Evidence Summary

Title: Quality Improvement in Public Health

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1. Introduction

This report describes the evidence search request, provides a brief thematic analysis of the findings and details the included references.

There were four search questions in total, a search was conducted for each one.

Question 1: Quality improvement in Public Health – what approach and methods of quality improvement can be applied in different situations and contexts in public health? This may include conceptual QI models and theories.

Question 2: Information on other country approaches to QI in public health and the success/effectiveness of these approaches.

Question 3: How can QI add value to / benefit public health practice?

Question 4: Can a Quality Improvement approach help improve reflective practice in public health, in that can it enable an organisation to become a "learning organisation" with improved reflective practice?

2. Search Overview

The searches for this evidence summary were conducted during July and August 2018. We used the following databases: Public Health Database (PROQUEST) as it would provide information on the public health aspect of quality improvement, the Health Management Information Consortium (HMIC) as it would provide management information relevant to quality improvement and finally, we used Medline (Ovid) as this was considered a key all-encompassing database of health and management information related articles. We conducted Google Advanced searches to identify Grey Literature, however, these results were excluded as a manageable set of results had been identified from the peer-reviewed literature. The search strategies and evidence table are available via this link: [hyperlink]

The following criteria were applied:
- Limits applied to search:
  - Language: [English]
  - Period: [2013-2018] – Additional evidence came from a special edition of the Journal of Public Health Management and Practice (Feb 2010)
  - Geography: [not limited]
  - Population: [not limited]
- Inclusion / Exclusion criteria:
  - [see search strategies]
- Existing research – see search strategy for details.

3. Key Messages

- **Quality improvement in public services** is a "dynamic phenomenon, inherently raises questions of equity and is usually concerned with the performance of multi-organisational networks rather than the achievements of single organisations" (Boyne, 2003a p213). [5]
- **Defining QI in Public Health** Quality improvement in public health is the use a deliberate and defined improvement process, such as Plan-Do-Check-Act...to achieve measurable improvements in the efficiency, effectiveness, performance, accountability, outcomes, and other indicators of quality in services or processes which achieve equity and improve the health of the community. [18]
- The articles show the main areas of QI application in public health to be within **process improvement, performance improvement** and **large scale collaboration** with the overall aim of improvement.
- To achieve **transformational change**, small incremental changes to public health services made within a larger scale management change are found to be effective. Leaders must publicly declare their intention to really make improvement happen, develop a vision for the future organization, build a QI infrastructure, and implement basic QI methods, concepts, and principles. [19]
- The literature identifies the key characteristics required for success in the different roles within any collaboration which include; **experience,**

availability, knowledge, expertise, willingness, ability and a clear **understanding and belief in Quality Improvement and the collaborative learning process**. [8]. In the Hulscher et al (2009) study on the effectiveness of collaboratives and determinants of their success, it was found to be important to have clear, measurable targets or benchmarks. For public health teams to achieve success in quality improvement through collaboration, consistent **sharing of data** was needed to quantify variability in the process or outcome. [8].

- **Sustainability of quality improvement** requires: cultivating Public Health leaders to empower employees; teaching, training and providing opportunities for individuals; creating national networks and resources; providing finances and incentives. [3] The facilitators for achieving successful Quality Improvement is recognised in the literature as being dependent upon; dedicated and informed leadership, clear aims, realistic time frames, adequate resources, performance management and accountability systems and suitable training and support and cultivating **curiousity and experimentation** in individuals and organisations [7] The QI process is designed to gradually and deliberately generate internal demand for QI [7], [12], [14], [18, [19]

- Much of the research on QI emphasises the **need to measure and evaluate outcomes** through data collection in order to justify the cost, effort and use of resources to implement QI initiatives QI also critically analyses process measures - which makes it different from other types of public health practice. The differentiator is **data-informed decision making**.

4. Findings

Findings were based on key themes specified by the requester.

Application of Quality Improvement in Public Health and QI Models used in Public health

Performance improvement and management of performance in public health

With the introduction of the Public Health Accreditation Board (PHAB) requirements (in the USA), there has been a focus on performance improvement. This is due to the requirements on one of the PHAB standards that focuses on evaluation and improvement of performance. It is important that quality improvement enhances and complements performance management and this is evident in the high performing public health departments that have been successful in having close synergy between performance management and quality improvement. [2]

Performance review cycles have been used by Washington State healthcare providers in order to monitor, measure and report on public health system performance. This is considered a new, although not unique approach, in public health quality improvement. These performance review cycles actually take the form of PDSA cycles at local health departments and are devised according to required improvements set out by accreditation board (PHAB). The data gathered from these performance review cycles is shared across all local health departments to enable wider improvement and incur changes at a state-wide level. [13] This

approach is consistent with the Baldrige National Quality Award and Washington State Quality Award frameworks for pursuing and achieving organisational excellence in seven criteria categories: leadership; strategic planning; customer and market focus; measurement, analysis, and knowledge; workforce focus; process management; and organisational results. [1] [2] [3]

<u>Practice Improvement</u>

The literature describes many examples of where quality improvement methods have been applied in practice to reduce variation in public health practice. Some examples are detailed below.

Example 1: Developing a resource (indicator checklist) to ensure a patient's treatment is monitored and reported on accurately throughout their care.

Developing an indicator item checklist for OBOT (Office Based Opioid Agonist Treatment) to identify various stability indicators for patients that would determine their treatment. This checklist helped to reduce variation in practice and shared measures enabled more consistent reporting.[15]

Example 2: Training Community Health Workers to provide diabetes care and treatment in an American Indian Reservation healthcare service.

Practice improvement was evident within the health provision service provided for diabetic patients within an American Indian Reservation. The aim was to improve the knowledge and skills of known and trusted Community Health Workers (CHWs) already employed on the reservation. PDSA cycles were used at all stages of the improvement process. For example, an initial ("PLAN") was used to determine appropriate CHW training (e.g. provided in person by specialist nurses). Training specific to the management of diabetes allowed CHWs, with no prior formal diabetes education, to work more effectively with individuals in the community with diabetes ("DO"), and enabled CHWs to create their own resources in order to deliver the information to those with diabetes and ensure those in a caring role were better informed ("STUDY"). The introduction of specialist nurses and training methods that would be accepted by the local population was found to work in the long term to improve services for those with diabetes and improve knowledge and understanding of those caring for family members with diabetes ("ACT"). [16]

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[2] 2009–2010 Criteria for Performance Excellence, the Baldrige National Quality Program at the National Institute of Standards and Technology in Gaithersburg, MD. http://www.baldrige. nist.gov/PDF files/2009 2010 Business Nonprofit Criteria. pdf. Accessed October 27, 2009

[3] Washington State Department of Health. (2012). Quality Improvement Program. https://www.phqix.org/sites/default/files/WADOH_QI_Plan.pdf

Quality Improvement Collaboratives and Shared Learning Systems

The value of using collaborative processes and working in partnership featured in the Christie Commission of 2011. This was possibly in response to the fragmentation of services in the 1980s and the aim of collaboration was to promote joint working, minimize duplication and deliver more integrated services. [5]

Example 1: Collaborative Improvement and Innovation Network (CoIIN)

A CoIIN (Collaborative Improvement and Innovation Network) is defined as a "team of self-motivated people with a collective vision, enabled by the Web to collaborate in achieving a common goal by sharing ideas, information, and work" (Gloor, P. 2006) [6]

Key elements of a CoIIN include: (i) creating and sustaining a "cyber-team"; (ii) fostering innovation through rapid, on-going communication; (iii) ensuring work is done in patterns characterized by meritocracy, transparency, and openness to all contributions; and (iv), creating innovations that are open and disruptive. (Gloor 2006) [6]

Example 2: Quality Improvement Collaborative (QIC**)** - QI collaboratives are one way to encourage joined up working to address a common problem or issues being experienced across a wider network and allows sharing of data and experience.

A Quality Improvement Collaborative (QIC) is an organised, multifaceted approach that includes teams from multiple healthcare sites coming together to learn, apply and share improvement methods, ideas and data on service performance for a given healthcare topic. [12]

A Quality Improvement Collaborative (QIC) involves 5 key features: (i) a specified topic; (ii) clinical experts along with experts in quality improvement (iii) multi-professional teams from multiple sites participate; (iv) a model for improvement e.g. PDSA (setting targets, collecting data and testing changes); and (v) the collaborative process involves a series of structured activities. [8]

Hulscher et al, state the following key points in QI collaboratives:

> ● **Evidence of impact and evaluation** of QICs is limited possibly due to lack of reporting from sites/boards/participating practices and the overall impression of the success of a collaborative approach in QI could be due to a publication bias. In the 2017 article by Wells, S. et al. [21] *Are quality improvement collaboratives effective? A systematic review*, the publication of negative findings by QICs was considered less likely than publication of those that demonstrate positive outcomes. Furthermore, evaluation of complex QI interventions implemented across multiple sites was deemed challenging in terms of practicality and accuracy, as reporting is often qualitative and methods of evaluation based on those used in single site QI interventions. [21]. In Livingood, et al [12] it is noted that the evaluation design must correspond with the intentions of the QI intervention which is aimed at practice improvement rather than evaluation of the research for its own sake. In Wells, S. et al, [21] it was emphasised that there is a need for improvement scientists to quality control reporting from QI collaborations and address gaps in QIC design to make them viable and sustainable improvement models for the future.

● There was no difference found in the effectiveness of **type of QIC** used in intervention.

● A **critical mass** of experts to lead and provide leadership on the process is key to collaboration success (see above paragraph).

● **Knowledge exchange** is an essential part of the collaborative.

● **Data** is required to measure and monitor performance across collaborative sites or health boards or practices. This data can be drawn from one unified system or across many systems, however, data sharing is imperative to monitor change and improvement as it is possible to build on and learn from the information provided by the data.

It was found to be important to have clear, measurable targets or benchmarks, for public health teams and collaboratives to achieve quality improvement alongside use of consistent sharing of data collected in the quality improvement process. This ensures that there is quantitative analysis of the data reported from improvement measures and target areas which in turn, informs the wider evidential processes such as accreditation, therefore, this data exchange allows the sharing of improvement information between organisations involved in a collaboration.

Transformational change

Riley, et al. write in their article, *Realizing Transformational Change Through Quality Improvement in Public Health*, that transformational change is possible when small incremental improvements are linked with large-scale management changes to continually improve public health performance resulting in better population outcomes. [19] [18]. The small incremental changes could be termed "Small QI" and the 'radical change' [19], introduced by the public health leaders, could be termed, "Big QI". This top-down / bottom up approach is evident in transformational change, as it is with many quality improvement methods. [19]

Transformational change is initiated by a "top down" management strategy and the actual change processes take place from the "bottom up" whereby frontline staff, teams and individuals bring about these changes in their working practices. [19].

Riley et al [19] describe two management strategy models that are used in implementing Transformational Change within an organisation. These are described as 1. *Punctuated Equilibrium* [19] where a service is for the long term, stable for a long period of time with few significant changes (equilibrium). The periods of dramatic change brought about by Big QI are the 'punctuation' – times during which major transformation (such as restructuring an organisation) occurs. The other model discussed is the 2. *Evolutionary model* [19] where small incremental changes occur as the organisation adapts and evolves more gradually. Both examples are considered models that can bring about organisational transformation.

Improving processes can be achieved with the small incremental changes incurred from introducing continuous QI in front-line services, such as applying PDSA. In the examples given earlier to improve processes in the day to day delivery of services and subsequently improve the health of the population.

Integration of QI in public health

The requirement for committed and effective leadership in implementing successful QI initiatives is well documented [2], [3], [5], [6], [18], [19]. Beitsch et al [2] state that leadership agreement is required in identifying performance indicators and that these cannot be successful without periodic performance review. Riley et al [19] identify eight factors that may inhibit transformational change:

- Lack of senior management support
- Poor planning / lack of strategy
- Inadequate training
- Lack of trust
- Silo mentality
- Poor communications
- Lack of employee involvement
- Resource constraints

Senior leadership

Without leadership support, quality improvement efforts do not transfer to an entire organisation or become fully integrated into everyday processes [18], [19]. In addition to this, integration of QI into the everyday work of an organisation is considered to be vital for its success [3]. It has been recognised that new leaders can bring about improvements in processes, such as change in culture, increased collectivity and new ways of working that help raise expectation and increase staff motivation [5].

Beitsch et al [2], discuss leadership in relation to the identification of performance indicators. They state that leaders need to consider the strategic intent of their organisation as well as the perspectives of their multiple stakeholders when identifying the relevant domains to be examined when developing the indicators with which to do this..

In their analysis of the Turning Point Collaborative, Beitsch et al [2] highlight that the updated Turning Point model incorporates a fifth element that makes explicit reference to the vital role of leadership and organisational culture in performance management. They reiterate that leadership is required to ensure organisational customer focus and to align strategies with activities, measures and successful resource management.

Collaboration and partnership working

Collaborative practices and partnership working are also considered to be of importance, however Rowe et al [5] state that, "despite the Scottish Government's drive towards greater collaborative working, there is little empirical evidence to judge whether or not collaborative practices actually lead to public service improvement" [5], [21]. In contrast to this Nordstrom et al [15] conclude that their results do support the effectiveness of a learning collaborative approach, referencing a systematic review which found positive evidence of their effectiveness. They emphasise that learning collaboratives blend research and practice-based mechanisms for producing QI in healthcare. However, they do acknowledge that the effectiveness of learning collaboratives on complex practice changes in addiction treatment has still been relatively unexamined [15].

Ghandour et al [6] list the key characteristics required for success in the different roles within any collaboration which include; experience, availability, knowledge, expertise, willingness, ability and a clear understanding and belief in QI and the collaborative learning process [6], [8], [19], [21]. Team formation, training and support are again considered to be critical to success.

Habits of improvement

In discussing how to achieve a culture of QI, Gorenflo [7] states that curiosity and experimentation are accepted as well as expected characteristics of organisational and staff attitudes, values, goals, and practices. The QI process is designed to gradually and deliberately generate internal demand for QI [7], [12], [14], [18, [19].

Performance management and accountability

Riley et al say that in relation to performance management models, alignment among all levels is critical to assure that everyone is moving in the same direction and thus the initiative will have the largest impact. In this way, each employee can see how their individual contribution leads to success in their area and how everyone's contribution builds to the overall organisational success. As such, it is apparent how QI operates at three levels within the organisation: at the macro or organisational level, at the public health or administrative process level, and at the individual level. Riley et al [18] differentiate between 'Small' and 'Big' QI in their commentary on defining QI in Public Health. They state that successful integration of QI into an organisation's culture requires both a top-down and bottom-up approach. Again, it is reiterated that for QI to become fully integrated into the culture of a health department, leaders and management must commit to ensuring that staff come to consider QI to be 'business as usual' [18], [19].

Beitsch et al [1] identified a positive relationship between aim statements that included target objectives, time frames, measurable goals, and well-defined processes. Positive associations were also identified between the degree to which the intervention was logically aligned with the aim and the comprehensiveness of the QI project [1], [6], [14], [19]. Edward Deming is quoted as saying "If you can't describe what you are doing as a process, you don't know what you are doing." [7]. Quantitative aims are closely tied with achieving measurable results but are seen to have an inverse relationship with quality planning. [1] Beitsch et al [1] list some examples of the variables that can positively impact upon QI project outcomes:

● When interventions are aligned with aims, there are more likely to be results linked closely with the aim and the results partially achieved.
● Detailed aim statements, which include time frames and are quantifiable and discrete, are more likely to achieve measurable and positive outcomes in most models.
● Mini-collaborative selection of health outcome targets are related to achieving quantitative results and aims in the binary logit models.
● Documented use of plan-do-check-act cycles relate to obtaining positive project results.
● Mid-sized population is positively related to achieving aims in some models.
● When greater numbers of organisations participate, the likelihood for quantitative results declines.

Workforce development and support

Davis [3] in her commentary on the opportunities to advance quality improvement in public health states that current public health leadership training programs provide minimal training in creating and fostering a culture of quality improvement. Whilst there are many QI training programs available, Davis [3] states that few offer in-depth resources and materials as to how to develop and sustain a culture of organisational quality improvement.

Davis [3] identifies five workforce factors that appear to facilitate the adoption and success of public health QI efforts:

● Cultivating public health leaders who support, facilitate, and provide resources for QI and performance management and empower employees to innovate in their agencies.
● Teaching, training, and providing opportunities for individuals and teams to practice and implement QI activities and performance management systems.
● Creating national networks and resources that support QI and performance management.
● Providing finances and incentives to encourage QI and performance management implementation.

● Selection of a specific issue, sufficient resources, appropriate standards and measures, and analysis of previous success with QI efforts.

Effective QI training is emphasised throughout the literature as being key to QI success [3], [17]. Repositories for QI tools, information and best practices across the larger public health community are seen be a facilitator for improvement [1], [17].

Davis et al [4] identified a number of potential barriers in relation to workforce development and support:

● Identifying priority areas for improvement can be challenging, with teams often having preconceived ideas about what to address, notwithstanding self-assessments results or a lack of data to inform the process.
● Difficulty in understanding that the PDCA (Plan-Do-Check-Act) cycle is intended to produce measurable improvements and not just generate change.

● Not realising that evaluation alone does not constitute QI. The lack of understanding of the elements of QI reiterates the need for more teaching resources, particularly to explain the distinction between QI and evaluation, as well as the scientific methods involved in QI.
● Comprehending the significance of collecting data, testing theories and addressing root causes as part of a QI effort.
● Teams with and without QI experience can struggle to define a manageable scope of work. Time constraints of the grant process and the specificity of the PDCA cycle can lead to large-scale projects needing to be narrowed in scope.

Organisations need leaders who promote and facilitate a culture of QI, including providing incentives to teams to participate in QI initiatives.Networking opportunities, such as peer support and mentoring, as well as interaction with other health departments can also facilitate and support individual and organisational action [3], [4], [6]. Davis [3] concludes that strategies to train and engage public health leaders as champions for QI and supporters of QI culture need to be created and implemented.

The requirement for adequate introductory training in QI methodology is discussed in many articles [4], [13], [16], [17]. Davis et al [4] investigate the use of web-based training, such as 2-day webinars, as well as face-to-face consultations at the onset of projects to guide teams in outlining their goals and provide training on how to use some of the QI tools offered. Mason et al [13] say that QI training should be 'just-in-time' training and be delivered to teams with identified improvement projects which should then be incorporated into any training provided. Other research found that QI initiatives typically involve a mix of face-to-face and teleconference encounters over an 18 month time-frame [15].

Measurement and evaluation

Measures gauge the impact of change [11]. Rowe et al [5] address the difficulty in determining whether or not a public service has improved or not due to factors such as stakeholder involvement. They do, however, identify 'tangible elements' that all stakeholders are likely to view as desirable and can be considered to be evidence of improvement. These include:

- Quantity of outputs.
- Equity.
- Outcomes.
- Value for money.
- Consumer satisfaction.

Due to the costs that collaboration carries in terms of time and resources, evaluation is essential to establish whether or not a positive impact on public services has been achieved [5], [8], [12], [13], [14], [15], [19], [21]. Livingood et al [12] state that there is a paucity of evidence documenting the value of QI to public health agencies and services [12], [14], [21]. Robust measurement systems to accompany the articulation of outcomes are essential for all QI reporting [14].

The use of extensive, large-scale, time-consuming applications of QI techniques has in some instances been met by resistance at the beginning of some QI projects [12].

Beitsch et al [2] claim that there is a "system-wide dearth" of information in relation to ascertaining the cost of conducting QI and Performance Management (PM) projects. This is also true for evaluating the impact of QI/PM on cost or the efficient use of resources. This is attributed to the difficulty in tracking factors such as human resources costs as well as external cost such as the hiring of external consultants, which it is suggested, is rarely reported in the financial analysis in published literature. Another complication is recognised in the delay of accrued benefits resulting from QI as the measurable cost savings from QI activities often occur and are recorded long after the intervention.

Resource

While many QI initiatives can be achieved in a 12-18 month timeframe Ghandour et al [6] state that several factors impact upon the timeframe required for Public Health QI initiatives. A 24 month timeframe is recommended to be of benefit for the following reasons [6], [11]:

- The systemic nature of the public health challenge.
- The multitude of stakeholders engaged.
- The numbers and types of strategies necessary to achieve change.
- The availability and timeliness of data or the projects not lending themselves to tracking through traditional data sources.

One of the most challenging transitions in the CoIIN process was identified as transitioning from strategy development in collaborative, multistate teams to implementation at the state level [6]. Individuals and teams relying on traditional partnerships instead of taking the time to build new relationships that in turn foster deeper collaboration has been acknowledged as a potential hindrance to success [6].

Riley et al [19] reiterate that large-scale change is never easy or quick and that the successful transformational change effort always occurs from the top-down while the process improvement occurs from the bottom-up.

Davis [3] comments that QI initiatives may "die on the vine should current funding sources and political support no longer exist and they have little chance of sustainability without an organisational culture of quality improvement." Ghandour et al [6] comment on the financial cost of face-to-face interactions whilst stating that comfort levels with distance communication technology remains an ongoing challenge. It is important for QI teams to only address prioritised problems. The formation of teams and the dedicated time required for a fully developed QI project are resource intensive and, if misdirected, can divert attention from strategic priorities [2]. As such resources should be deployed with an overall QI plan and data on the costs associated should be recorded throughout the process [2], [3], [5]. Davis et al [4] found from one study that 60% of barriers to implementing QI initiatives related to staffing issues: lack of time, commitment, or general staff resources. Further studies found additional negative responses centred on teams not having enough time with hired consultants because of contractual or budgetary restrictions.

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