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**CQI approaches for evaluating management development programs: A case study with health service managers from geographically remote settings**

**Abstract**

Health systems are known for being complex. Yet, there is a paucity of evidence about programs that successfully develop competent frontline managers to navigate these complex systems. There is even less evidence about developing frontline managers in areas of contextual complexity such as geographically remote and isolated health services. This study used a customised management development program containing continuous quality improvement (CQI) approaches to determine whether additional levels of evaluation could provide evidence for program impact. Generalisability is limited by the small sample size; however, the findings suggest that continuous improvement approaches, such as action learning workplace-based CQI projects not only provide for real-world application of the manager's learning; they can potentially produce the type of data needed to conduct evaluations for organisational impact and cost-benefits. The case study contributes to the literature in an area where there is a scarcity of empirical research. Further, this study proposes a pragmatic method for using CQI approaches with existing management development programs to generate the type of data needed for multi-level evaluation.

**Keywords:** program evaluation; continuous quality improvement; action learning; management development.

**Background**

Health service organisations rely on frontline managers to oversee the delivery of quality health services. In health service organisations, most frontline managers are clinician-managers. The role of clinician-manager is a hybrid one, which requires the incumbent to fulfill both managerial and clinical responsibilities (Fulop, 2012; Thompson & Henwood, 2016). Beyond the challenges of balancing the responsibilities of a dual role, there are inherent challenges in the transitioning of clinicians into hybrid manager positions. These challenges are further complicated by the political, socio-economical, financial, environmental and cultural context within which each remote health service operates (Stefl, 2008; Townsend, Wilkinson, Bamber, & Allan, 2012).

The transition from technical expert to manager exists in many professions. Typically, the transition from clinician-to-manager is influenced by individual expectations, personal characteristics and professional identity (Becker & Bish, 2017; Author, 2014; Whaley & Gillis, 2018). Further, in geographically remote locations (hereafter 'remote'), frequent workforce turnover can see clinicians promoted prematurely, often with inadequate preparation for management roles (NRHA 2004). Some managers find their own way through this transition phase until they find their clinical-management balance and thrive in their managerial role. This is not the case for all clinician-managers, and many struggle to find their clinical-management balance and prematurely leave the organisation, or even worse they stay!

The effects of inadequate management performance is concerning for health service organisations. Therefore, professional development programs aimed at improving the transition and supporting new clinician-managers are vital. However, for most clinician-managers, remoteness limits their access to management development and support (Author et al., 2016; Wakerman & Davey, 2008).

*Continuous Quality Improvement*

For the impact of management development programs to be understood, cost-effective evaluation methods must be sustainably integrated into program evaluation. Yet, the nature of management development programs, resource-rich small-group programs, not only inflates the costs of evaluating such programs, the small participant numbers create relatively small datasets. Typically, continuous Quality Improvement (CQI) approaches follow a Plan-Develop-Implement-Evaluate cycle (Author et al., 2018a). These CQI approaches to program evaluation enable small-group programs to be regularly evaluated, and improvements implemented without having to wait for the accumulation of large datasets. For example, a meta-synthesis of the findings from several small studies can improve our understanding of the broader application of the findings (Craig et al., 2006; Author et al., 2018b).

For health service organisations, CQI can connect best practice evidence with what actually happens in real-world practice (Bailie, Bailie, Broughton & Larkins, 2017). Action learning is a CQI approach where through the application of learning people develop skills, build relationships and bring about change (Pedler, 2008). A workplace-based project is an example of an action learning CQI approach (Adams & Waddle, 2002; Fealy et al., 2015; Hayes, 2007). In Ireland, an action learning study with nurse managers found evidence of a direct impact on the quality of health services, concluding that programs should focus on the setting in which the 'competencies will be demonstrated' (Fealy et al., 2015, p.327). Similarly, Adams and Waddle (2002) evaluated an action learning program which culminated in the completion of a project whereby the managers implemented their solution to a business problem within their own organisation. To calculate return on investment, a detailed cost-benefit calculation was completed, taking into account both direct (e.g. project costs) and indirect costs (e.g. opportunity costs), and both tangible (e.g. sales) and intangible benefits (e.g. intellectual capital) (Adams & Waddle, 2002). The study reported benefits 'directly attributed to the outputs arising from the work-based projects' (Adams & Waddle, 2002, p.20). One workplace-based project described by Adams & Waddle, (2002, p.20) is estimated to have saved the organisation '£1.5 million in development and implementation costs'. Beyond, bridging learning and practice in a real-world setting, CQI approaches can be financially beneficial for organisations.

Evaluations beyond the level of participant satisfaction are generally not conducted because they are costly and time consuming. In fact, few management development programs report the organisational impact or cost-benefits of their program (Author et al., 2018a). The aim of this study is to use an existing management development program as a case study to investigate how CQI approaches for evaluation can demonstrate program impact beyond participant satisfaction. For the chosen case study, the research is investigating the question: How effective is CQI as a methodology for evaluating the costs and benefits of a contextualised management development program? By using action learning to underpin the program's content, delivery and assessment tasks, as well as using a CQI approach for program evaluation; this case study contributes to the literature in an area where there is a deficit of empirical research. This study makes a contribution by proposing a pragmatic method for generating the type of data needed for multi-level evaluation. In using existing programs to generate the type of data needed, new knowledge is created about using CQI approaches for evaluating management development programs to determine how well a program achieves its overall aim.

*Context*

In this study 'geographically remote' describes isolated regions where there are small populations dispersed across a wide geographic area. Remoteness is based on the physical distance to infrastructure and services (Australian Bureau of Statistics, 2006). Other characteristics of remoteness include: limited public transport (if any), an absence of resident medical practitioners; reduced access to health services, and disruption to the quality and provision of health services arising from high workforce turnover and low workforce retention (Hegney et al., 2002; Author, 2019).

In Australia, the remote health workforce makes up only a small proportion of Australia's health workforce; however, they work to the full scope of their professional practice across a large

geographical area, and often with limited resources (Hegney, McCarthy, Rogers-Clark, & Gorman, 2002; Author et al., 2016). The remote health workforce comprises a range of multi-disciplinary health professionals from the allied health, nursing, Indigenous health worker and medical professions (Author et al., 2016). Clinician-managers are not a homogenous group of managers. Some clinician-managers manage remote health services that are outposts for government health services with the main hospital located in a regional centre. Some manage non-profit health services that may be part of a group of small health centres, all of which are in remote locations. Others manage remote health services that operate independently, such as Aboriginal Community Controlled Health Organisations who have their own Community Board. Regardless of the type of health service, these clinician-managers all have the challenges of remoteness in common.

**The Case: Essentials for Remote Managers Program (ERMP)**

The Essentials for Remote Managers Program (ERMP) is a small group, short-course professional development program offered through CRANAplus. CRANAplus is the peak professional body for the Australian remote and isolated health workforce. ERMP is contextualised for geographically remote settings. The impetus for the ERMP was the implementation of the National Safety and Quality Health Service Standards. The overall aim of the ERMP was to develop leadership and management skills, by broadening their understanding of clinical governance, their role and responsibilities, and equipping them with skills for successfully leading change and implementing a nominated workplace quality improvement project (Author et al., 2017). The success of the pilot program in 2016 resulted in ERMP being included as one of a range of professional development programs offered through CRANAplus. ERMP has been delivered five times, with workshops in Alice Springs, Cairns, Broome and Adelaide. From 2016-2018, 36 managers participated in the program.

The 12-week program consists of four online modules (action learning, leadership and management, clinical governance, and project management), a two-day workshop and a workplace-based CQI project. Post-program mentoring for a further six to eight months is offered through the Australasian

College of Health Service Management (ACHSM). The two-day workshop begins with a consolidation of the content from the online modules. Then, a facilitated discussion enables remote managers to connect with their peers and reflect on their management practices. Further exploration of the program content occurs with guest speakers and group activities. The program coordinator maintains contact with participants using audio-visual technologies and teleconferences throughout the program and provides additional support for their learning. For successful completion of ERMP, participants are required to complete four online modules, attend the two-day workshop, participate in all activities, maintain a reflective journal (summary of learning), and complete an action learning workplace-based CQI project (hereafter CQI project). The CQI project required participants to identify a workplace issue that can be addressed within the timeframe of the program. Next, using CQI tools, the managers plan, develop and implement the change in their workplace. Then, participants evaluate their CQI project and submit a final project report including an executive summary which details the overall CQI project. In addition, the ERMP managers can participate in the ACHSM mentoring program.

Action learning underpins the ERMP, and CQI is built into the program at two levels. First, action learning provides opportunities for the managers to implement CQI improvements into their own workplace during the program. Second, the program itself has a routine evaluation process of collecting feedback which provides for continuous improvement of the program.

The ERMP program's routine evaluation process is depicted in the white boxes in the centre of Figure 1. This data is typically reporting participant satisfaction and is used to improve future programs. When the research study is added to complement the routine evaluation, a broader level of evaluation is possible. The outer grey boxes, depict the broader CQI evaluation processes where the program outcomes are evaluated using the original purpose for the program. For a deeper level of evaluation, metrics should be developed in the planning stage, to enable evaluation to be conducted and to assist in attributing improvements to the program (Whaley & Gillis, 2018). The

metrics were not pre-determined for the ERMP which limited the amount and type of data that was available for analysis.

Despite the absence of pre-determined measures, the ERMP already had CQI integrated into the program. Therefore, the program was considered well-placed for an evaluation to determine how effective CQI is as a methodology for a multi-level evaluation of a management development program. ERMP is an Australian program; however, it is anticipated that the case study will be of interest to program evaluators and training facilitators worldwide.

Figure 1 approximately here

**Methods**

*Research Design*

This mixed methods study commenced with a review of the data routinely collected as part of the ERMP's evaluation. This included a desktop analysis of reports compiled by the Project Coordinator. Then, supplementary qualitative data was collected through interviews and adapting the existing surveys to collect additional information. The research study was conducted in addition to the routine evaluation with minimal disruption to the existing program. As a result, the workplace-based CQI project data were limited to a desktop analysis of the CQI Projects Summary Report (a report containing a summary of each project from 2016-2017) and asking past participants about the CQI projects during the interviews. Once the data were analysed, the emergent themes were mapped across the levels of evaluation. Then, the findings were synthesised. Figure 2 provides as overview of the research design for this study.

Figure 2 approximately here

Participants

All ERMP participants who commenced or completed the ERMP during the study period (September 2017 – June 2018) were invited to complete the online questionnaires (adapted version with supplementary data). All of the clinician-managers and mentors from the ERMP pilot program in 2016 were invited to participate in the interviews. Also, a purposive sampling method was used to invite participants with a range of characteristics (e.g. gender, age, location, Indigeneity) from the 2017-2018 ERMPs to participate in the interviews.

Overall, there were 35 participants (n=7 interviews, n=28 questionnaires) for this study. Two of the past ERMP interview participants may have also completed a questionnaire (non-identifiable data); therefore, the exact number of individual people in the study is unknown (i.e. between 33 and 35). The participants worked in remote Australia, or mentored an ERMP participant working in remote Australia. Twenty-seven of the completed questionnaires contained demographical data, of which there was one Indigenous manager and most (70%) were female.

*Data*

The were six data sources: Interviews (Past ERMP Participants, Mentors); Reports (CQI Projects Summary Report, Workshop Feedback Summary Report(s), Pilot Study Report) and Questionnaires (pre-post program).

Interviews - Informal telephone interviews were conducted with five past ERMP participants by authors (LO and MH) and with two mentors by author (MD). The interviews were transcribed.

Reports - The three unpublished reports analysed for this study were: 1) CQI Projects Summary Report; 2) Remote management pilot program - Program Evaluation Report (hereafter 'CQI Projects Summary Report'); and 3) Workshop Feedback Summary Report.

Questionnaires - Online questionnaires were distributed using Qualtrics software prior to commencing and after completion of the program. There was a 72% response rate to the pre-program questionnaire (n= 13) and a 68% response rate to the post-program questionnaire (n=15). Some participants could not be contacted for the post-program questionnaires (e.g. email no longer active). The questionnaires were distributed to three program groups (2017-2018). Due to the timing of the study, the data includes pre-program questionnaires from Group two and three; and post-program questionnaires from Group one and two. The questionnaires contained both qualitative and quantitative data.

*Data analysis*

The framework method of data analysis was used to evaluate the ERMP at each level of Kirkpatrick's Evaluation Model (plus level five) (Gale, Heath, Cameron, Rashid, & Redwood, 2013). Kirkpatrick's Evaluation Model has been extensively used as a model for the evaluation of programs in business, government, and across a variety of industries (Omar et al., 2009; Reio, Rocco, Smith, & Chang, 2017; Rouse, 2011). Kirkpatrick's Evaluation Model has four levels: reaction, learning, behaviour, and results (Adams & Waddle, 2002; Omar et al., 2009; Rouse, 2011). At level one, the participants' reaction to the ERMP content and delivery was evaluated. At level two, changes associated with learning were evaluated. At level three, the application of the skills and new knowledge were evaluated which informed the evaluation at level four regarding organisational benefit/impact. An additional fifth level for return on investment (ROI) was added for this study which is consistent with analysis methods used in similar studies (Adams & Waddle, 2002; Berge, 2008; Omar et al., 2009).

The data were coded using the *a priori* categories of the four levels of Kirkpatrick's Evaluation Model and ROI. Using the framework method, a coding system was developed for each level of evaluation based on the descriptions from the literature and educational frameworks (Table 1) (Gale et al., 2013). These codes were used to guide the thematic analysis of the interviews, reports, and qualitative questionnaire data by authors LO and MH. Within each of the *a priori* categories, free

coding was conducted to identify the emergent themes for each level. Authors LO and MH discussed the emergent themes, until consensus was reached on the final themes. Authors LO, MH and MD agreed on the final themes.

Table 1 approximately here

Quantitative data was collected through Likert scales that captured self-assessed changes observed by participants. Participants were asked to rate their level of knowledge for a series of 20 questions with Likert scales (1=poor to 5=excellent) (see appendix). They were then asked to rate their level of capability for 18 of the previous 20 questions on Likert scales (1=poor to 5=excellent) (see appendix). Two questions were omitted because they asked about knowledge and were not relevant to capacity. The same questionnaire was distributed pre and post program completion. Given the small sample size, and the absence of a unique identifier on some questionnaires, a group mean was used for analysis rather than matching individual participants on the pre-post program questionnaires. The mean for each question was calculated to reveal the group level self-assessed changes reported for each question. Descriptive quantitative data analysis was conducted using Microsoft Excel 2007.

*Synthesis of the findings*

A program Logic was developed for the ERMP by authors LO, MH and MD (Inline Supplementary Figure S1). The identified needs from the ERMP program logic were used as the proxy for the purpose of the ERMP, with 'improved management competence' described by the program creators as the overall aim of the program. Then, using the matrix, the findings at each level were synthesised by authors LO and MH to determine whether ERMP met the needs as prescribed in the Program Logic. Finally, the findings from the case study were extrapolated to understand what has been learned from this case study about how CQI approaches to evaluation can demonstrate whether a program is achieving its overall aim.

Inline Supplementary Figure S1 approximately here

Ethics approval to conduct the research was granted by the James Cook University Human Research Ethics Committee (#H7034).

**Results**

Overall, the synthesis of the findings suggests that the proposed method shows promise for evaluating multilevel management development programs that already contain CQI approaches to evaluation. While the case study cannot provide conclusive results due to the small sample size and the nature of case study research, the method did produce evidence, or signal the potential to collect evidence, at the five levels of evaluation. Using the ERMP as a case study, this section provides insight into how CQI approaches can be used to evaluate how well a program is meeting the identified needs for the program.

An analysis of the data identified 16 emergent themes from the six data sources. The themes were stratified across the five levels revealing that no single data source provided suitable data for all five levels of evaluation (Table 2). The next section examines the emergent themes at each level and includes examples of typical data for each theme.

Table 2 approximately here

*Level One: Reaction*

The routine evaluation methods already capture the data for *participant satisfaction*, *program implementation* and *relevance* through questionnaires. However, the theme *shared experience* emerged from interview data and the Pilot Program Report. These were supplementary data sources for the study.

The theme *participant satisfaction* described how satisfied participants were with the ERMP. The interviews with the past ERMP participants revealed that all five managers were satisfied with the program, describing program content they considered useful, for example, 'amongst the most useful were the HR management things that we got' (M2). Similarly, the Pilot Program Report stated that, 'All 7 participants attended and expressed a high level of satisfaction with 2-day workshop program.' In the questionnaires, participants were satisfied with the ERMP with one saying, 'a very worthwhile course that I have recommended to my manager for other staff'.

The theme, *shared experience*, described the value of participants engaging with others with similar remote contextualised experiences. The managers interviewed said 'there was some very useful experiences that other people had' (M1), and 'the sessions where we were learning face-to-face but also networking with other managers, I think the value of that is without compare' (M2). In the Pilot Study Report, the managers were quoted as saying the benefits included, ''Understanding that most of us experience similar issues. Networking and Sharing', and knowing 'That I am not alone, [we] all have similar issues.'

The theme *program implementation* described the ways in which the ERMP could be improved. The desktop review of the reports identified suggestions about how the ERMP could be improved (e.g. venue) and recommended additional content to include in the workshop. Of note, the pilot program report quoted one manager as suggesting an 'online portal where the group can have discussions together' (M1). This is notable because the suggestion builds on shared experience in suggesting an avenue for continued interaction with their ERMP participant group.

Finally, *relevance* describes how relevant the participants found the ERMP to their needs. In the questionnaire one manager explained that, 'It is suitable for remote managers as it covers several areas that clinical managers usually struggle with.' Similarly, the Workshop Feedback Summary Report quoted one manager as saying, 'The course was relevant to both Health Centre Coordinators

and Managers.' The routine evaluation will continue to collect data on relevance which is important as it is provides a foundation for level two. That is, the ERMP needs to be relevant to the managers for level two to be beneficial.

*Level Two: Learning*

The routine evaluation collects data for the theme *self-assessed learning* but not for *personal benefit*. As the routine data only collects self-assessed learning; there are no sources of independent data about learning. The data about *personal benefit* emerged through the interviews.

For the theme *self-assessed learning*, the managers assessed their own learning since commencing the ERMP. In the interviews, managers explained that the ERMP helped them to understand some work activities better, for example, 'helped to make it a little bit more clear just how much we all play a part in CQI' (M2). The Pilot Program Report stated that, '(80%) [of] respondents agreed that the on-line learning has helped develop the necessary skills needed for project management. 60% strongly agreed undertaking the study was an overall effective learning experience.' The Pilot Program Report also contained a summative statement, saying that the monitoring of knowledge and skill development throughout the ERMP, showed that, 'they gained significant self-assessed competence in their leadership style, and awareness of their management role and responsibilities.'

The Pre-Post program questionnaires specifically asked participants to self-assess their knowledge and capacity before and after the ERMP. In the section about knowledge, the group mean improved across all questions after completing the ERMP except for two questions: knowledge about their own leadership style (Figure 4, Q3), and knowledge about how to develop self-resilience (Figure 4, Q4). This is not consistent with the findings from other data sources, for example the Pilot Program Report stated that they, 'gained significant self-assessed competence in their leadership style.' As part of the CQI process these will be investigated and changes made to the questionnaire or the content of the ERMP depending on the aspect that needs improvement. Excluding the two

questions identified for follow-up, the findings across all other questions were indicative of the self-assessed changes reported by participants in other aspects of the evaluation.

Figure 4 approximately here

Similarly, the mean for the group improved across all of the questions about their level of capability. There was only a small improvement for the question about their leadership style in the workplace (Figure 5, Q2), which is consistent with the findings for the question about knowledge of their own leadership style (Figure 4, Q3). As mentioned previously, the reason for the smaller change is being investigated but it is outside of the scope of this study.

Figure 5 approximately here

The theme *personal benefit* describes ways in which the individual person benefits from the ERMP. In the interviews, four managers described personal benefits gained from the ERMP, with one manager saying, 'I actually found that it was really helpful because it gave me an idea of what expectations I should have on myself', going on to say, 'I personally found it quite beneficial' (M1). Also, a mentor explained that they provided personal support and guidance, when their mentee questioned their own ability to be a remote clinician-manager.

*Level Three: Application*

The emergent themes at level three identified through interviews and reports were: *applied skills and knowledge at work, application of ERMP resources*, and *collaboration*. The routine evaluation does not necessarily collect data about the application of the skills and knowledge, and any data that is collected is self-reported. The workplace-based CQI projects appear to be a good source of independent data about how well the managers apply the skills and knowledge developed through the ERMP in their workplace.

In the interviews with the past ERMP participants all five managers described the ways in which they applied their new skills and knowledge at work. For example, one said that the ERMP, 'helped me to be mindful of the way I communicate and not to just jump straight in and say [something] but to actually think about what message I want to put across before I started saying it' (M1), and another said that they are 'managing the visiting staff better' (M4). In addition, some used content directly from the program and described the *application of ERMP resources* in their workplace. For example, one manager commented on using the clinical governance content from the module saying, 'I just can't remember what it was called in the booklet, I can picture the overlapping circles' (M1).

Finally, the theme *collaboration* describes the ways in which the managers worked collaboratively to complete their CQI projects at their workplace. The CQI Projects Summary Report described collaborative ways of working such as 'the project involved a small focus group', I learned to 'consult and seek input and feedback from staff', and 'This was achieved in a relative short period, 8 weeks, due to a plan and the working group'. This data for this theme was contained in the Workplace CQI Project Report review and is not collected in the routine evaluation.

*Level Four: Impact*

The themes at level four emerged from the interview and CQI Project summary report data. The routine evaluation did not collect any data for impact. The themes from the interview data were: *identified organisational benefits* and *connecting to organisational support*. The themes that emerged from the CQI Project Summary Report data were: *improved compliance*, *capacity building* and *improved work practices.*

In the interviews, managers described *organisational benefits* arising from their completion of the ERMP, with one saying that they have started about six new CQI projects since completing the ERMP, and another saying, '… I was then able to effectively manage to a better ability. I was more

sure of decisions that I was making' (M1). Another manager explained that others within her organisation had observed organisational level changes saying, 'I don't know about any other departments but [my two immediate managers] have seen the difference … the clinic [is] running a lot 'smoother' (M4).

The document review revealed that some managers found that the CQI project had *improved compliance* processes in their workplace. For example, one manager said, 'there was no clear process … After discussion with the supply manager the process was made clear and included in the manual' and another said that, 'Occupational safety and health forms and process changed with regards to reporting an actual or potential incident.' Similarly, some managers described how the CQI project led to *capacity building* in their workplace. For example, one manager introduced changes in their processes to improve compliance explaining that when 'new equipment was introduced, staff were offered in-services in a small group to familiarise them with the equipment available and ensure they were made aware of the checking requirements and use of equipment.'

*Improved compliance* and *capacity building* usually leads to *improved work practices* which describes the development of customised tools and resources (e.g. orientation manuals, checklists) and the improvement of existing policies. At times *improved work practices* also led to *capacity building* with one manager developing an audit tool and then training the nurses to use the new audit tool.

Level 5: Return on Investment (ROI)

The ERMP final assessment did not require participants to include the type of data from their CQI project needed to calculate ROI. However, the document review found that the proposed benefits described in the CQI Projects Summary Report would generate the type of data that could be used to calculate ROI or the cost-benefits of the ERMP. Of the eleven managers who had implemented their CQI project at the time of the study, nine of them anticipated that their workplace-based CQI projects would lead to *better patient outcomes*, and four proposed that they would lead to *cost-*

*savings*. Examples of the proposed benefits included, a decline in hospital acquired infections reducing the length of stay for patients, reduced overtime costs, and a reduction in the costs associated with transporting pathology tubes for testing. One manager explained that their project could lead changes in spending, saying:

> 'new staff members will commence their roles with some confidence and knowledge on how [the health service] works; where to get help; information and support when needed; therefore enjoying their new employment place and role, so staying longer in the position. This then allows [the heath service] to spend more funds on improving the health of [the local] population instead of recruitment'.

Neither, the routine evaluation nor the supplementary data provided evidence for level five. However, there were signs that the type of data needed could be obtained through the workplace-based CQI projects.

*Synthesis of the findings*

The synthesis of the findings was conducted with the data from each data source mapped by theme at each level of evaluation (Table 2). The synthesis revealed that the routine ERMP evaluations using surveys and questionnaires provided data for evaluation at level one and two. Further, the interviews with past ERMP participants and mentors provided data for evaluation at levels one to four and were particularly useful for understanding the application of the knowledge and skills gained from the ERMP. The majority of this information was self-assessed or self-reported. The themes that emerged from the analysis of the Workplace-based CQI Projects Summary Report did not emerge through any other data sources.

The findings from analysis of the CQI Projects Summary Report suggested that the CQI projects could potentially provide evidence at levels three to five and were particularly useful for understanding how well the program met the identified needs (Table 3). Given the absence of predetermined competencies, the identified needs from the ERMP Program Logic (Inline Supplementary Figure S1)

were used as proxies for competencies in the evaluation. Table 3 shows that for each identified need there were themes that contributed to meeting that need. For example, for the first need, *Improved consistency in the delivery of health service across the remote sector nationally* there were six themes that contributed to meeting this need. The *shared experience* comforted them as they knew others had similar experiences, the ERMP was *relevant* and they were *applying ERMP resources* at work which possibly results in *improved compliance*, *improved staff practices* and potentially *better patient outcomes*. Hence, it appears that the ERMP is meeting the first need. However, the routine evaluation only includes data for the theme *relevance*, which means that the without the data from the supplementary research study, together with data from the CQI projects, it would not be possible to determine whether the program is meeting the identified need. Together, they can potentially provide the type of data needed for evaluation at the four levels of Kirkpatrick's Evaluation Model as well as ROI.

Table 3 approximately here

Overall, the case study suggests that it is possible to evaluate management development programs at the five levels of evaluation with a combination of routinely collected data from participants and the outputs from the program (e.g. CQI project assessment task). The CQI Projects Summary Report revealed the potential data that could be analysed to understand the organisational benefits arising from the ERMP.

**Discussion**

When programs are developed to provide solutions to real-world issues, it is essential that the evaluation of such programs attempts to do so in real-world contexts. The influence of context has been widely reported, especially the difference between acquiring skills and knowledge in an educational environment (learning) and applying those skills in the workplace (performance) (Berge & Karlson, 2008). Hence, CQI activities that lead to changes observed through improved workplace

performance are imperative. In the case study, the action learning workplace-based CQI project provided managers with an opportunity to be supported while learning to apply newly acquired skills and knowledge in their work context (Gardner et al., 2011; Kaplan et al., 2010; Larkins et al., 2016). In this sense, context does not only mean geographically remote; context includes the organisational culture, work systems, personalities, workplace histories and clinical challenges that form the real-world setting in which managers work (Gardner et al., 2011; Kaplan et al., 2010).

CQI approaches, such as action learning are important for programs wishing to demonstrate real-world improvements. The context-specific application of skills provides for understanding of real-world competence; however, the absence of predetermined competencies limited the extent to which the program could be evaluated. The case study findings suggest that the type of data needed to conduct a multi-level evaluation is available when complementary data sources are used (e.g. routinely collected data and supplementary data from program outputs). Further, where a program is to be evaluated against how well it delivered on the overall aim to improve management competence, the competencies must be identified during program development, and prior to implementation.

While many organisations have a prescribed set of competencies for their managers, others rely on competency frameworks developed by credentialing bodies and professional organisations relevant to their particular industry and/or profession (Health Workforce Australia, 2013; Author et al., 2018a; Saleh, Williams, & Balougan, 2004; West, Smithgall, Rosler, & Winn, 2016). A review conducted by the Healthcare Leadership Alliance (HLA), a consortium of six professional membership organisations in the United States, proposed five domains that are common for healthcare managers (Stefl, 2008). Similarly, the NHS Institute for Innovation and Improvement (2011) in the United Kingdom (UK), and the Australasian College of Health Service Management (2016) have five domains in their competency frameworks. Finally, Canada's LEADS Framework aligns the competency frameworks within Canada's health sector using five domains. Thus, it appears that five domains of

management competence are the norm. There are four similar domains in each of the competency frameworks: business skills, leadership, communication and collaboration, and knowledge of health systems. However, the fifth domain varies across frameworks: personal characteristics, self-awareness, professionalism, and social responsibility. This suggests that while there is international consensus on common competencies; there are still some areas of difference.

In social science research, the links between competence and soft management skills (e.g. empathy) suggest that human qualities, such as self-awareness, emotional intelligence and mindset, will also influence individual competence (Yan, Yinghong, Lui, Whiteside, & Tsey, 2018). In remote areas, where health services can be located in small rural towns, islands and remote Indigenous communities, where English may not be the first language for many community members; soft management skills are essential. Furthermore, in these circumstances, other competencies (e.g. cultural competence) may influence the effectiveness of the remote clinician-manager.

*What we can learn from this case study*

Given that there are few context-specific management development programs specifically designed for managers working in geographically remote regions; this case study provided insights into an innovative program that is showing promising results. The ERMP can benefit from the findings of this study with the authors proposing that the competencies required of remote managers be defined and the ERMP adapted to focus on developing these competencies. Then, if the complementary data can be obtained through the workplace-based CQI project as anticipated; further research into the cost-benefits and ROI will provide more understanding about the ability of the proposed method for a multilevel evaluation of management development programs.

The ERMP program was customised to a specific context; however, the lessons from this study are relevant for programs designers and evaluators more generally. The authors suggest that the

proposed method be considered for future management development or similar contextualized programs.

The key insights gained from the ERMP case study are:

- Typically, evaluating programs to determine the organisational impact and cost-benefits are time consuming and expensive. In these circumstances, workplace-based CQI projects could offer a practical solution.
- The information generated by the workplace-based CQI projects, complements the routinely collected data. Together, they can potentially provide the type of data needed to evaluate how well the program met its overall aim.
- Pre-determined context-relevant measures for competence must be identified prior to evaluation if programs are to be evaluated at all five levels.
- When evaluating a management development program at the four levels of Kirkpatrick's Evaluation Model as well as ROI, a combination of data generated through program activities such as workplace-based CQI projects, and routinely collected data, could be a pragmatic and cost-effective way of conducting multi-level evaluations.

*Limitations*

The small datasets for the interviews and questionnaires was a limitation for this study. Also, the small datasets and large amount of self-reported data limited the extent to which the findings from this study could be generalised. Researcher bias was minimised as far as practicable with three researchers conducting interviews, and two of the researchers coding and stratifying the themes separately before discussing the final themes.

**Conclusion**

As health systems continue to operate in the *do more with less* landscape of the global economy, the role of clinician-manager is unlikely to become easier. For health service organisations this

necessitates that clinician-managers perform competently to meet the growing demands of health services, staff, clients and the community within their given context. This case study showed that it is difficult to demonstrate the real-world benefits of management development programs where there is an absence of context-specific competencies at the foundation of the program.

Evaluating programs to determine the organisational impact and cost-benefits are expensive. In these circumstances, workplace-based CQI projects can offer a practical solution to complement routine evaluation. The findings suggest that through workplace-based CQI projects, action learning may be a cost-effective way for participants to generate the type of data needed to conduct multi-level evaluations. Therefore, where competencies are pre-determined, the evaluation method proposed in the ERMP case study may provide a cost effective and pragmatic method of developing contextualised management skills and collecting suitable data for a multilevel evaluation of management development programs.

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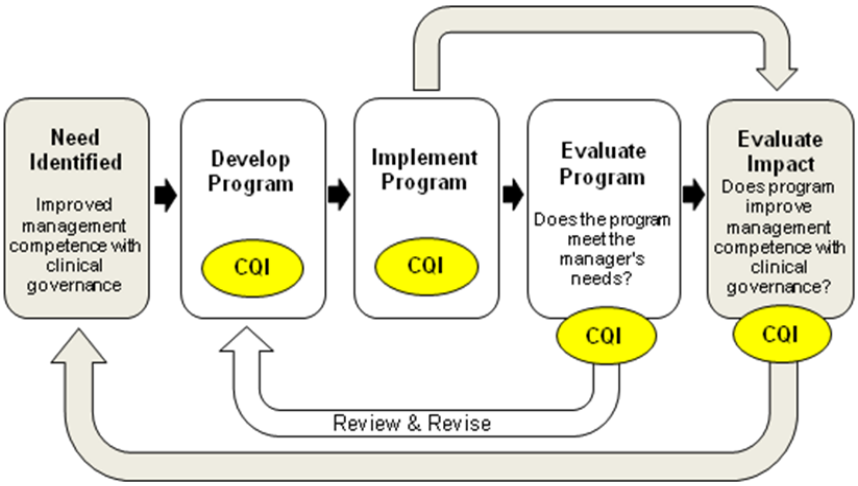



**Figure 1: Essentials for Remote Managers Program (ERMP) Evaluation**

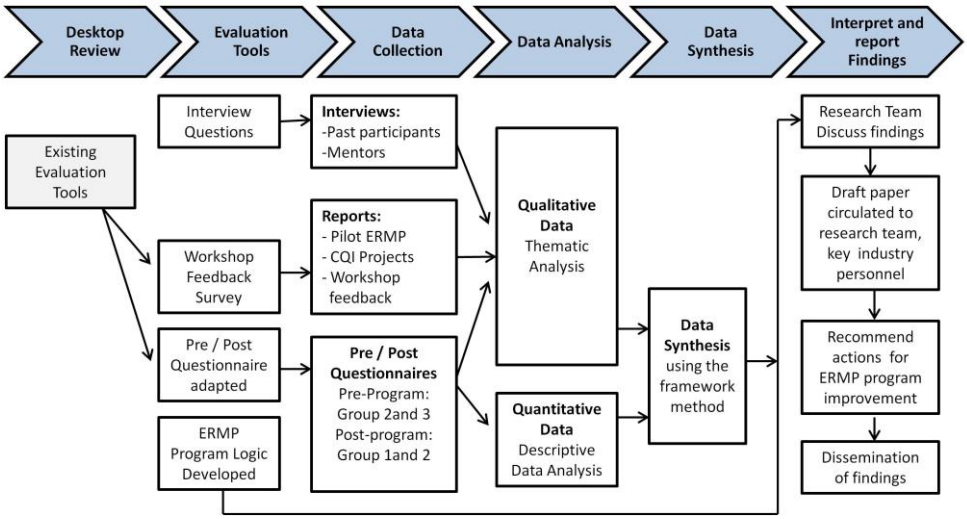



**Figure 2: ERMP Case Study Design**

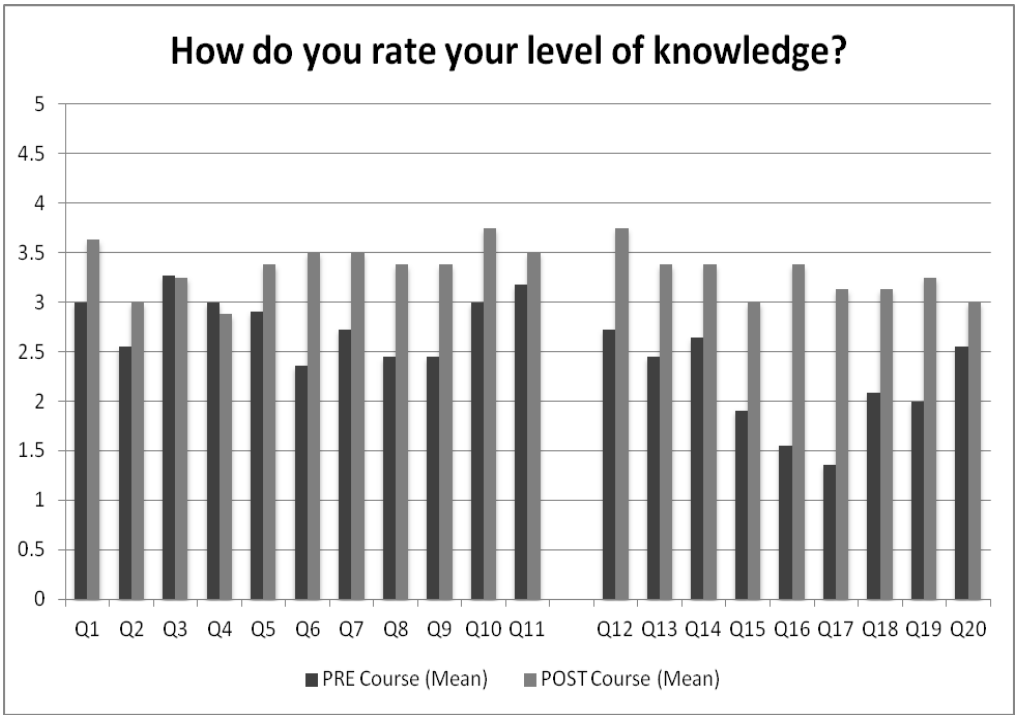



**Figure 3: Self-assessed changes in level of knowledge (group level)**

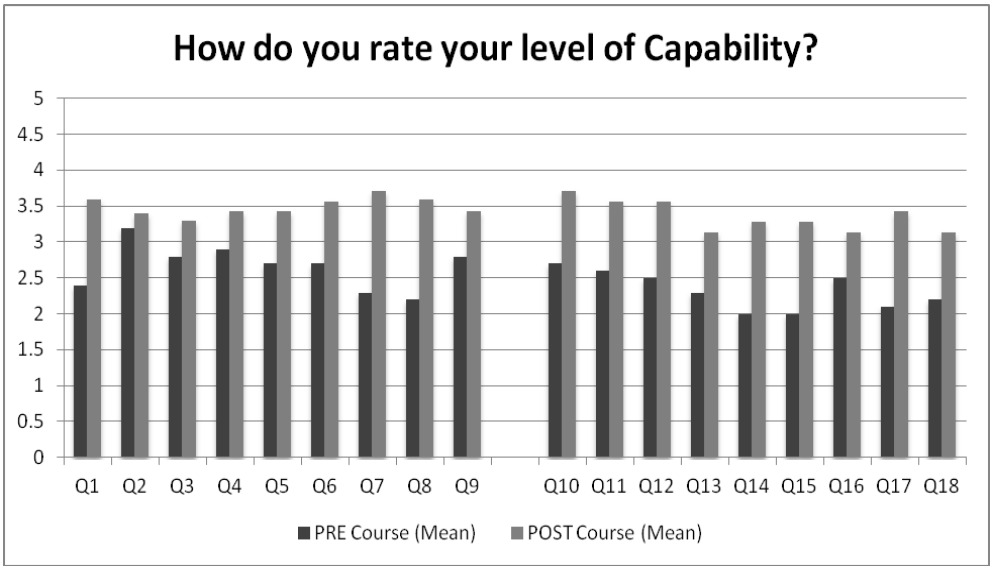



**Figure 4: Self-assessed changes in level of capability (group level)**

**Table 1: Coding guide for thematic analysis**

| Level | Code | Description |
|---|---|---|
| One: Reaction | Participant satisfaction with program (e.g. describing content and activities they found valuable). | At level one, the participants' reaction is evaluated for improvements to be made to the program content and delivery to ensure relevance, and learning (Reio et al., 2017). |
| Two: Learning | Changes in participants: knowledge, skills, behaviour, attitude, language | Evaluation at level two is conducted to identify the extent to which learning has occurred, including knowledge, skills or attitude changes (Rouse, 2011; Wallis & Kennedy, 2013). |
| Three: Application | Use of skills at work, the degree to which the program influenced a participant's actions in another setting. | Level three seeks to determine the extent to which participants apply the knowledge and skills developed from the program at work. Due to the high costs, organisations generally only evaluate programs at this level when the application of skills is critical to organisational success (Reio et al., 2017; Rouse, 2011). |
| Four: Impact | Changes made at work directly or indirectly related to the program, organisation benefits from the manager's improved competence benefits from the CQI project | The fourth level of evaluation determines organisational impact (Rouse, 2011). At this level it can be difficult to attribute changes to the program, particularly if measures are not pre-determined (Whaley & Gillis, 2018). |
| Five: Return on Investment (ROI) | Monetary benefits arising from the program when compared to the cost of the program (e.g. better patient outcomes) | In addition to the four levels of Kirkpatrick's Evaluation Model, several studies propose a fifth level to determine return on investment (ROI). (Adams & Waddle, 2002; Berge, 2008; Omar et al., 2009). |

**Table 2: Matrix: Emergent themes from each data source stratified by level of evaluation**

| | | Qualitative | | | Qualitative and Quantitative | | |
|---|---|---|---|---|---|---|---|
| | | Interviews | | | Reports | | Question-naires |
| | | Past ERMP Participant | Mentor | CQI Project | Work-shop survey *(Routine data)* | Pilot Study Report | Pre-post program *(Routine data)* |
| **Level 1** | Participant satisfaction | ✓ | ✓ | | ✓ | ✓ | ✓ |
| | Shared experience | ✓ | ✓ | | | ✓ | |
| | Program Implementation | ✓ | ✓ | | ✓ | ✓ | ✓ |
| | Relevance | | | | ✓ | ✓ | ✓ |
| **Level 2** | Self-assessment learning | ✓ | | | ✓ | ✓ | ✓ |
| | Personal benefit | ✓ | ✓ | | | | |
| **Level 3** | Applied skills and knowledge at work | ✓ | ✓ | | | ✓ | |
| | Application of ERMP resources | ✓ | | ✓ | | | |
| | Collaboration | | | ✓ | | | |
| **Level 4** | Identified organisational benefits | ✓ | | | | | |
| | Connecting to organisational support | | ✓ | | | | |
| | Improved compliance | | | ✓ | | | |
| | Capacity building | | | ✓ | | | |
| | Improved work practices | | | ✓ | | | |
| **Level 5** | Better patient outcomes | | | ✓ | | | |
| | Cost savings | | | ✓ | | | |

**Table 3: Identified program needs and emergent themes**

| Identified needs | Theme (level) |
|---|---|
| 1. Improved consistency in the delivery of health service across the remote sector nationally | • Shared experience(L1)<br>• Relevance(L1)<br>• Application of ERMP resources(L3)<br>• Improved compliance(L4)<br>• Improved staff practices(L3)<br>• Better patient outcomes(L5) |
| 2. Improved knowledge, confidence and competence with clinical governance | • Participant satisfaction(L1)<br>• Self-assessment learning(L2)<br>• Applied knowledge and skills at work(L3)<br>• Improved compliance(L4)<br>• Improved staff practices(L4) |
| 3. Remote context relevant professional development needs to be accessible | • Shared experience(L1)<br>• Participant satisfaction(L1)<br>• Program implementation(L1) |
| 4. Contextualised support for clinicians transitioning into management roles | • Participant satisfaction(L1)<br>• Personal benefit(L2)<br>• Connecting to organisational support(L4)<br>• Capacity building(L4) |
| 5. Remote sector peer network | • Shared experience(L1)<br>• Collaboration(L1)<br>• Program implementation(L1) |

**Appendix A**

**Pre-post program questions to measure self-assessed level of change (Knowledge)**

**Self-assessed changes in self**

| | |
|---|---|
| Q1 | Knowing the difference between leadership and management skills |
| Q2 | Using emotional intelligence in the workplace |
| Q3 | Your own leadership style |
| Q4 | How to develop self-resilience |
| Q5 | The elements of Clinical Governance |
| Q6 | Implementing clinical governance systems |
| Q7 | The responsibilities of a manager with clinical governance in the remote setting |
| Q8 | Using a reflective journal for personal development |
| Q9 | Using a reflective journal for professional development |
| Q10 | How mentoring can support management development |
| Q11 | Applying the National Safety and Quality Health Standards |

**Self-assessed changes in self associated with the CQI project**

| | |
|---|---|
| Q12 | Applying Continuous Quality Improvement (CQI) principles |
| Q13 | Using Risk management tools |
| Q14 | Use CQI evaluation tools for a project |
| Q15 | Conducting a Needs Analysis |
| Q16 | Developing a CQI project work plan |
| Q17 | Writing a CQI project proposal |
| Q18 | Implementing a CQI project |
| Q19 | Evaluating a CQI project |
| Q20 | Writing a project report |

**Pre-post program questions to measure self-assessed level of change (Capability)**

**Self-assessed changes in self**

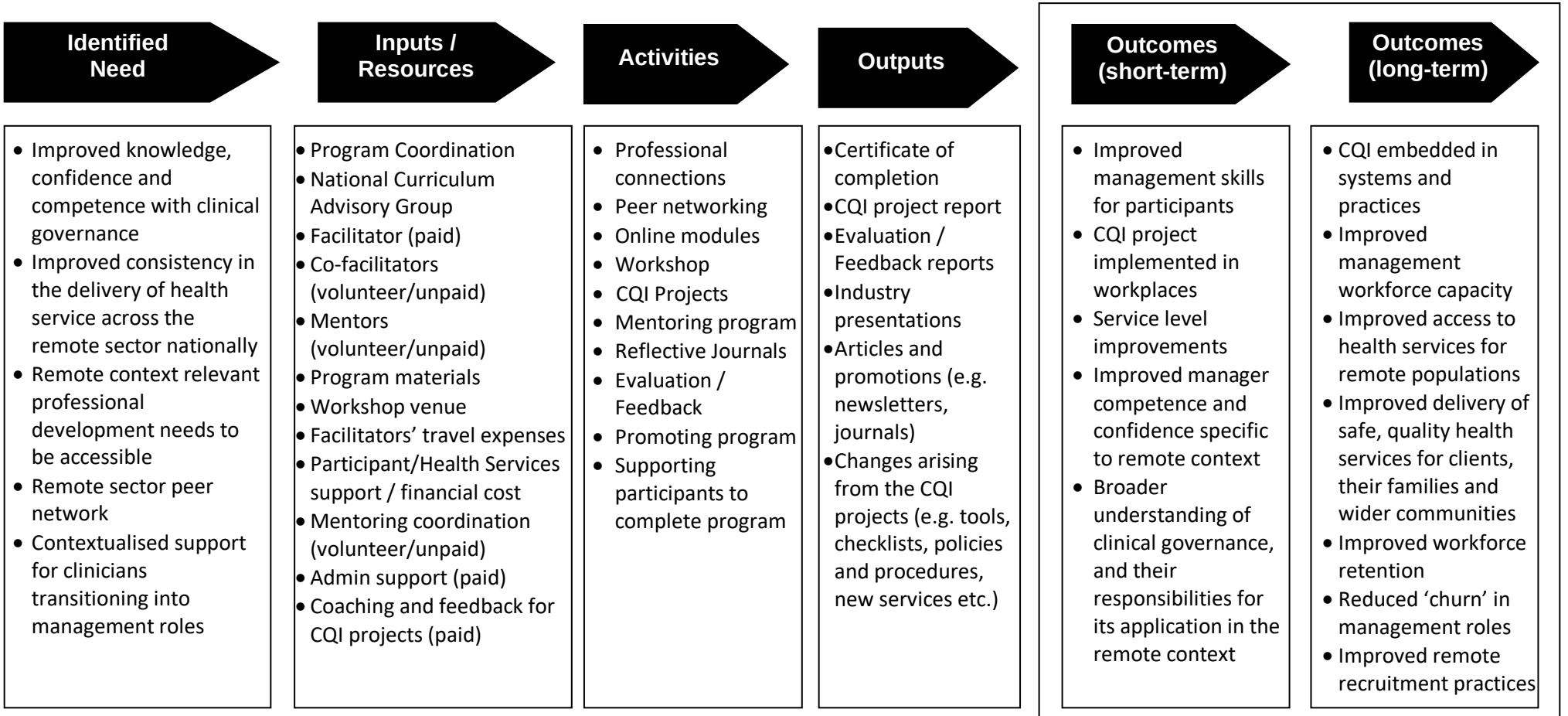
| | |
|---|---|
| Q1 | Use emotional intelligence in the workplace |
| Q2 | Use your own leadership style in the workplace |
| Q3 | Build self-resilience |
| Q4 | Comply with the elements of Clinical Governance |
| Q5 | Implement clinical governance systems |
| Q6 | Fulfill your role/responsibilities with clinical governance in the remote setting |
| Q7 | Use a reflective journal for personal development |
| Q8 | Use a reflective journal for professional development |
| Q9 | Use mentoring to support management development |

**Self-assessed changes in self associated with the CQI project**

| | |
|---|---|
| Q10 | Apply Continuous Quality Improvement (CQI) principles in the workplace |
| Q11 | Use risk management tools |
| Q12 | Use CQI evaluation tools in the workplace |
| Q13 | Conduct a Needs Analysis |
| Q14 | Develop a CQI project work plan |
| Q15 | Write a CQI project proposal |
| Q16 | Implement a CQI project |
| Q17 | Evaluate a CQI project |
| Q18 | Write a project report |

**Inline Supplementary Figure S1: Essential for Remote Management Program (ERMP) Logic Model**

Situation: The introduction of the mandatory National Safety and Quality Health Service Standards in 2013, was the impetus for CRANAplus to undertake a National Standards Project (2012-13) that provided evidence to support CRANAplus' viewpoint that a lack of consistency and uniformity in the standard of care existed and improvements were much needed in all areas with a focus on the workforce. It was well recognised that clinical managers are the key drivers needed for health services to meet these standards. In addition, a management workshop was held in 2015 whereby, skill deficits were identified by the managers, and advocated for professional development and much-needed short course for remote and isolated area managers, for compliance in this area.




**Assumptions:**

- Improving management competence will improve the quality of healthcare
- A national professional development program, contextualised for remote managers, will improve the consistency in the delivery of safe, quality health services
- The transition from clinician to manager in remote health services is often unplanned
- New remote managers are vulnerable and need remote contextualised support
- Managers are sufficiently self-aware to recognise the need for this type of professional development

**Barriers and enablers:**

- Organisational Culture
- Manager's self-awareness and support seeking behaviour
- Health sector and government support for consistency in the implementation of the National