policies.

A broad range of sectors and populations were of interest to the Royal Commission and, as such, most human services sectors were eligible (including social care, education and health) together with any population type (children, youth and adults). International aid was *excluded*.

Any study design was eligible and there was no requirement for the use of a comparison or control group or for follow-up assessment or measures of participants, outcomes or process. Published and unpublished studies were sought. As implementation is a relatively new field, only studies dated *after 1970* were sought. Due to limited resources, only English language studies were included, and books, chapters, theses and conference papers were *excluded*.

The REA involved a systematic search of 12 academic databases and 24 key organisation websites that included information and studies about implementation. Experts were also consulted to identify additional studies, and the reference lists of included papers were checked for relevant articles. Once models were identified via these sources, a targeted search using author and implementation framework names was conducted on the *Implementation Science* journal website. The flow of papers through the screening process is summarised in the chart below.


Identification
Screening
Eligibility
Inclusion
4820 papers identified through databases
1303 duplicates removed
50 new papers identified via websites
19 papers identified by experts
45 new papers identified via reference lists
118 new papers identified via targeted search
3517 abstracts screened for inclusion
3078 abstracts excluded
118 papers assessed for eligibility
76 papers excluded
439 papers assessed for eligibility
386 excluded 1 – unable to find full text
50 papers assessed for eligibility
27 papers excluded
19 papers assessed for eligibility
45 papers assessed for eligibility
29 papers excluded
52 papers on implementation frameworks
23 papers on implementation frameworks
19 papers on implementation frameworks
16 papers on implementation frameworks
42 papers on implementation frameworks
152 papers reporting applications of 39 frameworks identified in the review

4. Results

4.1 The evidence on implementation frameworks

This REA aimed to source and assess evidence of the effectiveness of implementation frameworks in changing practices, programs and policies in a range of human service sectors. A systematic search of all sources identified 152 papers reporting conceptual, theoretical and empirical studies of 39 implementation frameworks (presented on page 24).

Fifty-nine of the included papers were of a purely conceptual nature in that they aimed to (a) theoretically develop an implementation framework and its different components, (b) describe a protocol for a study that involved the use of an implementation framework or (c) summarise a manual for the uses of an implementation framework. This conceptual part of the literature was left out of the more detailed analysis of this review. However, since this literature can be valuable in understanding the details of specific implementation frameworks, a list of references to the conceptual literature is included in Appendix 1.

4.1.1 The evidence on implementation frameworks at a glance

Study type	Number of studies identified	Number of studies that tested or evaluated implementation frameworks	Number of studies that targeted implementation frameworks in other ways
Literature reviews	15	0	15
Randomised controlled trials	22	16	6
Other evaluations	56	19	37
TOTAL	**93**	**35**	**58**

Studies based on randomised designs

Only a few implementation frameworks have been tested through studies based on randomised controlled designs that applied and compared the effects of different conditions for implementing an intervention, be that a practice, a program or a policy.

Sixteen articles of this kind were identified in this REA. Together they covered eight different studies, all of which were conducted within child and youth mental health and community services in the United States (US). Targeted outcomes of these studies related to the implementation process (for example, its pace, intensity, quality or sustainability), to the users of the implementation framework

Implementation frameworks identified*

Active Implementation Framework (AIF)	Implementation Effectiveness model	Physician Mentored Implementation (PMI) framework
Availability, Responsiveness and Continuity (ARC)	Institute for Healthcare Improvement (IHI) Rapid Improvement Process	Practical Robust Implementation and Sustainability Model (PRISM)
Behaviour Change Wheel	IHI Breakthrough Series model	Promoting Action on Research Implementation in Health Services (PARIHS)
Behaviour Change Ball	Interactive Systems Framework for Dissemination and Implementation (ISF)	Pronovost model
Community Development Team (CDT)	Intervention mapping (IM)	Quality Implementation Framework (QIF)
Consolidated Framework for Implementation Research (CFIR)	Johns Hopkins Quality and Safety Research Group Translating Evidence into Practice model	QUERI's framework for informing implementation of organisational change
Diffusion of Innovations Theory	Knowledge to Action Framework (KTA)	Reach, Effectiveness, Adoption, Implementation, and Maintenance framework (RE-AIM)
Direction, Competence, Opportunity, Motivation (DCOM) model	Normalisation Process Theory (NPT)	Readiness for Implementation Model (RIM)
Durlak's and DuPre's implementation model	Organisational framework of innovation implementation	Replicating Effective Programs (REP)
Exploration, Preparation, Implementation, Sustainment (EPIS) framework	Organisational model of innovation implementation	Simpson Transfer Model
Friedman's implementation framework	Organizational Theory of Innovation Implementation (Weiner, Lewis & Linnan)	Theoretical Domains Framework (TDF)
Getting to Outcomes (GTO) framework	Organizational transformation model	**Four more unnamed frameworks were identified*

(for example, for ensuring practitioner capacity) and to the end-users of human services (for example, achieving desired placement rates and overall program performance).

Given the heterogeneity of outcomes in a small selection of studies, it is not possible to describe an overall trend for the impact of implementation frameworks on either service or implementation outcomes. Small indications that the active planning, support and monitoring of implementation processes may improve both practitioner capacity and clinical program performance are visible, but not as conclusive and clear tendencies.

None of the studies that applied implementation frameworks in health and public health settings tested these frameworks for their effectiveness as implementation interventions. Instead, implementation frameworks were used as heuristic devices or organising structures for such activities as developing questionnaires and survey instruments or structuring findings from the analysis and evaluation of clinical intervention data.

For example, a study by Hagedorn et al. (2014) presents implementation data from a randomised trial testing the effectiveness of an intervention aiming to promote abstinence. The study, in identifying potential barriers to, and facilitators of, the intervention's implementation, relies on questionnaires. The questions about the implementation of the intervention are based on domains from two different implementation frameworks to ensure all potential barriers to implementation are covered through the questions. Similarly, the findings from this evaluation then are presented as 'suggestions to enhance implementation efforts', which again are structured by the implementation framework domain.

Literature reviews

Fifteen literature reviews focused on implementation frameworks in four different ways: (a) they were conducted to inform the development of an implementation framework and the selection of its core components, (b) they explored the use and evidence for already existing frameworks by sourcing studies that used these frameworks, (c) they used implementation frameworks as organising structures to categorise findings from primary studies, and (d) they highlighted implementation frameworks when used in a single, empirical study included in the review.

The evidence for implementation frameworks as presented in these literature reviews shows that implementation frameworks in many cases are used as heuristic devices of use to researchers for planning projects, developing data collection tools, and organising and analysing data.

Some implementation frameworks – namely the AIF, the Behaviour Change Wheel and the Quality Implementation Framework (QIF) together with an unnamed implementation framework developed by Greenhalgh et al. (2004) – are informed by and developed on the basis of systematic searches of the scientific literature. Given that they integrate a broad range of theoretical and empirical insights from various scientific disciplines and sectors, they may represent a more robust knowledge and content base.

In addition, the ongoing development of implementation frameworks after their initial materialisation is in some cases driven by systematic inquiries of scientific literature about their application and operationalisation in specific projects. In these cases, a specific implementation framework is the target of the literature review. This review then sources conceptual and empirical work that uses the implementation framework in focus. The identified literature is reviewed for insights and findings that can increase the understanding of how the implementation framework has been used, what types of findings are related to its use, and whether knowledge gaps emerge from the literature. These insights are then integrated into suggestions for the further development of the specific implementation framework.

Implementation frameworks that have undergone such a development are PARIHS, KTA and NPT, which therefore in their current forms may integrate a certain level of practice-based knowledge derived from literature. The literature reviews identified for this REA provide little evidence to support any existing implementation framework as best practice in implementation.

In summary, not many rigorous literature reviews or randomised controlled trials present clear findings regarding the effectiveness of particular implementation frameworks. This means there is only inconclusive evidence for the effectiveness of implementation strategies that are packaged into frameworks, and no scientific ground for pointing to any specific implementation framework as particularly effective or applicable to the Royal Commission into Institutional Responses to Child Sexual Abuse.

It is worth keeping in mind that implementation frameworks are still in their infancy. They may well be effective when applied thoroughly, but this has not been fully documented. Additional research needs to be conducted to build an evidence base.

For a more detailed presentation of these findings, refer to Appendix 2.

The methodology applied in this REA is presented in Appendix 1. It also includes a table outlining the findings of each identified systematic review and randomised study that has been included in the analysis.

5. Contextualisation of findings

Even though the evidence for implementation frameworks is limited, the screened literature shows that implementation in itself is still important (Durlak & DuPre, 2008; Francke et al., 2008; Boaz et al., 2011; Powell et al., 2013; Boersma et al., 2015). The focus in this section is on contextualising findings derived from the literature and relating them to the three research questions that have guided this REA.

A recent systematic review of implementation strategies applied in randomised controlled studies of interventions in mental health confirms previous findings (Durlak & DuPre, 2008) by concluding that the majority of the studies found a statistically significant effect for the applied implementation strategy for at least one outcome, be it either a clinical or an implementation outcome (Powell et al., 2013).

While evidence for the effectiveness of combining implementation strategies into pre-packaged implementation frameworks is limited, the importance of implementation as a carefully planned and sufficiently resourced activity that is key to successful outcomes should not be underestimated. Among the vast number of implementation strategies some have emerged as 'implementation best practice' based on a consensus in the literature and their ability to consistently show results superior to those achieved with other means.

The question therefore is: if implementation frameworks do not represent current best practice in implementation, how then can individuals and organisations conceptualise implementation in a way that improves its quality and thereby the likelihood of achieving the intended outcomes of a practice, program or policy?

By addressing each of the guiding research questions for this project, we will provide answers to this key question as presented in the best available evidence in the current implementation science literature.

5.1 Research Question 1

What is best practice in implementation, including implementation planning, oversight, monitoring and evaluation?

The community of implementation scientists working across different human service sectors has identified common elements of good implementation practice. These elements are often included in frameworks as concepts, domains or interventions of importance to implementation quality.

5.1.1 Implementation stages

One of the most important concepts that characterises many implementation frameworks, and the implementation literature in general, is the notion of implementation unfolding in stages. In other words, implementation is not an event that takes place when the decision about the uptake of a practice, program or policy is made. On the contrary, the time frame will depend on the complexity

of the intervention, the context and the individuals and organisations involved – and for some complex interventions, the implementation may take as long as 2–4 years. Hence, taking into account *time* as a resource in implementation processes is important. This also means that implementation needs to be *thought through* and *planned*. It does not happens by itself. It needs the attention and dedication of staff members and organisational leaders.

Even though the definitions and descriptions of implementation stages may differ, most implementation frameworks identified in this REA build on the notion of implementation stages. Some do this more implicitly and briefly – such as GTO, which requires that the majority of its 10 steps take place before implementation – and others do it quite explicitly – such as AIF, which is focuses on the four stages of exploration, installation, initial implementation and full implementation. Indeed, the EPIS framework is so named due its adherence to implementation stages: exploration, preparation, implementation and sustainment. Similar to AIF, this framework recommends an implementation process with four stages (Aarons et al., 2011).

The concept of 'sustainment' is seen as the end state of an implementation under the EPIS framework, but the AIF framework uses 'sustainability' to describe an interim state between implementation stages. In this sense, while framework developers often agree on the existence of stages in implementation, they can disagree on the conceptualisation of specific stages, their chronology and linkages. Frameworks such as CDT and ARC mention phases and stages explicitly, whereas others such as RE-AIM and the Institute for Health Improvement's Improvement Model have an implicit understanding of phases as embedded into different implementation steps that need to be taken in a certain order.

5.1.2 Key activities in implementation

While the staged processes prescribed by these implementation frameworks demand planned activities over a certain time frame, the construct of key activities in implementation emphasises that it is an active process that can be influenced by specific activities or strategies at any point in time or at any stage. A single implementation strategy is a method or technique 'used to enhance the adoption, implementation and sustainability of a clinical program or practice' (Proctor et al., 2013). Following are some of these commonly recognised strategies or key activities.

Needs assessment

An implementation strategy commonly recognised in the implementation literature is to build the decision about adopting a practice, program or policy on a robust foundation of knowledge. This includes knowledge (and agreement) about the problem to be solved, the current best evidence for different solutions to the problem and the fit between any of these solutions and the concrete organisational and system setting into which it will be embedded. The responses to these questions will enable an organisation to make an informed decision about adopting the practice, program or policy, and secure support and buy-in from stakeholders from the beginning. In implementation frameworks this activity typically falls within the first implementation stage – the exploration or pre-

implementation stage. The GTO framework poses three questions that capture the essence of what should be examined as part of a needs assessment: What underlying needs and resources must be addressed? What goals, target population and objectives (that is, desired outcomes) will address the needs and change the underlying condition? Which science- or evidence-based models and best practice programs can be used to reach your goals? Practical guides developed outside the field of implementation science are available to guide these needs assessments (Sleezer et al., 2014).

Readiness assessment

An organisation that implements a specific practice, program or policy will need to prepare for the active use of the intervention.

At a practical level, this implies a clear understanding of what resources are needed to adopt the practice, program or policy, and setting aside these resources in the organisation. Similarly, the new practice, program or policy may require specific skills, and appropriate training to be organised. It is also worth considering whether data systems need to be installed, technical equipment obtained or administrative support secured – to name just a few potential topics of a readiness assessment. But readiness is more than just solving technical problems.

Weiner describes organisational readiness as 'a shared psychological state in which organisational members feel committed to implementing an organisational change and confident in their collective abilities to do so' (Weiner et al., 2009, p 1). This is in keeping with the Behaviour Change Wheel (Michie et al., 2011), according to which individual behaviour change depends upon individuals' capability, motivation and opportunity. However, Weiner elevates the understanding of readiness to multiple levels of an organisation and underlines that it refers to individual, group, unit and organisational levels. It is a *shared* state.

Scaccia et al. (2015) created a formula for organisational readiness: $R=MC^2$. They describe it as a function of three components: motivation, general organisational capacity and innovation-specific capacity. This reflects the same understanding of 'capacity' as in ISF framework. The relative advantage, compatibility, complexity, trialability, observability and priority of a practice, program or policy can affect the motivation to change. An organisation's capacity to change will be affected by its internal culture, climate, innovativeness, leadership, structure and staff capacities, as well as the way it uses resources. Its capacity to innovate will depend on the skills and abilities of its staff, and can be boosted with the help of program champions, specific implementation climate supports and inter-organisational relationships. These lists are non-exhaustive and can be adjusted to specific contexts and settings.

The literature on organisational readiness highlights that readiness needs to be addressed at both a technical level (where practical solutions are developed for practical problems) and at an adaptive level (where members of an organisation become familiar with and motivated to come up with new ideas, procedures and approaches). The amount of literature on organisational readiness is limited given

the recent development of the concept, and scientists in the field have highlighted what Emmons, Weiner, Fernandez and Tu (2012) call 'conceptual ambiguities and disagreements and limited evidence of reliability or validity for most publicly available readiness measures' (Emmons et al., 2012, p 88).

Ready-made assessment tools are therefore scarce and assessment processes often need to be based on homegrown approaches. However, a growing number of publications aimed at organisations with an interest in readiness and its measurement may be of use already (Maar et al., 2015; Oostendorp, Durand, Lloyd & Elwyn, 2015; Shea, Jacobs, Esserman, Bruce & Weiner, 2014), and in the long run may lead to more generally applicable tools for assessing the readiness of organisations to implement new practices, programs or policies.

Training, supervision, coaching and consultation

Adequate staff training and supervision while implementing interventions can prepare and guide individuals in their uptake of a practice, program or policy and thereby reduce variations in the use of the intervention, and enhance both the likeliness of reaching intended goals and the quality of services provided to individuals and families.

The Merriam-Webster Dictionary defines 'training' as 'a process by which someone is taught the skills that are needed for an art, profession or job', and 'supervision' as 'the action or process of watching and directing what someone does or how something is done'. Terms that are related to 'supervision', in the context of the behaviour of clinicians, are 'coaching' and 'consultation', which have a different focus, such as on adherence to manuals, on outcomes or on experience with an intervention in general. Coaching and consultation can also be either expert- or peer-based, whereas supervision implies an interaction between a clinician and a clinician expert (Lyon, Stirman, Kerns & Bruns, 2011). What these activities have in common, however, is that implementation processes are built on continuous feedback about observed behaviours and also data on the implementation process – feedback that is given to those who work at the front line of the implementation.

In much of the implementation literature, training, supervision, coaching and consultation are mentioned together. Research suggests, and the field has widely agreed, that training in itself will not bring about the changes in behaviour that are needed in a concrete organisational setting when a practice, program or policy is to be implemented (Dunst et al., 2015; Joyce & Showers, 2002).

A recent meta-synthesis of 15 research reviews focused on the continuous education and professional development of teachers. It raised the question whether this continuous education is related to enhanced instruction and improved student outcomes. The findings showed that in order to be effective, in-service professional development needs to provide opportunities to reflect on learning; coaching or mentor supports; and feedback and follow-up supports of a certain duration (Dunst et al., 2015). This resonates with the practices established for a number of empirically supported treatments in social care (for example, Multisystemic Therapy, Treatment Foster Care, Parent Management Training and Functional Family Therapy), whose implementation often is embedded in pre-

defined systems of supervision and consultation aiming to support both practitioners and organisational leaders in their implementation efforts.

The functions of training, supervision, coaching and consultation as separate but equally important implementation strategies may even go beyond the pure acquisition of knowledge and skills, and behaviour change. Nadeem, Gleacher, and Beidas (2013) highlight engagement, concrete problem solving around barriers to implementation, appropriate adaptation of the intervention to the organisational context, accountability and sustainability planning as other functions of coaching and consultation. However, less is known about the *specific* functions and processes within the fields of training, supervision, coaching and consultation that are effective.

Supervision or coaching models are often developed to help implement a practice, program or policy, especially when these interventions are homegrown and have not been applied by others before. The focus points of the feedback and support given to implementation staff will depend on the content of the intervention, its aims and goals, the behaviours expected to change with the practice, program or policy, and the required system changes. Within evidence-based practice the adherence to methodical prescriptions given through programs are often the focus of supervision.

The term commonly used to describe this approach is 'fidelity' or the extent to which a practice, program or policy is implemented as intended by its developers. Boller et al. (2014) differentiate between (a) *structural* aspects of fidelity: whether the intended target group was reached, the recommended dosage of activity (for example, the number of meetings or face-to-face interactions) was delivered, staff members were adequately trained or the recommended case load per worker kept; and (b) *dynamic* aspects of fidelity: the specific content of the intervention, and the relationship between the organisation implementing the intervention and its recipients. Based on this general approach to fidelity, concrete and individualised fidelity requirements can be described and taught as part of both homegrown and new practices, programs and policies, and guide staff supervision, coaching and consultation.

Continuous Quality Improvement

An implementation is likely to be more successful if relevant staff within an organisation are given regular feedback about their performance. Implicit in this requirement is a need for data. Implementation scientists broadly agree that good implementation relies on the continuous monitoring and assessment of data streams that describe both the process and outcomes of an implementation. This is commonly referred to as continuous quality improvement (CQI).

CQI has long been a standard in the healthcare industry (Blumenthal & Kilo, 1998; Rubenstein et al., 2014) and is slowly gaining ground in other professions as a process of 'planning to improve a product or process, plan implementation, analysing and comparing results against those expected, and corrective action on differences between actual and expected' (Lorch & Pollack, 2014, p 1).

CQI involves the systematic collection and review of data regarding the implementation of a practice, program or policy to identify opportunities for improvement that will deliver better services for customers or clients. CQI emphasises an ongoing process of improvement and evaluation, often based on a plan-do-study-act cycle. This structured thinking is reflected in, for example, the IHI framework's Rapid Improvement Process, which is presented in Appendix 2.

The methodological heterogeneity of CQI processes studied by researchers has resulted in an inability to clearly identify the characteristics of CQI that would lead to the success of an implementation. However, in a recent study, several experts highlighted three features of CQI methods as essential (Rubenstein et al., 2014): systematic data-guided activities, designing with local conditions in mind, and iterative development and testing. Hence, no off-the-shelve, ready-made and generally applicable CQI approaches are available to the field of human services. Instead they need to be developed from the ground up, and with the specific intervention and context in mind.

In recent years, with growing interest in measures for assessing implementation outcomes, the Stages of Implementation Completion (Chamberlain, Brown & Saldana, 2011) and the Implementation Leadership Scale (Aarons et al., 2014) have been developed, validated and tested. At the same time, the Society for Implementation Research Collaboration (SIRC) has built a repository of measures and instruments of use in dissemination and implementation[1] (Lewis et al., 2015). Any organisation or system implementing new practices, programs or policies should consider building CQI processes based on data collected through validated instruments.

Current best practice in implementation prescribes that changes should take place in stages, and that decisions affecting the change process be based on thorough assessments of the needs and readiness of an organisation and its staff. These changes should be supported through training, professional development and CQI.

In the context of the initial research question, this also means that the success of an implementation will depend on detailed and ongoing planning, which should be embedded in a structure of continuous data collection, assessment and evaluation. This will allow individuals and organisations to monitor their implementation practice and adjust it to both the ever-changing context they operate in and to the outcomes they aim to achieve. In many settings, the development of these structures, systems and cultures will imply significant changes in individual and organisational behaviour, which are not made easily. Implementation barriers and facilitators therefore are the focus of the following section.

[1] For detailed information see www.societyforimplementationresearchcollaboration.org/sirc-projects/sirc-instrument-project/

5.2 Research Question 2

What is known about the barriers to, and facilitators of, implementation and how does this vary across different settings, including institutional settings?

5.2.1 The individual

One of the most common barriers to implementation success is individual behaviour. Implementation requires changes in the behaviour of practitioners, supervisors, organisational leaders, bureaucrats and others involved in implementing programs, practices and policies in real-life settings. Finding ways of motivating individuals to change their habits is therefore a focal point in implementation science.

The health sector has shown a strong interest in effective interventions to change behaviours given its constant need to introduce new clinical guidelines reflecting current best evidence for handling medical problems. The topic has also received attention from the field of policy implementation, where the influence of 'street-level bureaucrats' has been discussed since the invention of this term in the 1970s (Brodkin, 2008; Peter Hupe & Buffat, 2014; P. Hupe, Hill & Buffat, 2015; Weatherley & Lipsky, 1977).

A comprehensive, research-based model for developing context-sensitive behaviour change interventions was developed by Michie, van Stralen and West (2011) who, through a systematic search of the literature on behaviour change and extensive consultations with behaviour change experts, sourced 19 different frameworks for behaviour change. These were synthesised into a new framework – the Behaviour Change Wheel – which aims to compensate for limitations identified in other frameworks. The theoretical foundation of the Behaviour Change Wheel is the COM-B system, according to which behaviour depends on three interacting components: an individual's capability to behave in a certain way, defined as the psychological and physical capacity of the individual; their motivation to act in a certain way; and their opportunity to behave as desired, taking into consideration any factor outside the individual that may facilitate or hamper the target behaviour. Based on this structure and the research described above, Michie et al. (2011) developed a set of intervention functions, each of which addresses one of the three components of behaviour change. In addition, seven policy categories – communication/marketing, guidelines, fiscal, regulation, legislation, environmental/social planning and service provision – are linked to intervention functions, describing channels through which intervention guidelines are most likely to be implemented.

In the context of this review, the work by Michie and others reminds implementers to think of implementation as something requiring behavioural change at the individual level. An important question for all implementation initiatives therefore is: 'What conditions internal to individuals and in their social and physical environment need to be in place for a specified behavioural target to be achieved?' (Michie et al., 2011, p 9). The Behaviour Change Wheel provides a system for answering implementation questions like this in a methodical way and for developing context-specific interventions for behaviour change.

5.2.2 The organisation

Similar to individuals, organisations working to implement evidence-informed interventions need to change behaviour, too. Their climate, culture and structures define the way they operate. Changes that challenge these foundations and don't align with routine operations therefore may fail. Damschroder et al. (2009) developed the Consolidated Framework for Implementation Research (CFIR) to capture the complexity of factors that can be either a barrier to or facilitator of an implementation. The CFIR is an attempt to summarise the professional consensus of the community of implementation researchers as to what constructs and domains form the dynamics of an implementation.

CFIR domains and constructs

Domain	Constructs of importance to implementation
Intervention characteristics	Intervention source; evidence strength and quality; relative advantage; adaptability; trialability; complexity; design quality and packaging; costs.
Outer setting	Patient needs and resources; cosmopolitanism; peer pressure; external policy and incentives.
Inner setting	Structural characteristics; networks and communications; culture; implementation climate (tension for change, compatibility, relative priority, organisational incentives and rewards, goals and feedback, and learning climate); readiness for implementation (leadership engagement, available resources, access to knowledge and information).
Characteristics of individuals	Knowledge and beliefs about the intervention; self-efficacy; individual identification with organisation; other personal attributes (such as intellectual ability, competence and learning style).
Implementation process	Planning; engaging (opinion leaders, formally appointed internal implementation leaders, champions and external change agents); executing; reflecting and evaluating.

As was the case with the Behaviour Change Wheel, Damschroder et al. (2009) sourced theories related to dissemination, implementation, knowledge translation and related fields based on a snowball sampling strategy. The starting point was a systematic review of determinants of the dissemination and implementation of innovations in health (Greenhalgh et al. (2004), described in Appendix 2).

The sourcing of the literature ended when theme saturation was reached, and the development of the CFIR framework was based on 19 different theories. The

majority of these theories came from the health sector, but corporate business, social care and education were also included. The table above gives an overview of domains identified for the CFIR and constructs under each of these domains that affect the implementation process. Each of these constructs can be viewed as a potential barrier to or facilitator of an implementation process, depending on whether there is alignment between the intervention – be that a practice, program or policy – and the construct. Certain constructs may be easier for an organisation to control than others, depending on the financial and human resources available within or outside the organisation.

In the context of this REA, it is vital to understand the complexity of implementation and take a whole-of-system perspective when developing programs, practices and policies that are expected to be implemented. This can seem an overwhelming task – how should a team or an organisation ever be able to consider every potential barrier or facilitator that could be at play in an implementation process?

This report does not suggest that the constructs summarised above should be thought of as a mechanical checklist or as cogs in a machine that, if controlled sufficiently, can add up to a perfect implementation. Even if all these elements are monitored systematically, the interplay between them in a concrete context and setting may still lead to unexpected results. Being aware of their role in implementation and assessing their importance in concrete implementation projects and initiatives may, however, help implementers prioritise them and integrate them into an implementation plan that is sensitive to the intervention itself, the individuals involved, and the inner and outer contexts of the implementation.

At the same time, the community of implementation researchers – especially in health, social care and education – agrees that certain constructs (presented above) are particularly important when implementing practices, programs or policies and should be paid considerable attention before and during implementation.

After an implementation, organisations and systems often experience significant difficulties in sustaining the innovation. This may be because funding streams end, staff members leave or political agendas change. Therefore ‘sustainability’, or the question of how to effectively meld innovations into the routine practices of individuals and organisations, is of great interest to implementation science.

5.2.3 Sustainability

Stirman et al. (2012) in a review of 125 health-based studies on sustainability identify four categories of potentially influential factors:

1. Organisational context: climate, culture, leadership, setting, and system or policy change

2. Capacity: champions, funding, workforce, resources, and community or stakeholder support or involvement

3. Processes: engagement, decision-making, adaptation, the integration of rules or policies, evaluation and feedback, training and education, collaboration, navigating competing demands, ongoing support, and planning
4. Factors related to the innovation itself: fit, adaptability, effectiveness and the ability to maintain fidelity.

These factors align with some of the barriers and facilitators included in the CFIR implementation framework, and with key characteristics of the EPIS framework. However, Stirman et al. (2012) also highlight that in the majority of implementation case studies considered in their review, the changes were only partially sustained and, of the studies focusing on fidelity of implementation, less than half of the organisations were able to maintain the intervention at a high level of fidelity.

This indicates how demanding sustainable implementation can be and the importance of planning for sustainment as part of the implementation process. Topics to consider include the continuity of funding, the building of capacity (skills and abilities) to enable growth and scale up interventions, the engagement and extension of stakeholder platforms that may support implementation efforts, and system changes that will consolidate long-term implementation. Planning for sustainability is very important in the context of recommendations to prevent institutional child sexual abuse and improve institutional responses to this abuse, given the complex policy environment in which the recommendations of the Royal Commission will be implemented.

5.3 Research Question 3

How do these best-practice approaches or models apply in the context of implementing reforms that aim to prevent institutional child sexual abuse and improve institutional responses to this type of abuse?

5.3.1 Implications for policy and program developers

The Royal Commission, governments and other organisations developing recommendations to prevent institutional child sexual abuse and improve institutional responses to this abuse, need to consider the implementability of these recommendations.

Implementability refers to characteristics of a recommendation that enhance the likeliness of its implementation (Gagliardi, Brouwers, Palda, Lemieux-Charles & Grimshaw, 2011). Based on a review of studies on guideline implementation, Gagliardi et al. (2011) identified eight subcategories into which implementability could be compartmentalised: usability, validity, applicability, adaptability, communicability, accommodation, implementation and evaluation. All refer to the qualities of an intervention that enhance the probability that it will be integrated into routine practice.

These findings correspond with those from a report entitled *Implementation of recommendations arising from previous inquiries of relevance to the Royal Commission into Institutional Responses to Child Sexual Abuse* (Parenting Research Centre, 2015). This report – among others – identified a number of strategies to enhance the likelihood of recommendations being clear, realistic and implementable. It highlighted the need to take into account the complexity of the service system related to child sexual abuse. It also emphasised the need to focus on outcomes, to avoid being overly prescriptive and instead allow implementers a level of flexibility in choosing the means of implementing a recommendation. As part of the future development of recommendations, these strategies will be worth revisiting.

Furthermore, it is important to acknowledge that the Royal Commission's work in developing recommendations to prevent institutional child sexual abuse and to respond to this type of abuse takes place in a complex policy environment that is barely addressed in the current literature on implementation science. Given this complexity, it is important that the Royal Commission continuously scans the policy, funding and legislative climate in which its reform work will be embedded to ensure the successful and sustainable implementation of its recommendations.

Barriers at these policy and system levels identified through previous investigations (Parenting Research Centre, 2015) include the complexity of national reform activities, gatekeeping taking place as part of the political process, regular changes to government and leadership, and a trend in the system to drift away from implementation plans over time.

Against this background, recommendations were made to embed reform attempts in a centrally coordinated whole-of-government strategy while consulting with stakeholders on how to realise the implementation of recommendations at other levels of the system. It was suggested that, concurrent to this, the development of an operational implementation plan taking into account already existing implementation mechanisms and structures in the system was crucial to implementation success.

Further findings from the report on the implementation of recommendations arising from previous inquiries of relevance to the Royal Commission may be relevant to the development of future recommendations and implementation planning at different levels of the system.

5.3.2 Implications for organisational leaders

Leaders of organisations that will work to implement recommendations for preventing institutional child sexual abuse and improving institutional responses to this abuse need to focus very strongly on four domains in an implementation process:

- assessing what an organisation needs to better prevent and respond to child sexual abuse, and its readiness to implement specific recommendations
- the required mix of implementation strategies

- the organisational infrastructure, including the inner and outer contextual factors as presented earlier in this report
- the required human resources.

Being an aspect of implementation, the Royal Commission is highly concerned with in its work, a strong focus on the assessment of organisational needs and readiness as part of the future implementation of its recommendations is warranted to ensure success in their implementation.

The quality and sustainability of an implementation and the results it achieves for end-users will largely depend on whether the recommendation meets a need that has been identified through previous work and experience. The authors note that in the context of an inquiry, the exploration and adoption process prior to the formulation of recommendations will be more substantial than in other implementations generally. However, organisations may revisit some of the stages of exploration and adoption when considering implementation of the recommendation.

When an organisation adopts a particular recommendation designed to improve its ability to prevent and/or respond to child sexual abuse, its leaders must ensure the organisation is ready to implement this intervention. They must thoroughly examine the recommendation to understand its implications within the organisational context. They must also undertake detailed planning for implementing the recommendation, aiming to build the capacity of the organisation to work with the new practice, program or policy.

Organisational leaders must also keep in mind that several implementation strategies may need to be applied at the same time. As highlighted before, training on its own has shown to be ineffective in ensuring practice change. Greater success may be achieved by combining it with regular coaching. Similarly, other implementation strategies may be insufficient when used alone but highly effective when combined. The literature provides detailed maps of existing implementation strategies (Powell et al., 2015) that can help in developing individualised and contextualised implementation plans.

The structure of an organisation, including existing networks and inter-organisational communication structures, may be as important to implementation as the organisational culture and climate that dominates it. If, for example, the use of data and CQI processes is routine among staff members already, the implementation may be fairly easy. However, if an organisation is not data-minded, or innovations are usually met with a certain level of hesitation among staff members, any implementation must be planned to take this into account. Organisational leaders are also responsible for other key activities in implementation. They need to provide training, supervision, coaching and consultation, enable CQI and head the planning for sustainability.

Implementation planning requires a thorough knowledge of an organisation's outer context on the part of its leaders. The outer context includes partner organisations important to the implementation but also broader networks and coalitions with policy partners that may be a resource in both the short and long

term. In addition, leaders must continuously scan the policy, funding and legislative climate surrounding the organisation to give the change process every chance of succeeding.

Leaders need to be sure that staff members participating in an implementation process are ready to make the necessary changes in behaviours, beliefs and attitudes. Part of this ability will come through training and supervision, but it may also be influenced by work in the inner context of the organisation to enable change.

5.3.3 The role of implementation support

Those responsible for both developing and implementing recommendations should consider whether the implementing organisation needs internal or external support. The field of implementation science and practice provides several suggestions for providing that support.

In recent years, there has been growing interest in the role of implementation brokers – that is, individuals or teams with a designated responsibility for facilitating an implementation. Examples of implementation frameworks that include such an approach include the AIF with its notion of 'implementation teams'; the CDT, where the team becomes a support structure for implementing systems; and ARC, with its 'change agent'. In a recent publication, it was noted that the developer of the EPIS implementation framework introduced Interagency Collaborative Teams (ICT) as an implementation strategy to support processes involving multiple stakeholders from different organisations and systems (Aarons et al., 2014).

Teams of the latter kind can be established within an organisation, and across multiple organisations. They can comprise adopters and implementers alone or include the developers of programs, practices or policies.

Implementation of recommendations arising from previous inquiries of relevance to the Royal Commission into institutional responses to child sexual abuse (Parenting Research Centre, 2015) suggests the concept of building implementation capacity through implementation bodies. Of importance in this regard is the need to manage implementation both via central agencies located 'at the top of the bureaucratic tree' and via implementation teams or statutory bodies at sector level. The report also considers the possibility of enabling and strengthening implementation processes with the help of external, private contractors.

This external implementation support is extensively used in the child and family services sector, where so-called 'intermediary organisations' and 'purveyors' support the implementation of programs, practices and policies. They combine a broad range of knowledge, skills and expertise in clinical interventions, implementation science and practice, and impact evaluation. Implementation support is tailored to the specific needs of organisations and systems. Intermediaries are comparable to the 'backbone organisations' sometimes referred to in the emerging literature on collective impact (Kania & Kramer, 2011) but have a better-defined role focused on implementation quality and outcomes.

Implementation Teams

Metz et al. (2014) define the following five core competencies of successful implementation teams, as conceptualised within the AIF.

Develop team structure	Know and apply the intervention	Know and apply implementation	Know and apply improvement cycles	Know and apply systems change
Represent the system	Assess 'fit' of intervention with local context	Develop infrastructure	Institutionalise feedback loops	Demonstrate knowledge of system components
Provide accountable structure for moving change forward	Demonstrate fluency in strategy	Conduct stage-appropriate work	Use data for decision making, problem solving, and action planning	Use skills for system building and increased cross-section collaboration
Develop memorandum of understanding or communication protocols	Operationalise intervention as needed	Use adaptive leadership skills	Identify or hire functionally engaged leaders	

As part of this REA, and given that previous experience has shown that the implementation of recommendations has had limited success, it is relevant to consider ways to support the implementation of recommendations for preventing institutional child sexual abuse and improving institutional responses to this abuse through external support capacities and internal governance structures.

6. Gaps and limitations

6.1 Gaps

This REA has identified a lack of conclusive evidence for the ability of implementation frameworks to improve the effectiveness of changes to programs, practices and policies in human services. Even when there are indications that implementation frameworks are valuable in this regard, studies do not provide insights into the causal mechanisms between the components of implementation frameworks and the outcomes.

Although the number of studies that evaluate implementation frameworks based on a randomised design appears to have grown in recent years, controlled studies of implementation strategies are still a very recent phenomenon (Landsverk, Brown, Rolls Reutz, Palinkas & Horwitz, 2011, p 59). It is also worth noting that many of the studies identified for this review that evaluated implementation frameworks were undertaken by the developers of the frameworks, which involves a potential risk of bias.

In the main, research on implementation frameworks is conducted in the US or the UK. This REA did not identify rigorous implementation studies or literature reviews that were conducted in Australia or New Zealand.

Also of note is a lack of implementation frameworks that clearly address the implementation of policies. This resonates with findings by Tabak et al. (2012), who concluded in their review of models for dissemination and implementation research that 'the fewest models (n= 8) addressed policy activities' (p 337).

6.2 Limitations

This review focused on implementation frameworks. These frameworks consist of single implementation strategies, which, if evaluated separately and independent from a framework, may be shown to be effective implementation interventions. Literature that presents the study of single implementation strategies is not included in this REA and may be of interest to those examining best practices in implementation. However, to review the evidence for each of these frameworks was beyond the scope of this review, which instead introduces strategies widely agreed upon as being implementation best practice.

Furthermore, this review focused on implementation frameworks in human services such as education, social care and health. To the degree frameworks exist in other sectors, such as corporate or international development, they could not be captured here.

In terms of methodological limitations, it is important to note that this review only sourced English literature, and that studies written in other languages may test the effectiveness of implementation frameworks. In addition, we did not include books, theses or conference presentations, and we did not contact authors for additional studies or data. However, we did seek further framework information

from developer websites and also searched several databases and websites to ensure good coverage of the research literature.

In the final sample of studies for detailed analysis, this review included only implementation studies that were based on a randomised design, thereby establishing a high level of rigour. Studies using a less rigorous design were not examined in detail. Even though the majority of these used implementation frameworks as heuristic devices, findings from the remaining evaluations and case studies may be of interest for further investigation.

7. Conclusions

The quality of implementation matters. Individuals, organisations and systems must attend not only to the practice, program or policy they intend to implement (the 'what') but also to the quality of this implementation (the 'how').

Increasing the quality of implementation increases the chances that programs, practices and policies will yield their intended outcomes.

The selection of programs, practices and policies should be guided by interventions that have been evaluated with rigour and implemented with quality. Otherwise, the relative value and cost-effectiveness of alternative interventions cannot be determined (Durlak, 2013).

During implementation, the developers of recommendations and interventions, and the individuals and systems implementing them, should consider the following best practices:

- Good implementation requires attending to the competencies and skills of individuals ***and*** of the organisations involved. Both individual and organisational capacity needs to be built for implementation.
- Individual behaviour change is an important source of effective implementation.
- Implementation is a complex endeavour that can be influenced by factors relating to the nature of the intervention, the individuals helping to implement the change, the inner and outer context of organisations, and the implementation process itself. Hence, implementation should be well planned and considered.
- Implementation takes place in phases or stages – it will take time to implement change effectively.
- Implementation quality can be improved through key activities, including:
    - needs and readiness assessments
    - training and continuous support of staff members involved in an implementation
    - CQI processes
    - an early focus on sustainability.
- The implementability of recommendations and interventions should be taken into account during their development and selection.
- Before any implementation process, organisational leaders should pay attention to the organisation's needs and readiness, the supportiveness of organisational infrastructure, staff readiness and motivation, and sustainment of change efforts.

- Implementation brokers – that is, individuals or teams with a designated responsibility for facilitating an implementation – may be used to support implementation processes at the system and the organisational levels.

These best practices are often also part of implementation frameworks. However, given the early stage in the development of these frameworks, studies using rigorous research designs include only small indications of their effectiveness when applied as packages. The active planning, support and monitoring of implementation processes may improve both practitioner capacity and clinical program performance – but these indications are not conclusive and clear.

This means that there is only inconclusive evidence for implementation strategies that are packaged into frameworks and that there is no scientific ground for pointing to specific implementation frameworks as particularly effective or applicable. Frameworks may well be effective when applied thoroughly but this has not been fully documented.

While awaiting the progress of research on implementation frameworks, individuals, organisations and systems should consider different combinations of implementation best practices when developing strategies to support the implementation of programs, practices and policies.

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Appendix 1

Methodology and data extraction

May 2016

Prepared by the Parenting Research Centre for the Royal Commission into Institutional Responses to Child Sexual Abuse

Parenting Research Centre
raising children well

Prepared by

Michelle Macvean
Parenting Research Centre

Bianca Albers
Parenting Research Centre*

Ben Devine
Parenting Research Centre

Other contributors: Sophia Rinaldis, Anastasia Pourliakas, Sally Kanno, Natalie Pill – Parenting Research Centre

May 2016

Parenting Research Centre
Level 5, 232 Victoria Parade
East Melbourne
Victoria 3002
Australia
p. + 61 03 8660 3500
www.parentingrc.org.au

*Bianca Albers is now based at the Centre for Evidence and Implementation, Save the Children.

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1. Methodology

This rapid evidence assessment (REA) did not have a registered protocol but methodology for conducting the review was established in a proposal prior to commencement.

1.1 Eligibility criteria

Studies were eligible for inclusion in this REA if they were conceptual, theoretical or empirical studies of implementation frameworks as defined in the 'Key definitions' section of this report. Studies may have addressed the implementation of programs, practices or policies.

A broad range of sectors and populations were of interest to the Royal Commission and, as such, most human services sectors were eligible (including social care, education and health) together with any population type (children, youth and adults). International aid was *excluded*.

Any study design was eligible and there was no requirement for the use of a comparison or control group or for follow-up assessments or measures regarding participants, outcomes or processes.

Published and unpublished studies were sought. As implementation is a relatively new field, only studies dated *after 1970* were sought. Due to limitations of resources, only English language studies were included, and books, chapters, theses and conference papers were *excluded*.

1.2 Information sources

Twelve academic databases were searched on 18 May 2015. Year limits were not imposed at this point, however studies dated before 1970 were excluded during screening.

OVID databases

- PsycINFO 1806 to May Week 2 2015
- Medline(R) 1946 to May Week 2 2015
- Embase Classic+ Embase 1947 to Week 20 2015
- Social Work Abstracts 1968 to March 2015

ProQuest databases

- Education Resources Information Centre 1966 to current
- Applied Social Sciences Index and Abstracts (ASSIA) 1987 to current
- Sociological Abstracts 1952 to current
- Social Services Abstracts 1979 to current

EBSCO databases

- Cumulative Index to Nursing and Allied Health Literature 1981 to current
- Criminal Justice Abstracts 1910 to current

Systematic review libraries

- The Cochrane Collaboration Library 1992 to current

- The Campbell Collaboration Library 2003 to current

Published and unpublished literature that may not have been identified via the database searches were sought via the systematic search of key organisation websites, as listed in Table 1. Searches took place in June 2015. Relevant studies not previously identified via academic database searches were screened for inclusion.

Table 1: Key organisation websites searched for relevant studies

Organisation	Website
The Anne E. Casey Foundation	http://www.aecf.org/
Bill & Melinda Gates Foundation	http://www.gatesfoundation.org/
California Evidence-Based Clearinghouse for Child Welfare (Selecting and Implementing Programs section)	http://www.cebc4cw.org/implementing-programs/
Canadian Knowledge Transfer and Exchange Community of Practice	http://www.ktecop.ca/
Center for Research in Implementation Science and Prevention	http://www.ucdenver.edu/academics/colleges/medicalschool/programs/crisp/Pages/default.aspx
Centre for Effective Services	http://www.effectiveservices.org/
Center for Implementation Practice and Research Support	http://www.queri.research.va.gov/ciprs/
Centre for Implementation Science	http://www.clahrc-southlondon.nihr.ac.uk/centre-implementation-science
Children's Mental Health Services Research Center, regarding ARC (Availability, Responsiveness, Continuity)	http://cmhsrc.utk.edu/arc/
The Colebrooke Centre for Evidence and Implementation	http://www.cevi.org.uk/
Consolidated Framework for Implementation Research	http://cfirguide.org/
Dissemination & Implementation Models in Health Research & Practice	http://www.dissemination-implementation.org/index.aspx
EPISCenter	http://www.episcenter.psu.edu/
European Implementation Collaborative	http://www.implementation.eu/resources
Frank Porter Graham State Implementation & Scaling-up of Evidence-based Practices Center	http://sisep.fpg.unc.edu/
Implementation Network	http://www.implementationnetwork.com/about
Institute for Government	http://www.instituteforgovernment.org.uk/
Knowledge Translation Clearinghouse	http://ktclearinghouse.ca/ktcanada
Laura and John Arnold Foundation	http://www.arnoldfoundation.org/
National Implementation Research Network	http://nirn.fpg.unc.edu/
Nesta	http://www.nesta.org.uk/
North Carolina Translational & Clinical Sciences Institute	http://portals.tracs.unc.edu/index.php/d-iportal/d-i-portal
Quality Enhancement Research Initiative	http://www.queri.research.va.gov/
William T. Grant Foundation	http://wtgrantfoundation.org/

Studies evaluating implementation frameworks were sought from expert colleagues, and were screened for inclusion in the review.

Reference lists of included studies were screened for additional relevant studies. Targeted searches of *Implementation Science* journal were also conducted using implementation framework names and the names of author of included studies.

Due to resource constraints, authors of included studies were not contacted to obtain additional studies or data.

1.3 Search terms

Search terms associated with implementation frameworks were used in conjunction with terminology designed to identify evaluations, as shown in Table 2.

Table 2: Search terms used to identify studies

OVID databases
Limits – English 1. ((implementation framework*) or (implementation model*) or (implementation plan*) or (implementation approach*) or (implementation strateg*) or (implementation protocol*) or (implementation guideline*) or (implementation manual*) or (implementation concept*) or (implementation principle*)).mp. 2. (Randomi* OR Random* control* OR RCT OR Clinical trial* OR trial* or Control group* OR Evaluation stud* or Study design OR Statistical* Significan* OR Double-blind OR Placebo OR meta-anal* OR meta anal* OR metaanal* OR Systematic Review* OR Econometric OR Propensity score matching OR Heckman* OR Instrumental variable* OR Natural experiment OR Bayesian or comparison group* or treat* group* or wait* list* or wait*-list* or control* condition* or quasi-ex* or quasiex*).mp. 3. 1 and 2.
ProQuest databases
AB((((implementation NEAR/1 framework*) or (implementation NEAR/1 model*) or (implementation NEAR/1 plan*) or (implementation NEAR/1 approach*) or (implementation NEAR/1 strateg*) or (implementation NEAR/1 protocol*) or (implementation NEAR/1 guideline*) or (implementation NEAR/1 manual*) or (implementation NEAR/1 concept*) or (implementation NEAR/1 principle*))) and (Randomi* OR Random* control* OR RCT OR Clinical trial* OR trial* or Control group* OR Evaluation stud* or Study design OR Statistical* Significan* OR Double-blind OR Placebo OR meta-anal* OR meta anal* OR metaanal* OR Systematic Review* OR Econometric OR Propensity score matching OR Heckman* OR Instrumental variable* OR Natural experiment OR Bayesian or comparison group* or treat* group* or wait* list* or wait*-list* or control* condition* or quasi-ex* or quasiex*)) and LA(English)
EBSCO databases
Limits – English Field – AB ((((implementation N1 framework*) or (implementation N1 model*) or (implementation plan*) or (implementation N1 approach*) or (implementation N1 strateg*) or (implementation N1 protocol*) or (implementation N1 guideline*) or (implementation N1 manual*) or (implementation N1 concept*) or (implementation N1 principle*))) and (Randomi* OR Random* control* OR RCT OR Clinical trial* OR trial* or Control group* OR Evaluation stud* or Study design OR Statistical* Significan* OR Double-blind OR Placebo OR meta-anal* OR meta anal* OR metaanal* OR Systematic Review* OR Econometric OR Propensity score matching OR Heckman* OR Instrumental variable* OR Natural experiment OR Bayesian or comparison group* or treat* group* or wait* list* or wait*-list* or control* condition* or quasi-ex* or quasiex*))
The Cochrane Collaboration Library
Fields – Titles, abstracts, keywords ((((implementation NEAR/1 framework*) or (implementation NEAR/1 model*) or (implementation NEAR/1 plan*) or (implementation NEAR/1 approach*) or (implementation NEAR/1 strateg*) or (implementation NEAR/1 protocol*) or (implementation NEAR/1 guideline*) or (implementation NEAR/1 manual*) or (implementation NEAR/1 concept*) or (implementation NEAR/1 principle*))) and (Randomi* OR Random* control* OR RCT OR Clinical trial* OR trial* or Control group* OR Evaluation stud* or Study design OR Statistical* Significan* OR Double-blind OR Placebo OR meta-anal* OR meta anal* OR metaanal* OR Systematic Review* OR Econometric OR Propensity score matching OR Heckman* OR Instrumental variable* OR Natural experiment OR Bayesian or comparison group* or treat* group* or

wait* list* or wait*-list* or control* condition* or quasi-ex* or quasiex*))
The Campbell Collaboration Library
Field – all text Implementation

Various methods were used to search the key organisation websites, depending on the capacity of the websites. Typically, lists of publications, research and resources were screened for inclusion. If such lists were not available, the phrases 'implementation framework' and 'implementation model' were entered into search boxes.

1.4 Study selection

All search results were exported from databases into Endnote and duplicate entries were removed. Research assistants were trained to use the selection criteria and they independently screened titles and abstracts in Endnote. Where abstracts appeared to meet the inclusion criteria, full texts were sourced and then screened by B. Albers to determine eligibility for inclusion in the REA.

Research assistants also conducted a targeted search of *Implementation Science*, a journal dedicated to implementation studies particularly in health, public health and allied sectors. The assistants were instructed to search for articles referring to designated implementation frameworks and names of framework developers which had been identified through the included studies or were known to the research team. Both framework names and developer names are listed in Table 3.

Table 3: Targeted search of implementation framework names and developer names in *Implementation Science*

Implementation frameworks	Implementation framework developers
Active Implementation Framework	Dean Fixsen/Allison Metz
Availability, Responsiveness and Continuity	Charles Glisson
Breakthrough Series Framework for Spread Rapid Improvement Process Model	Institute for Healthcare Improvement
Community Development Team	Patricia Chamberlain/Lisa Saldana
Conceptual Framework for Policy Implementation	RM Friedman
Exploration, Preparation, Implementation, Sustainment Framework	Gregory Aarons
Interactive Systems Framework for Dissemination and Implementation	Abraham Wandersman
Intervention Mapping	

Implementation frameworks	Implementation framework developers
Knowledge to Action Cycle/Knowledge to Action framework	ID Graham
Normalisation Process Theory/Normalisation Process Model	C May
Organisational Transformation Model	CVD Lukas
Practical Robust Implementation and Sustainability Model	AC Feldstein/RE Glasgow
Promoting Action on Research Implementation in Health Services	Jo Rycroft-Malone
Pronovost Model	PJ Pronovost
Reach Effectiveness Adoption Implementation Maintenance	RE Glasgow
Behaviour/Behaviour Change Wheel	S Michie/Lou Atkins
Consolidated Framework for Implementation Research	L Damschroder
Readiness for Implementation Model	NN
Replicating Effective Programs	NN
Simpson Transfer Model	NN
NN	C Heller
NN	E Proctor
NN	KJ Klein/JS Sorra
NN	JA Durlak/EP DuPre

Note: NN = not named

Websites were screened by the same research assistants to identify additional relevant papers for Bianca Albers to screen for inclusion. Albers also screened all papers recommended by experts and checked reference lists of included papers for additional studies.

Due to resource constraints, no double coding of screening was possible.

1.5 Data collection process

Albers collected data from all studies in collaboration with a research team. The focus of this data collection was on 15 literature reviews, 13 of which were labelled as systematic, and 22 primary studies based on randomised designs that either tested implementation frameworks as

interventions or used them as heuristic devices. Due to resource constraints, double-extraction of data was conducted only for a selected sample of studies, to improve consistency in the research team.

1.6 Data items

Included articles were classified into (a) conceptual articles (that discussed or developed implementation frameworks based on theoretical considerations); (b) evaluations (studies that used a non-controlled design to evaluate an implementation process); (c) randomised controlled trials (studies that used a controlled design to evaluate an implementation process); and (d) literature reviews (articles that described and discussed implementation frameworks based on a literature review).

Identified studies were listed by author name, publication year, study design, study purpose, study sector and implementation framework included. Studies included in the detailed analysis were summarised by author name, publication year, study design details, study purpose, research question, results, study sector, applied framework and framework application type.

Data collected from the included studies were gathered into a narrative synthesis that centred on two perspectives: knowledge about implementation frameworks used as heuristic devices, and knowledge about implementation frameworks used as implementation interventions to support the outcomes of clinical interventions for end users of services provided in human services. Data extracted from the included literature were also organised by sector (child and family services versus health and public health).

Articles that reported a study that applied an implementation framework but was not based on a randomised design (*n*=56) were solely analysed for implementation framework application type.

1.7 Risk of bias

The evidence for implementation frameworks as implementation interventions with a documented impact on outcomes for service users, as presented in this REA, is very limited. Given this, a systematic assessment of the risk of bias in individual studies or across studies has not been conducted. However, the authors of this REA note that in some studies the use of framework developers or their associates in the research process may have affected the quality of outcomes or the implementation quality.

1.8 Summary of measures

Given the paucity of information about outcomes related to the application of implementation frameworks – and the heterogeneity of the outcomes mentioned in included studies – such measures as assessing risk ratios or other variables of interest for single studies and across studies were not applied as part of this REA.

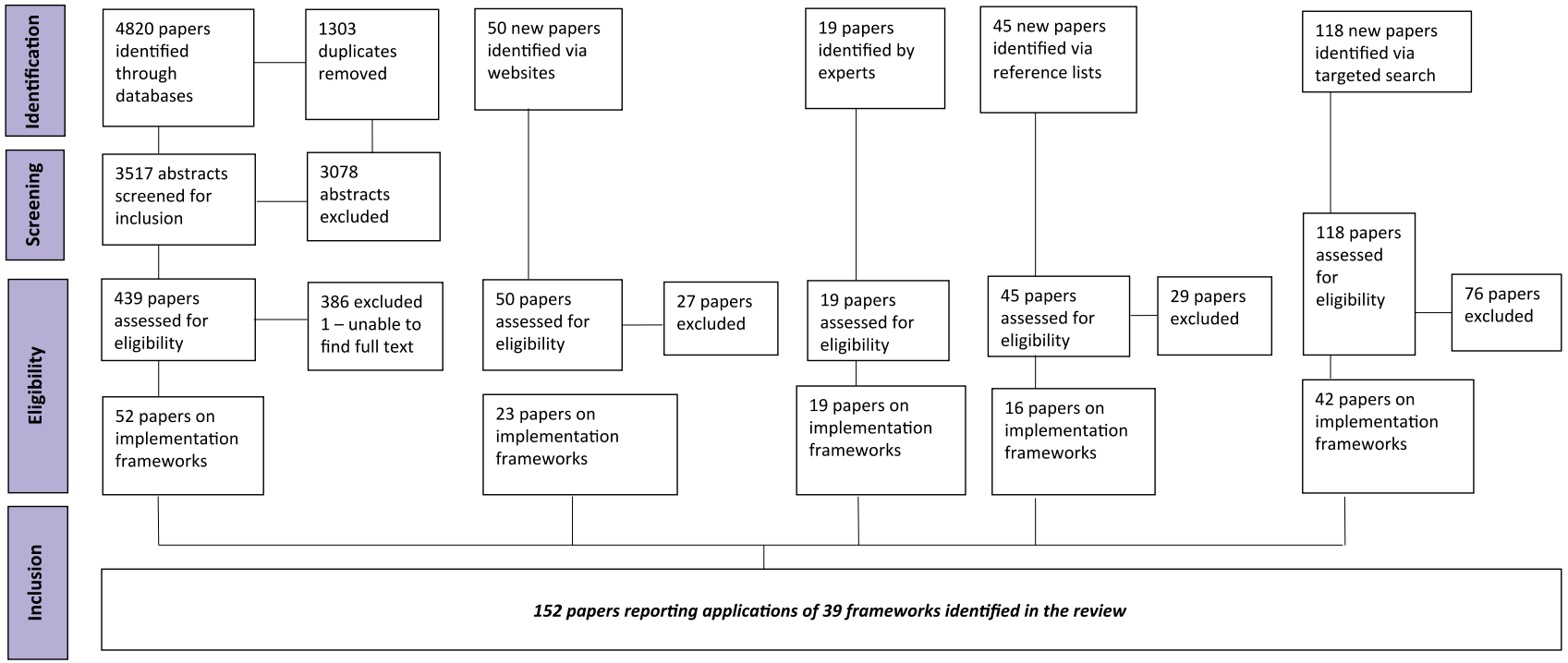
1.9 Synthesis of results

Data collected from the included studies were gathered into a narrative synthesis that centred on two perspectives: knowledge about implementation frameworks used as heuristic devices, and knowledge about implementation frameworks used as implementation interventions to support the outcomes of clinical interventions for end users of human services. Data extracted from the

included literature were also organised by sector (child and family services versus health and public health).

In the further contextualisation of findings, the results from the narrative synthesis were expanded with and reflected in knowledge derived from the broader literature on implementation science and practice, focusing on such things as single versus multiple implementation strategies, the role of implementation capacities and other core aspects of implementation agreed upon within research as central to implementation efforts.

2. PRISMA flowchart of studies through the selection process



3. Data extracted from literature reviews and randomised studies

3.1 Literature reviews

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
Fixsen, Naoom, Blase, Friedman & Wallace (2005)	2005	Systematic review	Included published and unpublished literature with any data and of any design in any sector, produced between 1970 and 2004. Based on a consistent search string and inclusion criteria. Databases: PsycINFO, Medline, Sociological Abstracts, CINAHL, emerald, JSTOR, Project Muse, Current Contents, Web of Science. Yielded 377 articles included, 22 of which were based on experimental	To advise the human services sectors on innovative implemen-tation strategies. Data were gathered from human services sectors as well as agriculture, business, engineering, medicine, manufacturing and marketing.	What are the relevant components and conditions of implementation?	Defines six stages of implementation: exploration, adoption, program installation, full operation, innovation and sustainability. Defined three core implementation components: training, coaching and performance measurement. Defined four organisational components that influence implementation: selection of staff, program evaluation, administration and systems intervention. Defined three factors influencing implementation: social, economic and political.	Cross-sector	Active Implementation Framework (AIF)	This reviews lays the foundation for the development of the Active Implementation Framework, which is further developed and refined in subsequent articles by this author and his colleagues.	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			designs or meta-analyses.							
Field, Booth & Gerrish (2014)	2014	Systematic Review and citation analysis	Citation searching in Scopus, Web of Science and Google Scholar and scoping search using Medline and CINAHL, targeting studies from 2006 to July 2013. Included only empirical real-life applications of the Knowledge to Action (KTA) framework to implementation projects. Yielded 1057 papers; reduced to 146 based on inclusion/exclusion criteria.	Assess the practical application of the KTA framework in implemen-tation projects.	Is the KTA framework being used in practice? If so, how?	Used a taxonomy according to which a project could (a) reference, (b) be informed by, (c) adapt/combine, (d) be directed by or (e) integrate the KTA framework. Of the studies, 43% referenced the framework, 27% were informed by KTA (no examples were given of how it was applied), 12% adapted it, 12% were directed by it, and only 10% integrated. The remainder of analysis was on these 10 integrated studies. Two used all phases of the knowledge creation stage; five applied one or more phases; all applied the action cycle; and all undertook the first phase. The least reported phase: sustain knowledge use. Most illustrate how knowledge was adapted to the local context. Education was the most frequently employed strategy. The authors concluded that the **review illustrates the adaptability of**	Health	Knowledge to Action (KTA) framework	Review of ways in which KTA framework is being used in practice. The research evaluated theory fidelity (whether KTA was articulated in a way that was true to the source paper). Each study was mapped against phases within the KTA framework.	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
						the conceptual framework to different healthcare settings and topics.				
Helfrich et al. (2010)	2010	Systematic review and critical synthesis	Critical synthesis methods, with key word searches in PubMed and CINAHL. The reference list of articles were then reviewed, along with solicited citations from a PARIHS author and other colleagues familiar with the framework. Criteria: peer review, English, published before 2009, with explicit reference to PARIHS. The primary reviewer wrote a narrative synopsis of an article that was distributed and reviewed by all authors, and discussed and	To critically examine the literature using the PARIHS framework to determine how the framework is used in practice, how it is operation-alised, and its overall strengths and limitations.	How has the PARIHS framework been used in practice? How has it been operationalised? What are its strengths and limitations?	Twenty-four publications were included in the final literature sample: eight were core concept and 18 empirical. Empirical studies generally used PARIHS as an organising framework for analyses, such as examining predictors of nurses' use of research, or reporting findings. No study used PARIHS prospectively to design implementation strategies; all studies were retrospective or cross-sectional. Except for one study (Stetler et al., 2006), none of the empirical articles was designed to validate or refine the framework. Few studies described ways in which the framework had been operationalised. PARIHS includes an explicit method for using it in analysing evidence and context. **The research showed that the framework had a high level of flexibility and applicability. Some**	Health	Promoting Action on Research Implementation in Health Services (PARIHS)	The implementation framework was examined in this review.	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			refined during a conference call. The synopsis was condensed into a table, which was discussed and reviewed by all authors. Authors independently highlighted key points per article from the summary tables and this was discussed as a group to identify similarities and differences across papers and to develop qualitative themes.			**elements/sub-elements seem to be validated by the literature. The weakness is a need for greater conceptual clarity about the definitions of sub-elements and the relationships between them. Same lack of clarity for the outcome 'successful implementation' – need to define this in greater detail**.				

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
Green-halgh, Robert, Macfarlane, Bate & Kyriaki-dou (2004)	2004	Systematic review and meta-narrative review	Included 213 empirical studies and 282 non-empirical studies. The initial search with index terms yield poorly so a snowball method was used, with advice from experts in various fields. Meta-narrative review: mapped the meta-narratives (i.e., traced the historical development of concepts, theory and methods in each research tradition) by identifying the seminal theoretical and overview papers and books, and analysing the conceptual and theoretical models proposed by recognised experts in each field.	This literature review aims to develop a parsimonious model for implementing innovations in health organisations to clearly define current knowledge gaps and to develop a systematic methodology for reviewing health service policy and management.	How can we spread and sustain innovations in health service delivery and organisation?	Suggests a two-stage framework to spread and sustain innovations in service delivery and organisation. Stage 1 is to consider the individual components of the model by answering the questions: What are the attributes of the innovation as perceived and evaluated by the intended user? What are the characteristics of the adopters and the adoption process? What is the nature of communication and influence about the innovation? What is the nature of the organisational context and how conducive is this to the assimilation of innovations in general? What is the organisation's level of readiness for this innovation in particular? What is the nature of the outer, environmental context, and how will this impact on the assimilation process? Is the implementation and maintenance process – as opposed to the adoption by individuals – adequately	Cross-sector	No name	This systematic review was used to develop a structured, evidence-based approach to spread and sustain innovations in service delivery and organisations. The framework suggested has no particular name. Its core components are summarised under 'results'.	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
						planned, resourced and managed? What are the nature, capacity and activities of external agencies, if any? Stage 2 is to consider the interactions between components on a concrete, case-by-case basis as these interactions cannot be generalised (e.g. interaction between adopter and innovation; opinion leaders and the innovation etc.)				
McEvoy et al., (2014)	2014	Systematic review and qualitative content analysis	Search of 12 databases: Academic Search Complete, AMED, Biomed reference collection, CINAHL, Medline, PsychARTICLES, PsycINFO, Social Sciences, UK and Ireland Ref Centre, EMBASE, PubMed. Also searched all citations linked to six key Normalisation Process Theory	To understand what interventions NPT is being used to analyse, how NPT is being operationa-lised, and the reported benefits, if any, of using NPT.	What interventions is NPT being used to analyse? How is NPT being operationalised? What are the reported benefits, if any, of using NPT?	NPT centred on four theoretical constructs: coherence (sense-making to embed the new practice in routine practice); cognitive participation (work to engage individuals in new practice); collective action (work to enact the new practice); and reflexive monitoring (work to appraise/assess the new practice). In the main, NPT is being applied to qualitatively analyse a diverse range of complex interventions, many beyond its original field of e-health and telehealth. The	Health	Normalisation Process Theory (NPT)	The implementation framework was examined in this review.	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			(NPT) development papers. Grey literature/unpub-lished studies were not sought. Limitations included English language, healthcare setting and year of publication (2006 to June 2012). Google Scholar alerts activated. Qualitative analysis: Final yield – 29 articles.			NPT constructs have high stability across settings and, notwithstanding challenges in applying NPT in terms of managing overlaps between constructs, there is evidence that it is **a beneficial heuristic device to explain and guide implementation processes**.				
Michie, van Stralen & West (2011)	2011	Systematic review and qualitative content analysis	Search of Web of Science, Pubmed, PsycINFO supplemented with consultations with eight international experts (in behavioural change, from various disciplines). Used search terms and inclusion criteria. Coded identified	To evaluate frameworks of behaviour change interventions and develop a new framework aimed at overcoming their limitations.	What interventions are included in different frameworks of behaviour change? How useful are these interventions? How can they be synthesised and integrated into a new framework that addresses	Systematic review: Scrutiny of the framework yielded nine intervention functions – education and persuasion; incentivisation; coercion; training; restriction; environmental restructuring; modelling; and enablement. It also yielded seven policy categories: communication/marketing, guidelines, fiscal policies, regulation, legislation, environmental/social planning	Cross-sector	Behaviour Change Wheel (BCW)	This review links the COM-B model of behaviour (which states that behaviour change at the individual level is dependent on capability, opportunity and motivation) with the Behaviour Change Wheel,	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			frameworks for (1) comprehensive coverage, (2) coherence, and (3) link to over-arching model of behaviour. Yielded 19 articles, describing 19 frameworks. These were integrated into the new framework for behaviour change: the Behaviour Change Wheel.		the limitations of existing frameworks?	and service provision. Reliability of framework: on tobacco strategy – 88% inter-rater agreement (met gold standard of 85%); on obesity guidance – 79% inter-rater reliability (met gold standard of 75%).			which was developed as a result of the systematic review. Both the intervention functions and the policy categories defined by this review are linked to the three COM-B dimensions such that decisions can be made on how best to create capability, and encourage opportunity and motivation	
Meyers, Durlak & Wanders man (2012)	2012	Systematic review and qualitative content synthesis	Systematic search of six databases (Business Source Premier, Dissertation Abstracts, Google Scholar, MEDLINE, PsycINFO, and Web of Science). Both empirical and theoretical or	Three goals: (1) to provide a conceptual overview of the process of implemen-tation by synthesising information from 25 implemen-	What are the common characteristics of different implementation frameworks? What research supports the different steps in QIF? What are the practical	Fourteen common elements of implementation frameworks are: assessing needs and resources; assessing fit; assessing capacity/readiness; the possibility for adaptation assessment; explicit buy-in compliance; accomplishing general/organisational capacity; staff recruitment and maintenance; effective pre-	Cross-sector	Quality Implementation Framework (QIF) and Integrated Systems Framework (ISF)	The QIF is the result of this literature review. It is linked in the discussion to the ISF, which was developed by the same authors. It is suggested that these frameworks	***FRAMEWORK DEVELOPMENT***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			conceptual literature was included, with no limitations on sector. Included published and unpublished literature, in English, produced by the end of June 2011. Included a hand-search of four journals published in the last five years and reference list of each. Final yield: 27 articles.	tation frameworks; (2) to summarise research support for each of the 14 steps of the Quality Implemen-tation Framework (QIF) and to offer suggestions to direct future research efforts; and (3) to outline practical implications of our findings for improving future implemen-tation efforts in practice.	implications of the findings in terms of improving future implementation?	innovation staff training; creating an implementation team; developing an implementation plan; technical assistance, coaching or supervision; process evaluation; supportive feedback; learning from experience. They form the basis of the QIF and occur in four temporal phases. Ten of the 14 steps occur before implementation. There is limited research to support each of these 14 steps. Training and ongoing technical assistance has the strongest research support. The QIF can guide how systems defined by the Interactive Systems Framework work together. Following the development of the QIF, the authors developed the Quality Implementation Tool.			complement each other.	

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
Grim-shaw et al. (2012)	2012	Literature review	The authors decided on scope, then searched Medline and other databases of methodological studies (the authors do not mention which) for systematic reviews and relevant methodological research through 2010.	This review aims to advise guideline developers in respiratory and other diseases on the dissemination and implemen-tation of best practice guidelines to improve care. The review focuses on the Knowledge to Action (KTA) cycle by Graham et al.	What frameworks can aid guideline dissemination and implemen-tation? What are the effects of various guideline dissemination and implemen-tation strategies? What is the role of guideline developers in guideline dissemination and implemen-tation?	The KTA cycle proposed by Graham et al. is a useful framework for planning dissemination and implementation activities that emphasise the need for tailored approaches based on an assessment of local barriers. These highlight that various professional interventions can be effective implementation strategies – but their success will always depend on the concrete situation. However, in general, it has been shown that 'greater effects are observed when barriers have been correctly identified and interventions are targeted at these barriers' (p. 302). Guideline developers should especially be concerned with the implementability of the guidelines, and should develop formal relationships with those who implement guidelines. Authors refer to a framework by Gagliardi focusing on guideline implementability through eight key domains. Three are	Health	Knowledge to Action (KTA) framework	KTA is identified as a framework that can aid guideline dissemination and implemen-tation because it is based on similarities between different models	***FRAMEWORK IDENTIFICATION and CLASSIFICATION***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
						format domains (usability, adaptability and validity) and five are content domains (applicability, communicability, accommodation, implementation and evaluation).				
Tabak, Khoong, Chambers & Brownson (2012)	2012	Literature review and narrative review	Used snowball sampling based on expertise in the research team. Focused on models used for dissemination and implementation research. Included only models designed for use by researchers and applicable to local level dissemination (community and organisations). Excluded those designed for dissemination at the end of a research study. Models aggregated from published	To provide a review of models used in implementation research to select the most appropriate models to inform implementation research design.	What models exist to inform research in dissemination and implementation. How can they be classified?	Identified 61 dissemination and implementation models. Classified models as 'dissemination only', 'more dissemination than implementation', 'more implementation than dissemination' and 'implementation only'. There were more models in dissemination-dominated categories than in implementation-dominated categories. Twelve models categorised as 'implementation-only models' were targeted for review. Models with an emphasis on implementation built on concepts that were more operational. **Only eight of the models included the policy context** (Pathways to Evidence	Cross-sector	Multiple frameworks	Active Implementation Framework; An Organisational Theory of Innovation Implementation; Conceptual Model of Implementation Research; Implementation Effectiveness Model; Normalization Process Theory; Promoting Action on Research Implementation in Health Services; Pronovost's 4Es Process Theory;	***FRAMEWORK IDENTIFICATION and CLASSIFICATION***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			literature and scientific presentations. Case studies included. Peer review and non-peer review. Phases: initial sampling, snowball sampling from the initial sample, consulting with experts, identifying categories for each model, categorising models, contacting a subset of model developers to validate categories. The starting point was determined by two authors who generated a list of commonly used models and common developers.			Informed Policy, A 6 step framework for International Physical Activity Dissemination, Push-Pull Capacity Model, Research Knowledge Infrastructure, Health Promotion Research Center Framework, Policy Framework for Increasing Diffusion of Evidence-Based Physical Activity Interventions, A Conceptual Model of Knowledge Utilisation, Streams of Policy Process). None of these were dominated by implementation-based thinking.			Sticky Knowledge; Consolidated Framework for Implementation Research; Replicating Effective Programs; Availability, Responsiveness and Continuity; Conceptual Model of Evidence-Based Practice Implementation in Public Service Sectors.	
Lands-verk, Brown, Rolls Reutz,	2011	Systematic review	Structured literature review based on systematic search terms. Searched	To identify similarities and variation in design elements in	Are RCT designs useful for implementation research? Paper examines the use	Controlled studies in implementation are a recent phenomenon. Most used only one level of randomisation (clinical intervention or	Child and adole-scent (mental)	Review of different implementation frameworks	The coding of included studies was based on the concept of implementation	***FRAMEWORK IDENTIFICATION and CLASSIFICATION***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
Palinkas & Horwitz (2011)			databases (Pubmed, Medline, PsycINFO and Social Services). Did not include grey literature. Used eight search terms and MeSH terms. Only peer reviewed articles. Studies were required to have implementation strategies and an evidence-based program being implemented, needed to have data, required to have some comparison condition, at least two data points. Literature from 1995-2010. Mixed methods papers were included.	dissemination and implementation research, drawing on approaches to studying social change processes in real world contexts.	of randomisation and other design elements in implementation studies to identify similarities and variation in design elements in these studies.	implementation intervention). Only the ARC (Availability, Responsiveness, Continuity) study was randomised at both levels. Use of quantitative only design for 5/9 and use of mixed methods for 4/9. Stages of implementation: exploration stage used in 1/9, adoption preparation stage in 2/9, implementation stage in 9/9, sustainment phase in 1/9. Limited use of implementation theories: Two used Roger's diffusion of innovations theory. ARC study anchored in organisational theory. Six studies linked to implementation interventions with no prior research and/or theory not mentioned at all. Concludes that implementation science in child mental health and child welfare is less well developed compared to medicine, and advocates for an extensive and critical discussion and development of study designs that can address the tension between external and internal validity in implementation	health		stages that is included in a number of implementation frameworks. The ARC framework was applied in one of the studies included in this review.	

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
						studies.				
Boersma, van Weert, Lakerveld & Droes (2015)	2015	Systematic review	Searched PubMed, PsycINFO and CINAHL. Search string and inclusion criteria were provided in the article. Used mesh terms, thesaurus, and free text words. The search was augmented by the snowball method. Yield: 268 papers, reviewed by three researchers and reduced to 54 papers.	Discern factors that assist in the successful implemen-tation of psychosocial strategies for the daily care of people with dementia in a residential setting. The goal of all 54 studies and training was to teach caregivers to work in a more personalised way. The RE-AIM (Reach Effectiveness Adoption Implementatio n Maintenance)	How are psychosocial interventions in daily residential dementia care implemented? Which factors contribute to successful implementation? Focus on behaviour changes in caregivers, and facilitating and impeding factors at the organisational level.	Most implementation studies focus on reach (the proportion of the target population that participated in the intervention) and efficacy (outcomes regarding the knowledge, skills and attitude of professionals), followed by implementation (the extent to which an intervention is implemented as intended). Fewer studies focus on adoption (the proportion of caregivers who adopt the intervention) or maintenance (the extent to which an intervention is maintained over time). Only five out of 54 studies elaborated on all five constructs. To influence the knowledge of caregivers is easier than to influence their behaviour. Training can improve knowledge but is never enough to change caregiver behaviour. The	Aged care	Reach, Effectiveness, Adoption, Implementation, and Maintenance Framework (RE-AIM)	Used five components to map degree of implementation of psychosocial interventions of each paper.	***HEURISTIC***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
				framework was used to elicit effective and sustainable implemen-tation methods.		development of flexible and multiple implementation strategies is recommended.				
Durlak & DuPre (2008)	2008	Systematic review and meta-analyses	Searched PsycINFO, Medline, Dissertation Abstracts. Search terms were provided in the paper. Then searched references and citations from reviews and conducted a manual search of the several journals published over the last five years. Question 1: only quantitative articles; 542 interventions (in 64 articles). Question 2:	To determine the impact of implemen-tation strategies on program outcomes and also to identify which factors affected the process of implemen-tation. Multiple sectors and programs were included and reviewed using the Interactive Systems Framework (ISF) for Dissemination	Does implementation influence program outcomes? What factors affect implementation?	Question 1: programs with better implementation result in higher effect sizes. If implementation quality is controlled, mean effect sizes are 2–3 times higher, and under ideal circumstances up to 12 times higher than without monitoring of implementation quality. Question 2: Important community-level factors include the prevention research system, politics, funding and policy. Provider-related characteristics involve perceptions of the need for and the potential benefits of the innovation, self-efficacy and skill proficiency. Important innovation characteristics are adaptability and compatibility.	Child and adole-scent (mental) health	Interactive Systems Framework (ISF) for Dissemination and Implementation	The ISF is used to develop a framework for effective implementation, which is described in detail on p. 335. This framework is then the organising principle for presenting results from the review (community-level factors, provider characteristics, innovation characteristics, factors related to organisational	***HEURISTIC***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			qualitative and quantitative; 81 studies.	and Implementation as a guide.		Factors related to organisational capacity include level of innovativeness, strong leadership, program champions and shared decision-making (which also predicts sustainability). Training and technical assistance received a lot of empirical support.			capacity and to training and technical assistance in the prevention delivery system).	
Powell et al. (2012)	2012	Systematic review, narrative review and modified DELPHI process	Included a systematic search of the literature, in English, published between 1995 and 2011, in CINAHL Plus, Global Health, MEDLINE, PsycINFO, Social Work Abstracts, and SocINDEX, using the EBSCO database host. Expert recommendations (from 46 experts). Compilations and lists known to the research team	To bring more depth and clarity to implementation research and practice by consolidating discrete implementation strategies.	What are the current implementation strategies identified by the literature? How can they be compiled into categories?	The research identified five main categories, some of which have sub-categories. Numbers in brackets indicate the number of concrete strategies identified for each main category (total is 68): plan strategies (17: gather information, select strategies, build buy-in, initiate leadership and develop relationships); education strategies (16: develop materials, educate, educate through peers, inform and influence stakeholders); finance strategies (9: modify incentive and facilitate financial support); restructure strategies (7); quality	Health and mental health	Consolidated Framework for Implementation Research (CFIR)	Used the CFIR to guide the review and organise different implementation strategies into categories. The CFIR itself was not evaluated.	***HEURISTIC***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
			were included. 205 full text sources were screened and data on implementation strategies extracted. The research team used a modified Delphi process to rate and agree on each suggested strategies and their definitions.			management strategies (16).				
May, Sibley & Hunt (2014)	2014	Systematic review and qualitative content analysis	Searched CINAHL, PsycINFO, EMBASE, Sociological Abstracts, CSA Illumina. Included literature from January 2000 to March 2012. Extensive inclusion criteria provided. Qualitative only. Final yield of seven articles.	To investigate the dynamics of nurses' work in implementing clinical practice guidelines	What factors promote or inhibit the implementation of nursing clinical practice guidelines?	Seven studies that met the inclusion criteria revealed that clinical practice guidelines are disposed to normalisation when: (a) they are associated with activities that practitioners can make workable in practice, and practitioners are able to integrate into their collective workflow; (b) when they are differentiated from existing clinical practice by their proponents, and when claims of differentiation are regarded as legitimate by their potential users; (c) when they are associated with an emergent	Health (nursing focus)	Normalisation Process Theory (NPT)	Used NPT to identify, understand and explain elements of implementation processes identified in the included studies. NPT directed the content analysis by examining the objects of implementation (guidelines), the contribution of participants (the things that	***HEURISTIC***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
						community of practice, and when members of that community of practice enrol each other into group processes that specify their engagement with them; (d) when they are associated with improvements in the collective knowledge of their users, and when users are able to integrate the application of that knowledge into their individual workflow; and (e) when nurses can minimise disruption to behaviour norms and agreed professional roles, and mobilise structural and cognitive resources in ways that build shared commitments across professional boundaries.			practitioners do), and the contexts in which implementation occurred. The review defines six propositions for successful guideline implementation by nurses, which can be considered a framework in itself (reflected in the results column, see left).	

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
Novins, Green, Legha & Aarons (2013)	2013	Systematic review and qualitative content analysis	Searched PubMed, Embase, PsycINFO, Web of Science, CINAHL, Cochrane. Search terms used and contacted model developers of prominent child/adolescent focused evidence-based practice (EBP) and examined publication lists on EBP websites. Followed PRISMA. Used exclusion/inclusion criteria. Only empirical articles. Final yield of 73 articles, covering 44 unique studies.	To identify key findings from empirical studies examining the dissemination and implementation of evidence-based practices for child and adolescent mental health.	What is the current state of the science regarding the implementation of evidence-based practices for the prevention and treatment of mental health problems among children and adolescents in community care, primary care and speciality mental health settings?	Only 16 papers covered more than one Exploration, Preparation, Implementation and Sustainment (EPIS) phase. Only 11 papers used a cluster-randomised design to address the complexities of implementation processes. Overall results: fidelity monitoring and supervision have the strongest empirical evidence and increase the likelihood that intervention effects will be realised. However, most identified research was conducted by program developers, including a disproportionate share of studies on Multisystemic Therapy (MST) implementation, who have an interest in finding effective ways to implement their programs. This may explain the large number of studies focusing on training and supervision. Interventions focusing on improving organisational culture and climate had better intervention sustainment, and	Child and adole-scent (mental) health	Exploration, Preparation, Implementation and Sustainment (EPIS)	Findings were organised and presented using the categories of the EPIS framework (exploration, preparation, implementation, sustainment and inner/outer context factors)	***HEURISTIC***

Author	Year	Study Design	Study Design Details	Study Purpose	Research Question	Results	Study Sector	Framework	How Implementation framework was used	FRAMEWORK APPLICATION TYPE
						better outcomes for both children and adolescents. The research included little on the impacts of different dissemination approaches. Training strategies and technologies are important to dissemination and implementation. Other outer contextual factors include connections with Evidence-Based Program developers and inter-organisational networks that link key stakeholders and facilitate interaction and communication.				

3.2 Randomised controlled trials

Author	*Year*	*Study Design*	*Details Study design*	*Study Purpose*	*Research Question*	*Results*	*Study Sector*	*Framework*	*How Implementation framework was used*
Glisson	2006	Randomised controlled trial (RCT)	The sample includes 235 caseworkers from 26 case management teams that provide child welfare and juvenile justice services to two urban regions (one county per urban region) and two rural regions (a total of 25 counties) in one south eastern state in the US. The experimental design randomly assigned case management teams within each location (urban or rural) to either the ARC intervention or control condition. This resulted in a true experimental design: fully crossed, 2×2, randomised blocks, The two urban regions were served by 10 teams and the two rural	To improve working conditions for caseworkers in the child welfare and juvenile justice system.	Would the case management teams that participated in the ARC organisational intervention would have lower levels of turnover? Would the case management teams that participated in the ARC organisational intervention develop healthier climates (e.g., lower levels of depersonalisation, emotional exhaustion, role conflict, and role overload) Would the case management teams that participated in the ARC organisational intervention develop more constructive cultures (e.g., more emphasis on support and motivation) and less defensive	There was significantly lower staff turnover in the intervention condition - case workers with higher levels of education reported higher levels of role overload and depersonalisation at follow-up; while intervention condition teams reported significantly more positive work climates, less emotional exhaustion, less depersonalisation, less role conflict, less role overload than case worked in control teams - members of teams in more urban areas reported more positive climates than teams in rural areas - results from follow up (included employees that joined the teams during the implementation	Child welfare and juvenile justice	ARC (Availability, Responsiveness and Continuity) framework	ARC was ARC principles were implemented over one year to test its effect on a work place.

regions were served by 16 teams. Five urban teams and eight rural teams were assigned to the ARC intervention condition, and five urban teams and eight rural teams were assigned to the control condition.		cultures (e.g., less emphasis on evasion and subservience) than case management teams in the control group.	process) showed that caseworkers with more education reported higher levels of role conflict, role overload and emotional exhaustion, minority status case workers described lower levels of role conflict and depersonalisation and caseworkers on team in the intervention condition reported significantly lower levels of role conflict and role overload. There was no difference in culture between the intervention and control groups

Glisson	2010	Randomised Controlled Trial (RCT)	A two-level strategy for implementing evidence-based mental health treatment (MST) was assessed in a 2 × 2 randomised trial with 615 delinquent youth in 14 rural Appalachian counties. Within each county, youth were randomly assigned to the MST program or to usual services programs, yielding 4 treatment conditions (MST plus ARC, MST only, ARC only, control).	This study aimed to compare Multisystemic Therapy (with or without ARC), ARC only and a control group in improving outcomes for delinquent youth in a community based mental health service.	Hypothesis 1: MST treatment model fidelity, efficiency of therapeutic effort within community and service systems, and MST treatment outcomes are superior in counties that receive the ARC organisational intervention compared to counties not receiving ARC. Hypothesis 2: Psychosocial (reduced behavioural problems) and systems outcomes (reduced out of home placements) are superior for youth in counties receiving the ARC organisational intervention compared to counties not receiving ARC. Hypothesis 3: Psychosocial (reduced behavioural problems) and systems outcomes (reduced out of home placements) are superior for youth who receive MST compared to youth who receive the usual services.	MST Therapists in the ARC condition spent fewer minutes weekly working with youth family systems and with youth caregivers, with primary caregivers and family members, with other caregivers and family members, with primary caregiver and youth together. No difference in time spent for other subsystems. Equivalent probability across ARC and non-ARC conditions that a particular system or subsystem was addressed in a given week. Therapist progress ratings were favouring the ARC counties in most subsystems. MST therapists judged families in the ARC condition as experiencing more cumulative progress in treatment. There were no differences in caregiver reported MST therapist adherence, supervisor adherence, or audio coded therapist	Youth mental health (community based)	ARC framework (Availability, Responsiveness and Continuity)	Three strategies of ARC: provides organisational tools for identifying and addressing service barriers, introduces organisations to principles of effective service systems, addresses service provider behaviour and attitudes that discourage service improvement efforts. Manual guided activities and 12 intervention components. Three stages of implementation. Guided by ARC specialist.

adherence between ARC and non-ARC conditions. Out-of-home placements were significantly lower for the youth who received MST within each county and for the youth in counties that received the ARC intervention. Youth in the ARC counties benefited more from MST treatment at the six month outcome than the youth in the non-ARC counties on problem behaviour scores. Total problem scores for youth in the MST plus ARC condition declined immediately after baseline at a significantly higher rate than total problem scores in the other conditions. Although the total problem behaviours continued to decrease for youth in all four conditions during the second follow-up period, the youth in the MST plus ARC conditions experienced significantly less

						decline in problem scores in the second period. Thus, the steep initial downward trend in total problem behaviours among youth in the MST plus ARC condition during the first six months began to flatten in the 6 to 18 month period. The differences in problem levels were eliminated by the end of the second period.			
Glisson	2012	Randomised Controlled Trial (RCT)	26 of 41 programs met inclusion criteria and were randomly allocated to control or ARC intervention (13 each group). 2 in the control group were then excluded and another 2 added to this group. ARC intervention facilitated by ARC specialist. Measure was Organizational Social Context (measures rigidity, proficiency and	Twenty-six community-based mental health programs for youth were assigned to either an ARC or control condition to determine whether ARC led to improvements in the organisational culture and social context of these teams.	In a new sample of community-based mental health programs for youth, does a longer ARC intervention period (18 vs 12 months) on organisational culture, organisational climate, and work attitudes, improve organisational culture? Note: in the 12 month period organisational climate was improved, but	Unlike 12 month period, all three constructs improved. All dimensions of work attitudes in the ARC condition were improved; clinicians reported higher morale, job satisfaction and commitment than in the control condition. The standardised ARC effects were in the hypothesised (improved) direction for all three primary	Youth mental health (community based)	ARC framework (Availability, Responsiveness and Continuity)	18 month ARC intervention facilitated by ARC specialist. Separate manuals for team leaders and team members were created, fidelity to ARC intervention assessed by adherence to its 12 components and 5 principles established; no between program variation reported by ARC condition

	resistance of org culture); Repeated measures design of program clinicians at baseline and after 18 month ARC intervention. Hierarchical linear models analyses using a two-level, random intercepts model conducted to provide effect size estimates.	organisational culture was not.	climate dimensions. After 18 months, respondents in the ARC condition were significantly more engaged in their work with clients and described the work environment as significantly more functional. Responses to all primary culture scales were in the hypothesised (improved) direction, with clinicians reporting significantly less rigidity. In addition, clinicians reported significantly less centralisation and apathy. After removing the added 2 control group programs, analyses were recalculated. Results were replicated except two, which were improved in hypothesised direction.	clinicians. Was used to affect organisational social context (culture, climate, work attitudes) and test if longer period can improve org culture.

Glisson	2013	Randomised Controlled Trial (RCT)	18 programs, matched for staff size and client population, randomly assigned to ARC or to control. Total of 402 youth randomly assigned to either program. 18 month intervention	This study aimed to compare mental health outcomes for youth in community based mental health teams who have taken part in the ARC intervention or a control condition.	Hypothesis 1: Youth between the ages of 5 and 18 years who receive mental health services from programs that completed the 18 month ARC intervention will have significantly better outcomes than youth who receive services from programs assigned to the control group. Hypothesis 2: Youth between the ages of 5 and 18 years who receive services from programs with more improved organisational social contexts after the 18-month ARC intervention will have better outcomes than youth who receive services from programs with less improved social contexts.	Youth who entered care after the completion of the 18-month ARC had sign better outcomes. Total problem behaviours of youth served by programs randomly assigned to the ARC intervention declined at significantly faster rates than the total problem behaviours of youth served by programs assigned to the control condition. Youth who entered care before the completion of the ARC intervention experienced less improvement in the programs assigned to ARC than in the programs assigned to the control condition. Youth who received services from programs with more improved org social contexts after ARC intervention had better outcomes than youth who received services from programs with less improved social context.	Youth mental health (community based)	ARC framework (Availability, Responsiveness and Continuity)	18 month ARC led by an ARC specialist.Fidelity to ARC assessed by adherence to its 12 components and 5 principles. No between program variation.

Palinkas	2011	Randomised Controlled Trial (RCT), Mixed methods	Based on the 40-Cal study: 40 counties matched to form three groups. Groups were then randomly assigned to three sequential cohorts. Wait list design with staggered start up time (months 6, 18, or 30). Within cohorts, counties were randomly assigned to CDT or standard implementation conditions. (6 replicate groups). Note: This article reports on agencies from the first cohort (13 counties). This study reports on qualitative data only.	To examine the structure of social networks of information and advice and their role in making decisions as to whether to adopt new evidence based practices	Describe the structure and operation of information and advice networks.	Qualitative: networks develop according to position in agency, responsibility, geography and friendship ties. Mostly within same county. Outside of county contact was with professional orgs, universities, and with peers (in rural counties). Majority with individuals in same implementation stage. Being nominated by others in the network was associated with higher implementation stage. Noted that collaboration contributed to success of implementation of EBP.	Cross sector: mental health, child welfare, county probation, youth	Community Development Team (CDT)	CDT used to scale up a Multidimensional Treatment Foster Care (MTFC). CDT described as an information and advice network of public youth serving systems

Palinkas	2013	Randomised Controlled Trial (RCT), Mixed methods	Based on the 40-Cal study: 40 counties matched to form three groups. Groups were then randomly assigned to three sequential cohorts. Wait list design with staggered start up time (months 6, 18, or 30). Within cohorts, counties were randomly assigned to CDT or standard implementation conditions. (6 replicate groups). Note: This article reports on agencies from the first cohort (13 counties). This study reports on qualitative data only.	To examine linkages across implementation strategy conditions of social influence networks to scale up use of evidence based practice	Do influence networks cut across implementation strategy conditions? Do they pose a threat to study's internal validity? Determine the number of direct and indirect linkages across the two study arms.	CDT network is more interconnected, with more links, more density, more centrality, high interconnectivity, than the network in standard group. CDT has fewer components. CDT had larger reach, more distance between connections. Individuals mostly connected with others in the opposite condition. Connections exist also with others outside the study.	Cross sector: mental health, child welfare, county probation, youth	Community Development Team (CDT)	CDT used to scale up a Multidimensional Treatment Foster Care (MTFC). CDT involves peer to peer interaction between counties. Broker agent delivers training. Counties worked together to address infrastructure, logistic, and resource challenges in implementing program.

Brown	2014	Randomised Controlled Trial (RCT)	MTFC was implemented in both conditions. All counties were Randomised to either CDT or individualised implementation (IND). Randomisation occurred at the level of implementation condition (CDT or IND) and when implementation would begin (three yearly cohorts, last one in two states). Eligible counties were matched within each state on county demographics (size, number of children in care, number minority children, use Medicaid, per capita group home placement rate). One state was Randomised prior to recruitment and the other state was Randomised after recruitment. Not blind. Participated between 3 and 6 years in a rollout design. Excluded	51 US counties were assigned randomly to one of two different implementation strategies, one of which was the Community Development Team (CDT). The Stages of Implementation (SIC) Measure was used to compare the two groups in terms of implementation process, quality and milestone achievements.	Whether a peer to peer CDT implementation strategy could improve the speed and quality of implementation, the quantity of families who received MTFC, and the ability of counties to reach competence in continued delivery of MTFC (compared to existing individualised single independent implementation strategy and a comparison condition). Outcome measure is a composite score made up of the number of implementation stages attained by a county, the number of families that received the treatment, and the sum of all quality indicators that were completed across all implementation stages. Hypotheses: CDT would score higher on composite score than IND counties. The number	Composite score was positive but non significant between CDT and IND. The CDT counties were slightly more likely, but non significantly, than IND to reach higher stages of implementation; no difference in the final stage attained. The overall average number of placements per site was higher in CDT, but difference was non significant. Many counties did not place any youth. When looking only at those counties that had placement, higher numbers of placement under CDT versus IND. No significant difference between CDT and IND in terms of proportion of counties that successfully started up MTFC. No significant difference in number of counties achieving competence. No significant difference in the speed at which counties obtained competency. No difference in quality of pre implementation.	Social services (child mental health, juvenile justice and child welfare).	Community Development Team (CDT)	Evaluated CDT implementation of a mental health program in comparison to an individualised implementation strategy by looking at quality, quantity (number of clients serviced) and speed of implementation, and competence in delivering the mental health program. CDT involved each county meeting five to seven other counties to problem solve and share information about implementation issues.

			those counties that had received MTFC previously, and those that were too small to make MTFC a viable program.		of counties that successfully delivered MTFC would be greater under CDT than IND. Those in CDT would reach competency in implementing MTFC more often. A greater number of youth would be placed in MTFC under CDT.	CDT had significantly higher overall quality of implementation scores for stages 4-7 than did IND. No difference between conditions on number of activities completed in competency stage.			
Chamberlain	2008	Randomised Controlled Trial (RCT)	Compared two methods of implementation (individual engagement IND or CDT) in the implementation of MTFC. Excluded counties with too small number of youth placement, and those counties that had already implemented MTFC. Randomisation at the county level at two levels: to IND or CDT condition, to time frame for beginning the	This study is a randomised design to test the implementation of the Multidimensional Treatment Foster Care program across the child public service system. It compares the use of Community Development Teams (peer to peer networking) with standard implementation (counties engaged individually). A conceptual model of	Does a peer-to peer support model with ongoing technical support (i.e., the CDT) increase the adoption, implementation, and sustainability of an empirically-based program across a broad range of community contexts (e.g., rural and urban), and do these increases ultimately lead to detectable benefits for youth and families? Do dynamic factors mediate positive	No difference between conditions in reaction of counties to random assignment. No difference in counties' decision to participate in the study, but there was a difference between cohorts. No counties in the IND decided to move up their timeline, while two in the CDT cohort 2 counties did. No difference between the level of enthusiasm or interest between conditions.	Social services (child mental health, juvenile justice and child welfare).	Community Development Team (CDT)	Evaluated CDT implementation of a mental health program in comparison to an individualised implementation strategy (IND). CDT implemented through 7 core processes: need benefit analysis, planning process, monitoring and support, fidelity focus, technical investigation and problem solving, procedural skills development, peer

			implementation. Counties matched on background factors and divided into six equivalent clusters. Each cluster was randomly assigned to one of three time cohorts. Within cohorts, counties were Randomised to either condition.	implementation guides the CDT intervention.	outcomes (dynamic factors are organisational culture and climate, system and practitioner attitudes towards evidence based practice, and adherence to competing treatment models.				to peer exchange and support.
Chamberlain	2011	Randomised Controlled Trial (RCT)	The study was not completed at the time of publication, so authors present examples of scoring for three counties who had completed or had withdrawn. Design for complete study: Counties were matched on key characteristics (e.g., population size, percent minority, number of previous placements in residential care), randomised to one of three timeframes (cohorts), and then randomised to one of the two implementation conditions– community	An evaluation of the Stages of Implementation completion (SIC) observation based measure. The context of the study is that run by Chamberlain, 2008, above.	Report on the use of a tool designed to document progress through implementation stages using a focused observation based measure of key milestone attainments (Stages of Implementation Completion - SIC)	There are differences in ways counties move through stages; some skip stages entirely and others complete activities meant for a later stage in an earlier stage. Counties take different amounts of time to complete each stage, this reflected differences in how the counties approached implementation. System leaders appear to be most influenced in stage 1 (engagement) by their need for an alternative to gorup home placement. Counties with positive organisational climates were more likely to consider	Social services (child mental health, juvenile justice and child welfare).	Community Development Team (CDT)	Compared CDT to IND in implementation of MTFC. Both conditions had basic consultancy package, but CDT there was an added peer to peer networking.

			development teams (CDT) [19], the experimental condition, or standard individualised implementation, the control condition.			implementing MTFC.			
Saldana	2014	Randomised Controlled Trial (RCT)	Two implementation models were compared (CDC or IND as usual), Randomised for study condition and time frame, matched on background variables to form three groupings that were randomly assigned to three sequential cohorts with start up times staggered . Within each cohort, random assignment to either conditions. Total of 53 sites across two states	To illustrate the value of a strategy used to measure costs and resources used in the implementation process	Study examined the potential of the SIC to serve as a template for mapping implementation costs. Assess different level costs at different points in the implementation process dependent on the implementation strategy used by comparing marginal cost increases	Differences in costs occurred mostly in the pre implementation phase. Stage 2 cost more out of pocket for control condition than for CDT, but took half the time to complete. Stage 3 took more time in the control condition, but cost less in terms of implementation fees. At Stage 3, county system leaders contributed more time to implementation in control CDT. Both conditions maintained similar costs and hours from stage 4 through to 8.	Social services (child mental health, juvenile justice and child welfare).	Community Development Team (CDT)	The framework was implemented and then compared to individual implementation as usual on measures of costs effectiveness

Chinman	2009	Randomised Controlled Trial (RCT)	Two sites - Missouri & Tennessee and their community coalitions. Missouri: No random assignment: All 18 funded sites received iGTO, and 8 non-funded site served as comparison sites. Tennessee: 30 funded sites were paired based on a number of characteristics they had in common. Pairs were selected and one member of each pair was randomly assigned to either the IGTO intervention or nothing (=15 comparison sites).	Evaluate how an internet based system based on GTO can improve the quality of prevention	(A) What is the impact of iGTO on substance prevention programs' performance over a year's time (defined by how well the programs were rated to perform key prevention activities such as needs assessment, planning and evaluation)? (B) How was the iGTO system used among coalitions conducting substance abuse programs in two state prevention systems (Missourri and Tennessee) - including the extent to which iGTO was diffused into the operations of these programs?	GTO groups improved more over time than control group. In Misouri, 8 of 10 GTO steps improved over time, and comparison group unchanged or worsened over time. In Tennesse, the activities of only three steps improved over time. iGTO had a positive impact on how well programs were able to carry out key prevention tasks such as planning and evaluation. Level of use: in M, use of iGTO increased to a basic level. In T, increased to routine use. Users stated many advantages to using GTO, but found there were still many barriers to using it - not able to demonstrate iGTO's relative advantage, ease of use, or compatibility.	Mental Health and Addictions (Substance use programs)	Getting to Outcomes (iGTO) - iGTO is a Web application that allows users to accomplish many tasks online on the basis of the logic of the GTO model	Interactive GTO (all online) was used. Implemented iGTO in coalition substance abuse treatment programs. Manuals were found on the iGTO website, as well as different pages for each of the ten steps which asked a series of questions to evaluate the programs. Teams received 2 days of training.

Acosta	2013	Randomised Controlled Trial (RCT)	Participants were coalition members and program staff from 12 communities in Maine. Each coalition nominated up to five prevention programs to participate. At random, six coalitions and their respective 30 programs received the two-year AGTO intervention and the other six maintained routine operations. The study assessed prevention practitioner capacity (efficacy and behaviors), practitioner exposure to and use of AGTO, practitioner perceptions of AGTO, and prevention program performance. Capacity of coalition members and performance of their programs were compared between the two groups across the baseline, one-, and two-year	To present two-year outcomes from an evaluation of the Assets Getting To Outcomes (AGTO) intervention in 12 Maine communities engaged in promoting Developmental Assets, a positive youth development approach to prevention.	What is the AGTO intervention's impact on the capacity of individual prevention practitioners and the performance of whole programs?	(1) The intent-to treat analyses showed prevention practitioners in the control group demonstrated significant gains in assets efficacy, although the control group's GTO behaviors declined. There were no other significant changes over time for either group on any of the other measures in these analyses. (2) The 'use/no-use' analyses showed significant differences between those with greater exposure to and use of AGTO: With greater numbers of TA hours spent, more improvement was noted in goals and process and outcome evaluation. (3) Whole prevention programs in the AGTO group demonstrated significant gains in certain domains of prevention performance (i.e., performing various prevention tasks with high quality) overall and related to their	Community Health (Prevention / Youth development)	Getting to Outcomes + Developmental Assets (AGTO) + Consolidated Framework for Implementation Research (CFIR)	AGTO was the implementation framework tested. CFIR was used to guide the development of AGTO and functions as heuristic in this study.

			time points			use of TA.			
Chinman	2012	Randomised Controlled Trial (RCT)	The trial compares programs and individual practitioners from six community-based coalitions using AGTO with programs and practitioners from six similar coalitions that are not (all located in Maine, US). Randomisation was done using matched pairs of coalitions. Integrated Systems Framework operationalised through coalitions & their programs (prevention delivery system) + Training & TA (Prevention Support System) + Tools & Manual (Prevention Synthesis and	The purpose of this article is to: (1) describe how an intervention called Assets-Getting To Outcomes (AGTO) was used to establish the key functions of the ISF (improve practitioner capacity) and present early lessons learned from that intervention's first 6 months and (2) examine whether there is an empirical relationship between practitioner capacity at the individual level and the performance of prevention at the program level—a relationship predicted by the ISF but untested.	Hypotheses: Use of capacity supports from AGTO will improve program and subsequently youth outcomes by strengthening capacity of individual practitioners.	No sign difference on Knowledge, but knowledge score was sign related to performance measures. Sign difference in skills between groups, but skills score not sign related to performance. Funding did not sign influence scores. Leadership score and receptivity to change score were not sign related to program performance. From focus groups: programs vary in their ability to use the training and TA supervision. Support team should conduct assessments of needs, resources, and capacities. Providers who participated in	Mental Health and Addictions (Substance use programs) + youth	Getting to Outcomes + Developmental Assets (AGTO) + ISF	Implemented AGTO in 12 coalitions. Training at start of study. Practitioners are supervised by TAs, and had three assessments of capacity and performance.

			Translation System). Baseline, midpoint (1 year after implementation), posttest (2 years). This study reports on baseline assessments + focus groups conducted 6 months into implementation.			initial training were more enthusiastic than those who did not. Work of TA is mostly relationship based, this has led to some tensions between TA and other systems. These characteristics facilitate technical assistance: flexibility, persistence, adaptability, assertiveness, farsightedness, non judgment. Activities need to be tailored to specific programs			
Chinman	2013	Randomised Controlled Trial (RCT)	Same as Chinman (2012). This study reports on first year of implementation (midpoint assessment)	Measure the effect of AGTO on improving practitioner capacity.	Does the individual capacity of community practitioners influence the quality of program performance and youth outcomes?	Expected that intervention group practitioners would show greater change in their prevention capacity (efficacy, behaviors) and their programs would demonstrate improved performance. At this midpoint in the study, survey results failed to confirm that hypothesis. Further, the control group showed improvement in two scales (Assets Efficacy, AGTO Behaviors) while the intervention group did	Mental Health and Addictions (Substance use programs) + youth	Getting to Outcomes + Developmental Assets (AGTO) + ISF	Implemented AGTO in 12 coalitions. Training at start of study. Practitioners are supervised by TAs, and had three assessments of capacity and performance.

						not improve on those same scales. Secondary analyses (only focusing on intervention group) found that AGTO behaviors (which are behaviors indicative of high-quality program implementation) and self- efficacy in using the Assets approach (asset efficacy) increased among individuals that are exposed to and use AGTO. The intervention group improved on several performance domains, relative to the control group, especially in the domains of setting goals, and utilising process and outcome evaluation			
Chinman	2014	Randomised Controlled Trial (RCT)	Three coalitions in South Carolina and their RBS and compliance check programs received the 16-month GTO-UD intervention, including the GTO-UD manual, training, and onsite technical assistance, while another three in	Measure the impact of GTO-UD on the implementation of two strategies to reduce underage drinking (responsible beverage service (RBS) and compliance checks)	Does providing prevention coalitions with Getting To Outcomes– Underage Drinking (GTO-UD), a tool kit and implementation support intervention, help improve implementation of two common environmental	Based on interviews, GTO group improved overall and control declined. Compliance checks in GTO programs increased, and decreased in control. RBS programs improved in 2 intervention groups, did not improve in third intervention	Mental Health and Addictions (Substance use programs) + youth	Getting to Outcomes + Underage Drinking (GTO-UD)	Implementation of GTO to reduce underage age drinking.

	South Carolina maintained routine operations. Counties were stratified by size and then randomly assigned to control or GTO condition. Baseline and post test (after 16 month intervention).	alcohol prevention (EAP) strategies, responsible beverage service training (RBS) and compliance checks?	group. In control, RBS programs declined in 2 groups, and improved slightly in third. No difference in baseline to follow up between groups, but the odds of merchants refusing minor's attempts to purchase alcohol were greater after the intervention in intervention group, while no sign change in control group. The findings on GTO-UD are similar to prior research showing that GTO can improve the quality of certain tasks key to the success of prevention programming and that greater TA hours may lead to greater improvement.

Coleman	2012	Randomised Controlled Trial (RCT)	Hybrid design: traditional randomised design combined with formative evaluation methods that adjust the intervention based upon data collection continuously throughout the study. Schools followed at baseline year and two intervention years. After baseline, 3 elementary and one middle school randomly assigned to intervention, and three elementary and one middle served as control. Random assignment was done by matching elementary school based on size and location. Once pair was created, random assignment to intervention or control condition. Researchers not blinded to condition. Intervention delivered school wide, but outcomes were only measured	To evaluate the implementation of the Healthy Options for Nutrition Environments in Schools (Health ONES) program, utilising the Institute for Health Improvement's (IHI) rapid improvement process. Intervention goals were to 1) eliminate unhealthy foods and beverages on campus, 2) develop nutrition services as the main source on campus for healthful eating (HE), and 3) promote school staff modeling of HE.	Hypothesis: outside unhealthy foods and beverages would be significantly reduced in intervention schools as compared to control school, and as a result obesity rates would remain constant for children in intervention schools while obesity rates would increase for children in control schools	Significant group time interaction: intervention schools outside food/drink per child per week decrease over time, but increased in control schools. Outside unhealthy items decreased on intervention campus and increased in control school. Effect varied by school environment, only present in morning snack recess environment. No differences between groups for class room wide events. Outside unhealthy food in the lunch/cafeteria envnt increased and decreased over time for both groups. Unhealthy drink items decreased over time in intervention schools and did not change in control school. No changes in obesity rates over time. Outside healthy food items: decreased in intervention school and did not change in control. Dependent on school environment.	Schools (low income school district, elementary and middle schools).	IHI's (Institute for Healthcare Improvement's rapid improvement process model	Strategies for change were developed by implementing the rapid Improvement Process model. Elements of the model that were particularly relevant to the school context were: capacity building within the org to address org concerns, fostering ownership and sustainability at every step, providing several temporary Plan-Do-Study-Act learning cycle, revisiting goals depending on feedback om PDSA cycle.

			in grades 2,3 and 6, in the spring of each year.						
Halgunseth	2012	Randomised Controlled Trial	12 school based after school programs (8 intervention, 4 control - controls were matched and Randomised with 4 intervention groups, then 4 intervention groups were added). This study does not report on the 4 controls. Randomisation for part of the sample only.	To understand how two levels of general capacity (organisational and community) influence the implementation of a program in afterschool settings.	Is implementation greater in programs with high organisational and high community levels of general capacity?	Of nine possible GBG strategies, intervention sites used on average 6.4. Programs that rated high on both org and community level capacity used the most strategies and were more likely to implement GBG with quality. Programs that rated high on org and low on comm capacity used the least strategies. Programs that were low on org and high on comm capacity were least likely to implement GBG with quality.	Youth mental health (school based)	Interactive Systems Framework (ISF)	Focuses on the Prevention Support System of the ISF. In implementing an after school program (GBG), the approach was to provide technical assistance and other supports (as suggested by the Prevention Support System)

Rycroft-Malone	2012	Randomised Controlled Trial (RCT)	This study was a pragmatic cluster randomised controlled trial (RCT) using time series with embedded mixed methods process and economic evaluation. The trial had three arms: standard dissemination (SD) of a guideline package; SD plus a web-based education package championed by an opinion leader, and 3) SD plus a Plan-Do-Study-Act (PDSA) approach. Hospital Trusts were randomised to one of the three implementation interventions. Data were collected eight months pre and post-intervention. The intervention period was six months.	To evaluate the effectiveness of three strategies for the implementation of recommendations on peri-operative fasting	No explicit research Questions. Outcomes measured were: Primary: Duration of fluid fast prior to induction of anesthesia. Secondary: Patients experience of fasting, Facilitator experience of implementation, key contact experiences of implementation, staff experience of fasting, organisational culture, cost analysis	The results from the trial showed no significant effect of the interventions on the primary outcome of fluid fasting time. Stats on provision of information to patients, patients liked clear consistent information, repetitions were useful, 18% non compliance rate of patients. Patients were patient with delays. Study had some impacts that did not translate into change. Evidence underpinning recommendations was judged as strong. Interprofessional factors were important in influencing process, the nature of communication between team members significantly impacted practice. Over 50% felt their ideas were rewarded. Fidelity of intervention (facilitation) was variable.	Health	Promoting action on Research Implementation in Health Services (PARIHS)	PARIHS served as the theoretical framework for the study: The framework was used to incorporate interventions and to guide decisions about data collection, qualitative data analysis, and synthesis

Rycroft-Malone	2013	Randomised Controlled Trial (RCT)	Related to Rycroft Malone 2012 study. This paper reports on findings from data collected from a purposive sample of 151 staff and patients pre- and post-intervention. Data were analysed using content analysis within, and then across data sets. Semi-structured audio-recorded interviews were con- ducted with patients from each hospital during pre- and post-intervention data collection periods about their experiences of fasting. Semi-structured audio-recorded telephone interviews took place with PDSA facilitators and opinion leaders about their experiences of implementation including activities, barriers and facilitators, and perceived im- pact were collected in	To provide an explanation of the implementation processes that was part of the study described in Rycroft Malone 2012 & to reflect on how findings from the process evaluation have implications for the PARIHS framework and its development as framework that represents the implementation of evidence into practice	What were barriers and facilitators of the implementation process as perceived by patients, opinion leaders and DSA facilitators? How can they explain the results from the trial findings (Rycroft Malone 2012)?	Findings show that while the evidence underpinning the fasting recommendations was strong and relatively uncontested, the delivery of interventions and the practice change was mediated by many factors, including individuals' behaviors, attitudes, emotional responses, communication by and across individuals and teams, and by challenging implementation contexts, including inter-professional functioning and an organisation's existing surgical systems and processes. Within two of the interventions there was the potential to work with individuals and teams to attempt to overcome some of the challenges, but this was not translated to reductions in fasting times in most sites. Potentially successful strategies included using existing	Health	Promoting action on Research Implementation in Health Services (PARIHS)	PARIHS served as the theoretical framework for the trial referred to. In this additional qualitative study, it is also used as a reference point for improvement: The data collected indicate that the framework needs to be refined and the dimension 'individuals' integrated into the framework in order to ensure that it keeps a pace with the current evidence base for implementation.

			pre- and post-intervention periods.			structures or initiatives already in place to review fasting times and practice, aligning with organizational strategies, working with those in pivotal roles, and the initiation of awareness raising activities			
Hagedorn	2014	Randomised Controlled Trial (RCT), Randomised effectiveness trial	Two medical VHA centres. Outpatients from substance use disorder treatment clinics. Patients Randomised to receive usual care with or without financial abstinence incentives. Eight weeks.	To evaluate the effectiveness and implementation of an abstinence incentive intervention for substance use disorders at two Veterans Health Administration medical centres. This was completed with both the RE-AIM and PARIHS implementation frameworks as a guide.	Set of several research questions for each element of the frameworks.	Reach: only 60% of potential participants agreed to enroll. Effectiveness: incentive participants submitted significantly more negative samples, were retained significantly longer, and achieved significantly longer median durations of abstinence. Intervention effects were non sign for stimulant dependent group. Adoption: Greatest barrier was lack of resources. Implementation : Staff felt they should have been more involved in planning, roles should	Health (substance use, primary care)	RE-AIM and PARIHS	RE_AIM primarily used to develop a series of questions to inform study. Questions developed for each of the four elements of the framework. Aim was to inform future implementation rather than evaluate the actual implementation. Followed PARIHS framework suggestion to evaluate evidence and context to add to Re-AIM limitations.

							be more clearly defined and that more supports shoudl be provided to adapt the intervention to the clinic. Maintenance: Need to fully integrate program into the clinic. Evidence: staff at both facilities generally agreed with the evidence supporting the intervention, that the intervention met the needs of their patients, and that the intervention fit with their treatment philosophy. Context: Staff perceived a positive leadership and staff culture and positive practices, but felt they did not have access to necessary resources to support innovation.

Glasgow	2013	randomised Controlled Trial (RCT), randomised Implementation trial	Twenty four month weight loss and hypertension self-management intervention trial at three community health centres in Boston. 365 primary care patients were randomised to usual care or to intervention. Data were collected at baseline, 6, 12, 18 and 24 months visit.	This study aims to describe how the reach, effectiveness, adoption, implementation, and maintenance (RE-AIM) framework can be used to focus the design, evaluation, and reporting on interventions targeting populations at increased risk and illustrate its application in the context of a Randomised, pragmatic weight loss and hypertension self-management intervention. The RE-AIM framework was used to plan and evaluate the Be Fit Be Well program, a program designed to assist low income individuals in urban community health centres with weight loss and hypertension self-management.	What are the health disparity implications for each of the five key RE-AIM dimensions in the BFBW program? How does the program address them?	The RE-AIM framework helped to focus attention on and produce high rates of adoption and reach. Implementation rates varied across components. Weight losses were statistically significant, but not clinically significant. They were robust across a variety of patient characteristics, and the program was relatively of low cost. Individual weight losses and blood pressure reductions were maintained throughout the 24-month period, but the program was not sustained at any of the three settings. Implementation frameworks such as RE- AIM can help design pragmatic interventions that focus on both the context for disparities reduction and the ultimate goal of public health impact.	Health (Community health)	Reach, Effectiveness, Adoption, Implementation, and Maintenance Framework (RE-AIM)	RE-AIM framework was used to design the intervention program and to evaluate its impact and dissemination potential. Looked at the five components of RE-AIM to evaluate the program.

Estabrook	2012	Randomised Controlled Trial (RCT)	Six hospitals in a Central Massachusetts network participated, three randomly assigned to the intervention condition and three to control. A representative sample of employees was enrolled for longitudinal evaluation of study outcomes (evaluation cohort; N = *806)*. Data were collected at baseline and the 12- and 24-month follow-ups.	To evaluate the implementation of the Step Ahead program, a weight gain prevention intervention designed for delivery in the hospital workplace. This was evaluated as an RCT, utilising the RE-AIM framework.	Assess the Step Ahead Program using the Re-AIM framework. Primary outcome: BMI. Secondary outcomes: eating and physical activity behaviours, perceived institutional support, social norms.	The intervention was not result in changes in BMI. Change in BMI was associated with level of participation in intervention activities. Intervention group reported improved perception of their workplace commitment to employee wellness. Greater effectiveness of program at small and medium hospitals, less effectiveness at large hospitals. High levels of management support continued through out project implementation.	Health (hospital employees)	Reach, Effectiveness, Adoption, Implementation, and Maintenance Framework (RE-AIM)	Framework is used to evaluate implementation of work site health promotion activity

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Appendix 2

The extent of the evidence on implementation frameworks

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Parenting Research Centre
raising children well

Prepared by:

Bianca Albers*

Robyn Mildon*

Contributors:
Sophia Rinaldis, Michelle Macvean, Anastasia Pourliakas, Ben Devine, Sally Kanno, Natalie Pill – Parenting Research Centre

May 2016

Parenting Research Centre
Level 5, 232 Victoria Parade
East Melbourne
Victoria 3002
Australia
p. + 61 03 8660 3500
www.parentingrc.org.au

*Bianca Albers and Robyn Mildon are now based at the Centre for Evidence and Implementation, Save the Children.

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1. Introduction

This appendix summarises the evidence on implementation frameworks as documented in 15 literature reviews and 22 randomised controlled trials that were identified through a systematic search of the scientific literature. A brief summary of the overall results has been provided in the main report: *Rapid evidence assessment of implementation frameworks*. This appendix presents the findings from single studies and reviews in more detail. It focuses first on studies that used a randomised controlled design, followed by literature reviews, of which the majority were systematic.

Section 4 of this appendix lists all implementation frameworks that could be identified through this rapid evidence assessment.

2. Studies using randomised designs that apply implementation frameworks

When considering the results of studies with a randomised design to assess the impact of different implementation conditions, it is important to keep in mind that these conditions add another layer of randomisation to a study. Typically, these studies already operate with one level of randomisation in that individuals, teams or organisations are randomly assigned to a specific intervention – that is, a practice, program or policy aiming to improve the outcomes for selected target groups. In implementation trials this random assignment to different interventions is then combined with a random assignment to an implementation condition – for example, campaigning only, or education only, or education combined with ongoing coaching. This adds a certain complexity to implementation trials but also allows an evaluation of whether working with implementation processes and strategies can further enhance the outcomes of interventions related to programs, practices or policies.

In the following, the results from implementation studies using a random design are ordered by implementation framework. Of the 22 articles that met the inclusion criteria for this review:

- four covered the Availability, Responsiveness and Continuity (ARC) framework
- six applied the Community Development Team (CDT)
- five included variations of the Getting to Outcomes (GTO) framework
- one covered the Interactive Systems Framework for Dissemination and Implementation (ISF), which is closely linked to the GTO framework.

The ARC, CDT, GTO and ISF frameworks are prominent and applied primarily in child and youth welfare, mental health and community services settings, while the remaining four frameworks identified are entrenched in health services.

- Two studies looked at the Reach, Effectiveness, Adoption, Implementation and Maintenance (RE-AIM) framework.
- Two articles considered the Promoting Action on Research Implementation in Health Services (PARIHS) framework.

- One article looked at the combined use of RE-AIM and PARIHS.
- One article considered the Institute for Healthcare Improvement's Rapid Improvement Process Model.

Each of these is discussed in more detail below.

2.1 Implementation frameworks applied in social care

2.1.1 The ARC Framework

The Availability, Responsiveness and Continuity (ARC) framework is an organisational intervention model with theoretical foundations in systems theory and in models of organisational and inter-organisational domain development (Glisson, Dukes & Green, 2006). It was developed to support the implementation of effective children's and mental health services (Glisson & Schoenwald, 2005).

In a study of 26 case management teams providing child welfare and juvenile justice services in urban and rural counties in the US, teams were randomly assigned to either the ARC intervention or a control group. The study aimed to evaluate whether teams in the intervention condition would experience less staff turnover and develop both healthier work climates and more constructive work cultures that prioritised support and motivation. According to the authors 'the ARC organisational intervention reduced the probability of caseworker turnover by two-thirds and improved organisational climate by reducing role conflict, role overload, emotional exhaustion, and depersonalisation' (Glisson et al., 2006, p. 855) in the intervention group. The differences cited for turnover, role conflict and role overload between intervention and control groups were significant. No difference could be measured for changes in the organisational culture in which the caseworkers functioned.

In the three remaining studies, ARC was applied in combination with clinical interventions addressing the mental health of adolescents. In one study, youth who were referred to an evidence-based intervention, Multisystemic Therapy (MST), the implementation of which was supported by the ARC intervention, entered out-of-home placements at a significantly lower rate than youth cared for under the control condition. In addition, youth receiving MST supported by the ARC intervention had better outcomes at six-month follow-ups than youth in MST programs who were not supported by an ARC change agent. However, these differences flattened out over time, and at the 18-month follow-up the levels of problem behaviour noted under all four conditions – Tuning and Analysis Utilities (TAU); TAU plus ARC; MST; and MST plus ARC – were similar.

Finally, two articles (Glisson et al., 2012; Glisson, Hemmelgarn, Green & Williams, 2013) present data from the same study that evaluates 18 community-based mental health programs for youth, provided in 17 different counties in the US. Clinicians from different mental health programs were randomly assigned to the ARC or a control condition, and both youth outcomes and changes in organisational culture, climate and work attitudes were assessed. Youth outcomes significantly improved under the ARC condition compared to outcomes under the condition in which interventions were delivered without a supporting implementation framework, especially in organisations where organisational context also improved. Work attitudes and organisational culture and climate significantly improved among clinicians assigned to the ARC condition.

The **Availability, Responsiveness and Continuity (ARC)** framework was developed to support the implementation of any core technology (for example, an evidence-based parenting program or other program, a practice or a policy innovation) in community settings.

The framework uses intervention strategies at both the organisational level (addressing different implementing organisations) and the inter-organisational level (addressing alliance building between organisations, community leaders and opinion leaders). An ARC-trained change agent works as a 'boundary spanner' at both of these levels and at the individual stakeholder level to facilitate the implementation of the innovation.

The ARC change agent is guided by four principles of effective service systems: be mission-driven, be results-oriented, be improvement-directed and be relationship-centred. They must also consider 10 intervention components: participatory decision-making, team building, continuous quality improvement, job redesign, network development, feedback, personal relationships, conflict resolution, information and assessment strategies, and self-regulation and stabilisation.

These constitute the ARC framework and are applied over the course of three phases: problem-setting, direction-setting and implementation.

C. Glisson (2002); Glisson & Schoenwald (2005)

2.1.2 The CDT Framework

The Community Development Team (CDT) model is an approach to improving implementation with the help of a dedicated team of experts who support organisations and systems in their implementation efforts. It was specifically designed to support the implementation of the Multidimensional Treatment Foster Care (MTFC[1]) evidence-based intervention but has since been used to assist the implementation of other comparable evidence-based programs.

All the identified articles that include the CDT intervention relate to a sample of counties in California, in the US, that were involved in a trial implementation of MTFC under different implementation conditions (Brown et al., 2014; Chamberlain, Brown & Saldana, 2011; Chamberlain et al., 2008; Palinkas et al., 2013; Palinkas et al., 2011; Saldana, Chamberlain, Bradford, Campbell & Landsverk, 2014). In this trial, the CDT strategy is compared to a regular implementation process with no additional support. While standard trials of this kind typically evaluate the clinical outcomes for end-users of an intervention, these articles instead focus on changes in the implementation processes and the systems involved.

[1] Note that MTFC was recently renamed Treatment Foster Care Oregon (TFCO) and the literature therefore may use both names in articles covering this intervention.

The total sample included 51 counties that were randomly assigned to either the MTFC clinical intervention or a control condition (randomisation 1); and the CDT implementation intervention or a control condition (randomisation 2). While preliminary results from this study show great variability among participating sites in terms of the pace and quality with which they progress through different stages of an implementation (Chamberlain et al., 2011), the final results from this study (Brown et al., 2014) show neither higher nor faster rates of implementation in the CDT condition but indicate that implementation may have been more robust for sites that implemented MTFC with CDT support. Once implementation commenced with the placement of the first youth in the MTFC program, the overall rate of youth placement in the CDT-supported programs and the number of implementation activities displayed by these programs was significantly higher than in the control programs.

In addition to evaluating clinical and implementation outcomes, one of the articles covering this study also assessed the implementation costs of the two implementation conditions (Saldana et al., 2014). The authors highlight that implementation costs for the CDT condition on average are 12 per cent higher than for control conditions, and that the pre-implementation phase when working with CDT is especially more costly. However, costs become more similar in later stages of the implementation process, and the number of person-hours used to move through different stages of the implementation appears to be lower in the CDT condition. The overall cost-effectiveness of different implementation strategies could not be assessed in this article but the authors conclude that different strategies appear to lead to different cost structures and that a staged approach to implementation can help organisations lay a foundation for costing implementation work.

The California Institute of Mental Health (CIMH) developed the **Community Development Team (CDT)** model, which is a collaborative approach to implementation, building on peer-to-peer networks of organisations that implement evidence-based practices. The goal of using the CDT is to enhance the pace and the quality with which practices are implemented and thereby improve the outcomes for child and adult consumers of practices.

A CDT goes through three phases of implementation: pre-implementation, implementation and sustainability, each of which involves different goals (pre-implementation: engagement and implementation planning; implementation: clinical training and model-adherence; and sustainability: practitioner competence and autonomous site).

A CDT is coordinated by a trained CDT facilitator who is in monthly contact with key stakeholders during an implementation process. The stakeholders, from different levels of the implementing system, meet six times.

Saldana & Chamberlain (2012); Sosna & Marsenich (2006)

Two additional articles about this study focused on the social network structures dominating the implementation process in 12 of the counties participating in the trial (Palinkas et al., 2013; Palinkas et al., 2011) and relate them to the different implementation conditions. When comparing the social network structure for counties operating under CDT conditions with the

social networks that emerge when implementing MTFC under standard conditions, it shows that CDT networks are more interconnected, more cohesive, less fragmented, more dense than standard networks, and encourage more communication between stakeholders.

Taken together, these results indicate that the assistance of a CDT improves implementation quality but not necessarily its intensity or pace. It may also alter the network structures that enable a given implementation to occur. The gains in implementation quality and structure when the CDT model is used need to be weighed against potential extra costs that can be expected when conducting specific and systematic implementation work.

2.1.3 The GTO Framework

Another collection of articles identified in this review covers the Getting to Outcomes (GTO) framework, which is a branded model owned by the University of South Carolina, disseminated by the RAND Corporation[2] and based on 10 guiding questions (see page 8).

A web-based version of the GTO implementation framework – iGTO – that allows users to accomplish tasks online while working within the GTO framework is applied in a study that evaluates how this implementation can improve the quality of prevention services provided by coalitions in Missouri and Tennessee, in the US (Chinman, Tremain, Imm & Wandersman, 2009). Specifically, the researchers were interested in how iGTO affected the performance of substance abuse prevention programs over one year, and how iGTO was used and diffused in these programs. The findings from this study indicate that programs applying the iGTO framework significantly improved their prevention practice performance whereas the performance of control programs remained unchanged or worsened. However, users of iGTO adopted the implementation model at only an elementary level and it did not reach routine use. Data collected through interviews with study participants also highlight that iGTO was not perceived as having a high level of relative advantage, ease of use, or compatibility with existing organisational structures and procedures.

Another three articles included in this review focus on another adaptation of the standard GTO model, called AGTO or Assets Getting to Outcomes (Chinman et al., 2013; Chinman et al., 2012). AGTO combines the 10 steps included in the GTO implementation framework with a community mobilisation and planning process through which a focus on developmental assets for youth is integrated into each of the 10 GTO steps.

The articles report on the application of AGTO in 12 communities in Maine, six of which were randomly assigned to the AGTO condition while the remaining six maintained routine operations. The introduction of AGTO in these communities aimed to enhance practitioners' capacity to implement prevention practices; however, this enhancement was not achieved at the midpoint (Chinman et al., 2013). On the other hand, practitioners' self-efficacy to apply AGTO and the frequency with which AGTO was used appeared to be significantly improved among regular users of the AGTO approach, leading the authors to conclude that regular use of AGTO over one year might improve the capacity of community practitioners. This study also noted that program performance had improved for programs that applied the AGTO intervention. But these data were collected among 32 program leaders (16 from each implementation condition), and the small sample size limits this study in identifying results that are statistically significant.

[2] Articles about the model and related tools are accessible on the RAND Corporation's website: www.rand.org/pubs/technical_reports/TR101.html

The results of this study from the midpoint assessment confirm that no significant differences in prevention capacity could be identified between practitioners working under the AGTO conditions and those working under routine conditions (Acosta et al., 2013). However, significant differences could be found among AGTO users. Those who regularly used the implementation model had a significantly improved prevention capacity compared to practitioners who did not regularly use AGTO. In addition, the authors highlight that programs displaying the greatest performance improvements were those that had received most technical assistance as part of the AGTO program.

The **Getting to Outcomes (GTO)** framework was designed to assist community services practitioners in planning, evaluating and implementing programs and practices. The goal of applying the framework in a practice setting is to achieve and improve on desired outcomes and demonstrate accountability to funders of services.

The GTO process works through 10 accountability questions for planning and executing the implementation of a service:

1. What underlying needs and resources must be addressed? (NEEDS)
2. What goals, target population and objectives (that is, desired outcomes) will address the needs and change the underlying condition? (GOALS)
3. Which science-based (and evidence-based) models and best practice programs can be used to reach your goals? (BEST PRACTICE)
4. What actions need to be taken so that the selected program 'fits' the community context? (FIT)
5. What organisational capacities are needed to implement the prevention program? (CAPACITIES)
6. What is the plan for this program? (PLAN)
7. How will the quality of implementation be assessed? (IMPLEMENTATION)
8. How well did the program work? (OUTCOMES)
9. How will continuous quality improvement strategies be incorporated? (CQI)
10. If the program is successful, how will it be sustained? (SUSTAIN)

Wandersman, Imm, Chinman & Kaftarian (2000)

Finally, in a study involving six community coalitions in South Carolina, GTO was applied in the implementation of programs addressing underage drinking through environmental alcohol prevention strategies (Chinman et al., 2014). Three of these coalitions and their programs received 16 months of GTO implementation support, and the remaining programs maintained standard operations. The study did not identify any significant differences in alcohol merchant services or attitudes between the GTO and control groups. However, the quality of some of the alcohol prevention practices did improve in the GTO group, and merchants in this group

improved significantly on refusing the sale of alcohol to minors. The authors conclude that, similar to previous studies, the application of GTO 'can improve the quality of certain tasks key to the success of prevention programming and that greater TA (Technical Assistance) hours may lead to greater improvement' (Chinman et al., 2014, p. 491).

Taken together, the findings for the GTO implementation framework indicate potential advantages of the model in that it may enhance practitioner capacity and program performance in community services if used actively and regularly. Achieving improvements of this kind may depend on technical assistance provided when introducing the GTO system, which will need to be adapted and adjusted to fit the context of its host setting. Note that these are only first indications as the data represent only a few studies and small sample sizes.

2.1.4 The ISF Framework

Closely linked to the GTO framework is the Interactive Systems Framework for Dissemination and Implementation (ISF), which was developed by the same team as the GTO.

The ISF is included and operationalised in the AGTO study summarised above (Chinman et al., 2012) and used in that study as a reference point for explaining the need for technical assistance in the implementation process. However, the framework itself is not tested.

The **Interactive Systems Framework for Dissemination and Implementation (ISF)** was developed for the use of different stakeholders (including funders, practitioners and researchers) involved in implementing prevention services.

The goal of applying the framework is to create a better understanding among these stakeholders of their own and others' needs, barriers and resources, and thereby improve implementation processes.

The ISF describes implementation as an interplay between three systems: the prevention delivery system that implements the prevention service; the prevention support system that supports the work done in the prevention delivery system; and the prevention synthesis and translation system in which evidence is produced and translated to support the other systems.

Each of these systems depends on two types of capacities (skills and motivations) needed to effectively bridge the gap between research and practice: general capacities that enable individuals and organisations to function, and innovation-specific capacities that support the implementation of a specific innovation.

Wandersman et al. (2008)

A clearer operationalisation and application of the ISF is noted in a study of the Good Behaviour Game (GBG), a program to manage school students' classroom behaviour. By examining a subsample of sites involved in a randomised study of the relationship between this clinical intervention and students' behaviours, the researchers also explored how general capacity factors influence the implementation of GBG in an after-school setting. During the implementation, each of these sites received extensive technical assistance by GBG coaches, who were an operationalisation of the ISF's 'prevention support system'. The findings from this

analysis show significant associations between sites' capacities at the organisational and community levels and their implementation quality and breadth. Sites that ranked high on both capacity dimensions used most of the GBG strategies and were most likely to implement the intervention with quality, compared to sites that ranked low on at least one of the capacity dimensions. This leads the authors to conclude that 'while this study involved a small sample size, results seem to support the Prevention Support System of the ISF and the importance of two levels of general capacity, in particular' (Halgunseth et al., 2012).

2.2 Implementation frameworks applied in healthcare

2.2.1 The PARIHS framework

An implementation framework that is widely known in the health sector is Promoting Action on Research Implementation in Health Services (PARIHS). According to its developers, implementation is a function of the nature and type of evidence that is to be implemented, the context into which this evidence will be implemented, and the facilitation provided to support the implementation (Rycroft-Malone et al., 2012). PARIHS was applied in two studies identified for this review – both referring to the same cluster randomised trial that tested the effectiveness of three strategies for implementing clinical guidelines for peri-operative fasting.

In both articles, the use of PARIHS was limited to laying the theoretical groundwork of the studies. As was the case for some of the literature reviews, the implementation framework here was used as heuristic device that helped organise and understand information and knowledge.

The Promoting Action on Research in Health Services (PARIHS) framework was developed for implementation processes in health and describes successful implementation as a function of the relationship between the nature and type of *evidence* that is to be implemented, the *context* into which this evidence will be implemented, and the *facilitation* provided to support the implementation. Each of these elements consists of sub-elements (evidence: research, clinical experience, patient experience and local data; context: culture, leadership and evaluation; facilitation: purpose or role, and skills or attributes), which can be positioned on different points of a high–low quality continuum. The implicit assumption is that to succeed in implementation there needs to be clarity around these elements, and that good implementation is more likely when all elements are of high quality.

In a recent study, the developers of the PARIHS suggest extending the framework with an additional element: the attributes of individuals such as practitioners, patients and clients participating in implementation processes: their capability, motivation, resilience and beliefs etc. The integration of this concept into the PARIHS framework has not been finalised.

Rycroft-Malone (2004); Rycroft-Malone et al. (2013)

The first article introduces PARIHS as the theoretical framework for this trial used to 'incorporate interventions and to guide decisions about data collection, qualitative data analysis, and synthesis' (Rycroft-Malone et al., 2012, p. 4). The second article summarises results from a process evaluation of the trial, and the PARIHS framework's dimensions (evidence, context and individuals) are used to develop interview topics for patients and staff involved in the trial

(Rycroft-Malone et al., 2013). The data collected through these interviews are then used to discuss whether the PARIHS framework needs further refinement. This review did not identify studies that tested and evaluated the effectiveness of the PARIHS framework as an implementation intervention.

2.2.2 The RE-AIM framework

In the public health sector the Reach, Efficacy, Adoption, Implementation and Maintenance (RE-AIM) framework is widely applied to plan, evaluate and implement public health interventions. Three studies identified for this review integrated this framework, two of which focused on obesity and weight loss interventions (Estabrook, Zapka & Lemon, 2012; Glasgow et al., 2013), and one covering substance use among veterans (Hagedorn et al., 2014).

None of these studies aims to test RE-AIM as an implementation tool that may help improve the outcomes of clinical interventions when compared to implementation processes that do not use the framework. Instead, all studies use the framework for designing and planning the implementation of their clinical interventions and for subsequently evaluating both the intervention and the implementation. Hence, these studies do not allow any conclusions regarding the effectiveness of RE-AIM as an implementation tool despite the fact that the authors of these studies agree that the domains of the framework 'help to understand' (Estabrook et al., 2012 p. 195) implementation and 'can be useful for both planning and reporting' (Glasgow et al., 2013 p. 200) on the implementation and effectiveness of programs.

The **RE-AIM framework** was developed in 1999 and originally thought of as a tool for consistently reporting research results. It has since developed and is today presented as a tool to support the sustainable adoption and implementation of evidence-based interventions in public health. Connected to each of its five dimensions are questions aiming to help implementers develop and execute a robust implementation plan and process, comprising:

1. ***REACH*****:** How do I reach the targeted population with the intervention?
2. ***EFFICACY*****:** How do I know my intervention is effective?
3. ***ADOPTION*****:** How do I develop organisational support to deliver my intervention?
4. ***IMPLEMENTATION*****:** How do I ensure the intervention is delivered properly?
5. ***MAINTENANCE*****:** How do I incorporate the intervention so it is delivered over the long term?

The website www.re-aim.org, owned by The College of Agriculture and Life Sciences at the Virginia Polytechnic Institute and State University, offers a broad range of articles, presentations and tools on the RE-AIM framework and its use.

The study by Hagedorn et al. (2014) presents implementation data from a randomised trial testing the effectiveness of an abstinence incentive intervention implemented through two Veterans Health Administration Medical Centers in the US. It aims to identify potential barriers to, and facilitators of, the treatment's implementation and builds on a mixed method design that

also includes interview and observational data. This study differs from the other two in that it applies a combination of RE-AIM and PARIHS. In developing questions about the implementation of the intervention, the researchers use all RE-AIM domains as guidance, together with the 'evidence' and 'context' domains of PARIHS. Findings from this process evaluation then are presented as 'suggestions to enhance implementation efforts', which again are structured by the RE-AIM and PARIHS domains.

2.2.3 The IHI framework

The use of implementation models to change nutrition policy and environments in low-income schools is the focus in a study that applies the Institute for Healthcare Improvement's (IHI's) rapid improvement process (Coleman, Shordon, Caparosa, Pomichowski & Dzewaltowski, 2012).

As was the case for the RE-AIM studies, this study also uses the IHI improvement model as a structure for developing, testing and continuously improving an intervention – Healthy ONES (Healthy Options for Nutrition Environments in Schools). This is an approach aiming to eliminate unhealthy foods and beverages on school campuses and steer schools' nutrition services in more healthy directions. The IHI improvement model in itself was not evaluated in this trial.

2.3 Summary

In summary, the evidence for packaged implementation strategies – implementation frameworks – applied as implementation interventions that have a documented effect on outcomes for end-users of human services is still fragile. Sixteen articles were identified as presenting evaluations based on randomised designs testing implementation frameworks. Together they covered eight different studies, all conducted within child and youth mental health and community services in the US. Targeted outcomes of these studies were related to the implementation process (for example, its pace, intensity, quality or sustainability), to the users of the implementation framework (for example, practitioner capacity) and to the end-users of human services (considering such factors as placement rates and overall program performance). Given the heterogeneity of outcomes in a small selection of studies, it is not possible to describe an overall trend for the impact of implementation frameworks. There are small indications that the active planning, support and monitoring of implementation processes may improve both practitioner capacity and clinical program performance, but they are not conclusive and clear tendencies. None of the studies that applied implementation frameworks in health and public health settings tested these frameworks for their effectiveness as implementation interventions. The use of implementation frameworks merely as heuristic devices in the development, implementation and evaluation of clinical interventions seems to dominate in this field.

In the following section, this Rapid Evidence Assessment (REA) will integrate further findings from literature reviews (the majority of which were systematic) that investigated implementation studies or applied implementation frameworks to examine whether any of these reviews provide more substantive evidence for the effectiveness of implementation frameworks in improving the quality of implementation processes and of human services for clients, patients or customers.

3. Implementation Frameworks covered by literature reviews

Fifteen of the identified articles were literature reviews, 13 of which were labelled as 'systematic' and two that were 'non-systematic' literature reviews.

3.1 Systematic reviews conducted to inform the development or improvement of an implementation framework

Seven of the systematic literature reviews were conducted to establish the foundations of a new and/or develop an already existing implementation framework. They were:

- The Active Implementation Framework (AIF) (Fixsen, Naoom, Blase, Friedman & Wallace, 2005)
- The Quality Implementation Framework (QIF) (Meyers, Durlak & Wandersman, 2012)
- The Knowledge to Action (KTA) framework (Field, Booth & Gerrish, 2014)
- The Promoting Action on Research Implementation in Health Services (PARIHS) framework (Helfrich et al., 2010)
- Normalisation Process Theory (NPT) (McEvoy et al., 2014)
- The Behaviour Change Wheel (Michie, van Stralen & West, 2011)

In addition, one systematic review targeting the dissemination of innovations within health led to the development of an unnamed implementation framework (Greenhalgh et al., 2004).

The first two frameworks listed above are commonly known and linked to the social care sector, whereas the bottom five frameworks are linked to healthcare.

3.1.1 Reviews laying the foundation of an implementation framework

Four of the seven reviews serve the purpose of laying the foundation of an implementation framework. In the main, these reviews screened the literature on implementation and extracted common elements of good implementation, which authors agree upon as relevant and important to the quality of implementation processes. These systematic reviews thus do not provide evidence for the effectiveness of specific implementation frameworks but instead inform the basic conceptualisation of their components and elements. Each of the included frameworks is presented briefly below.

The review by Fixsen and colleagues (2005) lays the groundwork for what is later called the Active Implementation Framework (AIF). Based on a systematic search of the implementation literature in a broad range of both human service and other sectors (such as agriculture, business and manufacturing), it defines some of the core concepts of the AIF: implementation stages, selection, training and coaching of staff, organisational factors and evaluation.

The review by Michie and colleagues (2011) identified interventions included in frameworks of behaviour change in order to synthesise and integrate them into a new framework that addresses potential limitations of the already existing frameworks. The review informed the development of the Behaviour Change Wheel.

The Behaviour Change Wheel comprises nine different intervention functions (education, persuasion, incentivisation, coercion, training, restriction, environmental restructuring, modelling

and enablement) and seven policy categories (communication/marketing, guidelines, fiscal policies, regulation, legislation, environmental/social planning and service provision). The authors report that these elements can be flexibly combined into concrete and individualised implementation strategies that fit different purposes and contexts.

The National Implementation Research Network (NIRN) has been developing the **Active Implementation Framework (AIF)** since 2005. In its current version, the AIF consists of five basic assumptions:

1. Implementation depends on ***usable intervention criteria***. Programs and practices need to be fully operationalised so implementation support can be tailored and adherence to program and practice requirements continuously measured.
2. Implementation takes place in ***stages***. An implementation process goes through four stages: exploration, installation, initial implementation and full implementation.
3. Implementation needs to be embedded into a strong infrastructure of implementation ***drivers*** to enable the development of required competencies, leadership and organisation and system support for the implementation.
4. Implementation should be driven by data-informed ***improvement cycles***.
5. ***Implementation teams*** should support and drive an implementation. They build local and system-wide implementation capacity and are accountable for moving practices and programs through the different stages of an implementation process.

Metz et al. (2014)

A review by Meyers et al. (2012) drew on the literature on implementation frameworks from a broad range of sectors. The authors identified the elements or steps that were common across these frameworks in order to integrate these into a new framework, the QIF.

The QIF comprises 14 common elements or steps that make up an implementation process: conducting a needs and resource assessment, conducting a fit assessment, conducting a capacity/readiness assessment, assessing the possibility for the adaptation of the innovation, obtaining explicit buy-in, building both general and specific organisational capacity, recruiting and maintaining staff, training staff pre-innovation, creating an implementation tea, and developing an implementation plan. Implementation is then guided by technical assistance/coaching/supervision, process evaluation, supportive feedback and the continuous learning from experience – the four final steps in any implementation process.

Finally, guided by a systematic search of literature about what works in the dissemination of innovations, Greenhalgh et al. developed a framework for implementing innovations in health organisations (Greenhalgh et al., 2004). The main findings from this review indicate that implementation depends on an interplay among seven key areas: the innovation itself, the adoption process, the communication and influence processes, the inner (organisational) context, the outer (extra-organisational) context, the nature of any active dissemination campaign and the nature of any given implementation process. These findings are then integrated into a separate implementation framework. This framework consists of two stages. In stage 1 the individual components of any given model to be implemented have to be considered,

while activities in stage 2 focus on the interactions between factors and actors involved in an implementation (the innovation itself, the adopter of the innovation, opinion leaders etc.). Within each of these two stages, questions and sub-questions are raised with the aim of helping implementers think through the implementation needs of any given innovation.

The components of a **two-stage implementation framework** developed by Greenhalgh, Robert, Macfarlane, Bate and Kyriakidou (2004) are a series of questions aiming to support implementers in planning and executing implementation processes. The main questions raised are listed below.

Stage 1: Considering the individual components of the model	Stage 2: Considering the interaction between components
What are the attributes of the innovation as perceived and evaluated by the intended users?	Interaction between the adopter and the innovation
What are the characteristics of the adopters and the adoption process?	Interaction between opinion leadership and the nature of the innovation
What is the nature of the communication and influence about the innovation?	Interaction between the task (innovation-in-use) and the boundary
What is the nature of the organisational context and how conducive is this to the assimilation of innovations in general?	Interaction between the organisational structure and stage of assimilation
What is the organisation's level of readiness for this innovation in particular?	Further interactions may be relevant and should be considered on a case-by-case basis.
What is the nature of the outer (environmental) context and how will this affect the assimilation process?	
Is the implementation and maintenance process (as opposed to the adoption by individuals) adequately planned, resourced and managed?	
Describe the nature, capacity and activities of external agencies (if any)?	

3.1.2 Reviews that inform existing implementation frameworks

Three implementation frameworks – KTA, PARIHS and NPT – were already developed when a systematic review was conducted. Here, the reviews focused on how the framework had been

applied and operationalised in studies, and what strengths and weaknesses had emerged in these processes. The research questions guiding the reviews focus less on whether a framework had been tested as an implementation intervention and more on how the frameworks had been used in general. Field et al. (2014) based their discussion of KTA on 10 empirical studies that integrated KTA in different ways into a research project. McEvoy et al. (2014) sourced 29 articles applying NPT, and the review about the PARIHS framework is based upon a screening of 18 empirical and eight conceptual articles about PARIHS.

A common conclusion from all three reviews is that the respective frameworks are characterised by high levels of flexibility, adaptability and applicability, and that they comprise robust concepts that are of relevance to various systems, sectors or organisational settings. However, these reviews also highlight that the way frameworks are used or adapted often is not clearly operationalised, described and reported in included primary studies; that some studies only consider parts of a framework and not the framework as a whole; and that studies in only a few cases aim to validate a given framework. In addition, both Helfrich et al. (2010) and McEvoy et al. (2014) emphasise that concepts included in the PARIHS framework and NPT appear to have significant overlap, pointing to the need for greater clarity about definitions of elements of the frameworks. Given the general use of frameworks in primary studies and the conceptual weaknesses of frameworks described in these reviews, the conclusion drawn by McEvoy et al. (2014) in a systematic review of how NPT was applied therefore seems characteristic for the use of implementation frameworks in general: '… authors are thinking critically about the relevance of NPT constructs to their data and are using it as a heuristic device rather than as a 'conceptual straitjacket'…' McEvoy et al. (2014, p. 11).

3.1.3 Reviews that apply implementation frameworks as heuristics

The use of implementation frameworks as heuristic devices (as described in the previous section) is common to a further five systematic reviews that target different implementation-related research questions. Using an implementation framework as a heuristic means using it as an aid to facilitate learning, problem solving and discovery. The frameworks used in this way are RE-AIM (Boersma, van Weert, Lakerveld & Droes, 2015), ISF (Durlak & DuPre, 2008), CFIR (Powell et al., 2012), NPT and EPIS (Exploration, Preparation, Implementation and Sustainment) (Novins, Green, Legha & Aarons, 2013). In these five systematic reviews the implementation framework is not the focus but rather an instrument that helps to organise, analyse and understand a given phenomenon.

By focusing on behaviour changes in caregivers, the review by Boersma et al. (2015) assessed how psychosocial interventions in daily residential care are implemented, and the five components of the RE-AIM framework are used to map the degree of implementation of the psychosocial interventions presented in each of the identified studies. In a similar way, the reviews by Novins et al. (2013) and Powell et al. (2012) use the concepts of implementation frameworks to organise and present implementation strategies identified through included studies – for example, by implementation stage or implementation factor. The NPT directed the content analysis of the systematic review conducted by May, Sibley and Hunt (2014) such that categories included in the NPT were the lenses through which single studies were viewed and assessed. Finally, the ISF was the starting point for developing a slightly adjusted implementation framework applied by Durlak and DuPre (2008) to categorise and organise findings from 81 studies, identifying factors of relevance to an implementation process.

These systematic reviews document the applicability of implementation frameworks as tools in planning, researching and learning from implementation processes. They provide no evidence for implementation frameworks as collections of strategies that can improve the outcomes of human services.

3.1.4 Reviews highlighting specific implementation frameworks

The final three of the identified literature reviews highlight specific implementation frameworks because they were identified as part of the literature search that forms the basis of the review.

Two of these reviews were non-systematic. In an attempt to advise guideline developers in health about effective guideline implementation strategies, Grimshaw et al. (2012) identified the KTA framework as an approach to planning dissemination and implementation activities. The KTA framework has an additional emphasis on the importance of conducting concrete assessments of local barriers and addressing these with targeted and tailored interventions.

In their non-systematic literature review, Tabak, Khoong, Chambers and Brownson (2012) focused on models and frameworks that may inform research in dissemination and implementation, and identified 61 such models, 12 of which were classified as 'implementation-only models'. Among them were five implementation frameworks: AIF, NPT, PARIHS, CFIR and ARC. They are presented and discussed in different ways in this review.

The remaining 'implementation-only models' identified by Tabak et al. (2012) were explored and examined in the search and screening phases for this review, and literature about them was included in the analysis. However, that literature was either purely conceptual or based on non-randomised evaluations, so these models are not described or integrated in more detail in this review.

The third review identified, which was systematic, was conducted by Landsverk, Brown, Rolls Reutz, Palinkas and Horwitz (2011) and focused on assessing the usefulness and applicability of randomised controlled designs for implementation research. Nine studies were included in this review, in which the authors conclude that 'the development of controlled studies of implementation strategies is a very recent phenomenon' (Landsverk et al., 2011, p. 59). Only one of these studies applied an implementation framework – ARC. That study is included in this current review and presented in the analysis of primary studies based on randomised research designs testing an implementation intervention.

3.2 Summary

Taken together, the evidence for the effectiveness of implementation frameworks as presented in identified literature reviews shows that implementation frameworks in many cases are used as heuristic devices by researchers in planning projects, developing data collection tools, and organising and analysing data.

Some implementation frameworks – namely AIF, QIF and the Behaviour Change Wheel, together with an unnamed implementation framework developed by Greenhalgh et al. (2004) – are informed by and developed on the basis of systematic searches of specific areas of the scientific literature and therefore may represent a more robust knowledge and content base. In addition, the ongoing development of implementation frameworks after their initial materialisation is, in some cases, driven by systematic inquiries of the scientific literature about their application and operationalisation in specific projects. Implementation frameworks that have undergone such a

development are the PARIHS, the KTA framework and NPT, which may integrate a certain level of practice-based knowledge derived from the sourced literature.

However, literature reviews provide little evidence to support implementation frameworks as 'best practices' in implementation. As highlighted above, in only a few cases have implementation frameworks been tested through research projects that were based on randomised controlled designs in which the conditions for implementing an intervention – be that a practice, a program or a policy – were varied and were compared with each other for their impact on outcomes. Given this scarcity of studies, the absence of systematic reviews summarising the evidence for implementation frameworks as implementation interventions is not surprising.

In summary, this means that there is only inconclusive evidence for implementation strategies that are packaged into frameworks and that there is no scientific ground for pointing to specific implementation frameworks as particularly effective or applicable.

4. Frameworks identified in this rapid evidence assessment

1. Active Implementation Framework (AIF)
2. An Organizational Theory of Innovation Implementation (developed by Weiner, Lewis and Linnan in 2009)
3. Availability, Responsiveness and Continuity (ARC) framework
4. Behaviour Change Wheel
5. Behaviour Change Ball
6. Community Development Team (CDT)
7. Consolidated Framework for Implementation Research (CFIR)
8. Diffusion of Innovations Theory
9. Direction, Competence, Opportunity & Motivation (D-COM) model
10. Durlak's and DuPre's implementation model
11. Exploration, Preparation, Implementation, Sustainment (EPIS) framework
12. Friedman's implementation framework
13. Getting to Outcomes (GTO)
14. Implementation Effectiveness Model (developed by Klein, Conn and Sorra in 2001)
15. Institute for Healthcare Improvement (IHI) Rapid Improvement Process
16. IHI's Breakthrough Series model
17. Interactive Systems Framework for Dissemination and Implementation (ISF)
18. Intervention mapping (IM)
19. Johns Hopkins Quality and Safety Research Group Translating Evidence into Practice Model
20. Knowledge to Action (KTA) framework
21. Normalisation Process Theory (NPT)
22. Organisational framework of innovation implementation
23. Organisational model of innovation implementation
24. Organisational transformation model
25. Physician Mentored Implementation (PMI) framework
26. Practical Robust Implementation and Sustainability Model (PRISM)
27. Promoting Action on Research Implementation in Health Services (PARIHS)
28. Pronovost model

29. Quality Implementation Framework (QIF)
30. QUERI's framework for informing implementation of organisational change
31. Reach, Effectiveness, Adoption, Implementation and Maintenance Framework (RE-AIM)
32. Readiness for Implementation Model (RIM)
33. Replicating Effective Programs (REP)
34. Simpson Transfer Model
35. Theoretical Domains Framework (TDF)
36. No name (developed by Greenhalgh et al. in 2004)
37. No name (developed by Heller and Arozullah in 2001)
38. No name (developed by Moulding, Silagy and Weller in 1999)
39. No name (developed by Proctor et al. in 2011)

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