BMJ Open is committed to open peer review. As part of this commitment we make the peer review history of every article we publish publicly available.

When an article is published we post the peer reviewers' comments and the authors' responses online. We also post the versions of the paper that were used during peer review. These are the versions that the peer review comments apply to.

The versions of the paper that follow are the versions that were submitted during the peer review process. They are not the versions of record or the final published versions. They should not be cited or distributed as the published version of this manuscript.

BMJ Open is an open access journal and the full, final, typeset and author-corrected version of record of the manuscript is available on our site with no access controls, subscription charges or pay-per-view fees (http://bmjopen.bmj.com).

If you have any questions on BMJ Open's open peer review process please email editorial.bmjopen@bmj.com

BMJ Open

Encouraging translation and assessing impact of the Centre for Research Excellence in Integrated Quality Improvement: rationale and protocol for a research impact assessment

SCHOLARONE™
Manuscripts

Title page

Encouraging translation and assessing impact of the Centre for Research Excellence in Integrated Quality Improvement: rationale and protocol for a research impact assessment

Authors

Shanthi Ramanathan [1,2] *

Penny Reeves [1,2]

Simon Deeming [1,2]

Ross Stewart Bailie [3]

Jodie Bailie [3]

Roxanne Bainbridge [4,5]

Frances Cunningham [6]

Christopher Doran [4]

Karen McPhail Bell [7]

Andrew Searles [1,2]

Corresponding author *

Dr Shanthi Ramanathan

Hunter Medical Research Institute

Locked Bag 100

New Lambton Heights 2305

Email: shanthi.ramanathan@hmri.org.au

Phone: 61-2-4042-0555

Affiliations

1.   Health Research Economics, Hunter Medical Research Institute, Newcastle, NSW, Australia
2.   School of Medicine and Public Health, Faculty of Health and Medicine, University of Newcastle, NSW, Australia

1

3. The University of Sydney, University Centre for Rural Health – North Coast, Lismore, NSW, Australia
4. Centre for Indigenous Health Equity Research, School of Health Medical and Applied Sciences, Central Queensland University, Brisbane, Queensland, Australia
5. The Cairns Institute, James Cook University, Cairns, Queensland, Australia
6. Menzies School of Health Research, Charles Darwin University, Brisbane, Queensland, Australia
7. The University of Sydney, University Centre for Rural Health – Camperdown, Sydney, NSW, Australia

Word count: 4340 words

ABSTRACT

Introduction:

There is growing recognition amongst health researchers and funders that the wider benefits of research such as economic, social, and health impacts ought to be assessed and valued alongside academic outputs such as peer-reviewed papers. Research translation needs to increase and the pathways to impact ought to be more transparent. These processes are particularly pertinent to the Indigenous health sector given continued concerns that Indigenous communities are over-researched with little corresponding improvement in health outcomes. This paper describes the research protocol of a mixed methods study to apply FAIT (Framework to Assess the Impact from Translational health research) to the Centre for Research Excellence in Integrated Quality Improvement (CRE-IQI). FAIT will be applied to five selected CRE-IQI Flagship projects to encourage research translation and assess the wider impact of that research.

Methods and analysis:

Phase 1 will develop a modified program logic model for each Flagship project including identifying process, output and impact metrics so progress can be monitored. A scoping review will inform potential benefits. In Phase 2 program logic models will be updated to account for changes in the research pathways over time. Audit and feedback will be used to encourage research translation and collect evidence of achievement of any process, output and interim impacts. In Phase 3 three proven methodologies for measuring research impact - Payback, economic assessment, and narratives- will be applied. Data on the application of FAIT will be collected and analysed to inform and improve FAIT's performance.

Ethics and dissemination:

This study is funded by a nationally-competitive grant (ID 1078927) from the Australian National Health and Medical Research Council. Ethics approval was obtained from the University of Newcastle's Human Research Ethics Committee (ID: H-2017-0026). The results from the study will be presented in several peer-reviewed publications, through conference presentations and via social media.

3

1. **Introduction**

A substantial amount of health and medical research does not translate, is not implemented by healthcare systems, is not used by end users in policy and practice, and does not create impact. (Neta, Glasgow et al. 2015) Research translation is the process of knowledge generation and transfer that enables those utilising the developed knowledge to apply it. (Rubio, Schoenbaum et al. 2010) The definition for 'research impact' modified for the health and medical research context and used in this protocol is *the demonstrable effect from basic, health systems, patient and population-orientated research, and clinical trials, that ultimately improves healthcare delivery, human health and quality of life, and generates benefits for the economy, society, culture, public policy, or the environment*. (Penfield, Baker et al. 2014) Any level of suboptimal translation means the returns earned from research investments do not achieve their potential. Further, in terms of the broader fiscal environment, there is a growing demand for more accountability in public spending across all sectors, including health. (Australian Research Council 2013)

A contributor to suboptimal translation and impact is that research translation has not been systematically encouraged and impacts have rarely been measured beyond academic outputs such as peer-reviewed publications. (Bornmann 2013) There is growing recognition that translation of research into policy and practice needs to increase and that the pathways to realising impact ought to be more transparent. (McKeon, Alexander et al. 2013) A decade ago, the gap between the generation of research outputs and the use of those outputs was not closing. (Green and Glasgow 2006) Since then, there have been major developments in this space in Australia. Key initiatives include:

- The Excellence in Research for Australia (ERA) a national framework to examine how universities are translating their research into economic, social and other benefits (Australian Research Council 2010)
- Australia's National Health and Medical Research Council's (NHMRCs) Advanced Health Research and Translation Centres Program (National Health and Medical Research Council 2015)
- Medical Research Futures Fund (MRFF) to support translational medical research (Department of Health 2015)
- Australian Research Council's development and piloting of a national engagement and impact assessment framework to sit alongside the current ERA (Australian Research Council 2015)
- NHMRC's Centres for Innovation in Regional Health. (National Health and Medical Research Council 2016)

These initiatives confirm that research translation and impact assessment are high on Australia's research agenda and attempts to close the gap between research outputs and impacts will be highly regarded.

In Australia, this need for greater accountability is particularly evident in the area of Aboriginal and Torres Strait Islander (thereafter respectfully referred to as Indigenous Australians) health where health disparities continue between Indigenous and non-Indigenous Australians. (Vos, Begg et al. 2009, Commonwealth of Australia 2017) There remain serious concerns that Indigenous Australians have been over-researched without corresponding improvements in health outcomes. (Bainbridge, Tsey et al. 2015) One reason for this has been the over-abundance of descriptive studies in Indigenous health that,

4

of themselves, rarely translate to changes in policy and practice. A recent systematic review of reviews of Indigenous health and wellbeing research identified knowledge and methodological gaps in documenting Indigenous health research impact and found that not one of the reviews assessed the impact of research nor explicitly referred to research impact. (Kinchin, Mccalman et al. 2017) More needs to be done to ensure that Indigenous health research improves the quality of health and health-related services delivered to Indigenous communities and, ultimately, improves the health and wellbeing of the Indigenous community. Consideration of 'value for money' must be a component of determining the success or failure of health and wellbeing programs. Currently, government agency reporting is based largely on inputs and outputs rather than impacts, and the absence of robust and available outcome data has been a significant barrier to assessing impacts. In a debate-style article on the benefits of Indigenous health research, the authors concluded that adopting a benefit-led approach and embedding the assessment of benefit from the outset of the research is a vital pre-requisite to maximizing research impact. (Bainbridge, Tsey et al. 2015)

Recognising a need to enhance continuous quality improvement initiatives in Indigenous primary healthcare, the NHMRC funded the Centre for Research Excellence for Integrated Quality Improvement in Indigenous Primary Healthcare (CRE-IQI) from 2015-2019. The vision for the CRE-IQI is to improve Aboriginal and Torres Strait Islander health outcomes by accelerating and strengthening large-scale primary healthcare (PHC) quality improvement efforts. Building on the Partnership Learning Model (Bailie, Matthews et al. 2013) developed through earlier research, and on innovation platform concepts, the CRE-IQI brings together stakeholders from across different levels of the health system (clinical, policy, service coordination and support) to share and exchange their experiences, knowledge, skills, ideas, and resources to accelerate and strengthen systems-level PHC improvement efforts. A significant portion of CRE-IQI resources are dedicated to the functioning and improvement of the Innovation Platform and cross cutting programs including research capacity-strengthening, strengthening collaboration and research translation. Specifically, a portion of its funding has been allocated to adopting a framework to encourage research translation and assess impact of its research program. The selected Framework to Assess the Impact from Translational health research (FAIT) was developed by a team of health economists and health and medical researchers based at the Hunter Medical Research Institute (HMRI) with the specific aim of encouraging and measuring research translation and impact. (Searles, Doran et al. 2016) The adoption of FAIT by CRE-IQI presents an opportunity to pilot the framework's implementation and trial its research impact assessment methodology. The framework will be applied to five selected Flagship projects to present transparency to the translation process, provide capacity to improve the speed of translation (when applied prospectively) and ultimately to assess the impact of these research projects (see Table 1 for details of each project).

 --- insert Table 1----

The remainder of this paper focusses on the research protocol of a mixed methods study to document the pathway to translation (including engagement with stakeholders and barriers and enablers of translation) and measure the impact of the five aforementioned projects – all of which are at different stages of the research pipeline. There are four objectives for this study, to:

1. Provide transparency about the pathway to generating research impact
2. Examine process issues associated with the implementation of FAIT
3. Test the feasibility of using FAIT's package of validated impact assessment methodologies

5

4. Assess the impact of the five Flagship projects

The anticipated outcome of this study will be greater translation of research amongst CRE-IQI associates and others working in this field. It is also anticipated that the study will provide an evidence-based report of the impact of CRE-IQI.

2.   Methods and analysis

This study involves the application of a specific framework (FAIT) to encourage research translation and measure research impact. (Searles, Doran et al. 2016) The setting will be the CRE-IQI. While the CRE has a Project Coordinating Centre in Lismore, New South Wales, its work is largely carried out through collaborative teams from multiple organisations including community-controlled health services, government health services, policy organisations, universities and research institutions across New South Wales, Queensland, the Northern Territory, South Australia and Western Australia. Participants in data collection will be a mix of researchers and students who are associated with CRE-IQI and collaborators in related fields such as health service staff, clinicians, policy makers, representatives of peak Indigenous health organisations and Indigenous community members.

The study design will involve a four-stage sequential mixed method design, summarized below:

Phase 1: A modified program logic model of the CRE-IQI's five selected flagship research programs will be developed with input from key stakeholders. The models will be developed retrospectively for ongoing research projects and prospectively for newly instigated initiatives. Part of this process will include a scoping review to identify categories of impact that will inform the type of benefits that may be expected to result from research into integrated quality improvement in Indigenous primary healthcare and to identify potential values or sources of value associated with those benefits.

Phase 2: The implementation of FAIT focusing on data collection (process, outcome and impact metrics). This stage will also incorporate a process evaluation to collect participants' perceptions of FAIT and its implementation.

Phase 3: The impact of the five Flagship projects will be measured and evaluated using the package of FAIT methodologies for impact assessment namely Payback (Buxton and Hanney 1996) economic assessment and case studies. The results will be summarized and presented by way of a scorecard, including narratives describing the process by which the research translated and generated impact.

Phase 4: The outcomes of both the implementation of FAIT and the results of the assessment of the five Flagship projects will be compiled. This report will include recommendations for the future implementation of FAIT in Indigenous health research settings.

The approximate timelines for the various activities and key dates are summarised in Figure 1 .

 --- insert Figure 1----

The following sections provide details about the methods for each of these four phases of the study.

2.1   Phase 1

6

A modified program logic model

The first phase will be the creation of five modified program logic models. (Searles, Doran et al. 2016) One of the modifications to the logic model as used in FAIT relates to the insertion of 'end users' which has the advantage for impact assessment purposes of identifying who will use the research outputs. However, in the context of CRE-IQI, end users are defined as collaborators along the pathway to impact that are both co-creators and co-users of the research outputs, including CQI coordinators, other health service staff, clinicians, policy makers, representatives of peak Indigenous health organisations and Indigenous community members. This definition includes both interim and final users. The purpose of the logic models will be to provide a strategic map of how each of the five Flagship projects plan to generate impact. The logic models link community and other needs to the research priorities and activities. These activities should produce an output that when utilized by an end user, creates an opportunity for the generation of impact. While recognizing that translation is a multidirectional phenomenon, this approach provides "line of sight" from need to research to impact (see Figure 2)

The value in articulating these processes in a program logic model gives transparency to how the research producers believe their project will generate impact. The program logic model provides insights about the planned activities, expected outputs and intended impacts. This information is used to determine a series of metrics to measure the project's progress against plans. Process metrics not only allow researchers to determine if the research is going to plan, they are an opportunity to include activities that have, in the literature, been associated with successful translation and the generation of impact. Output metrics help identify when key outputs or products of the research activity have been generated. Impact metrics are measures that reflect the consequence of the research output being used by end users. For example, a new clinical guideline might be the product of a Flagship project but it will need to be used or implemented by clinicians before it can generate impact such as improved patient outcomes.

--- insert Figure 2 ---

Data for the given program logic models will be obtained through a series of semi-structured individual and group telephone interviews with key stakeholders from each project and group feedback sessions to ensure all perspectives are covered. For projects that are further along the research pipeline, information obtained from researchers and collaborators will be triangulated against existing documents such as published papers, and other project documents including meeting minutes and progress reports.

With the prospective application of FAIT, the modified program logic model will be used to discern the relevant research outputs and to describe the expected impacts when used by the end users. In a retrospective application, it will be used to give clarity to the extent to which research translation and impact were given consideration at the program outset. While the program logic model appears linear within this diagrammatic representation (necessary for the development of a logic model); its application including project development, stakeholder engagement and project refinement are in most part non-linear and iterative in nature. Hence the program logic models will be living documents open to change at all stages of the research to ensure they capture the actual translational pathways to impact.

7

Scoping review

The development of the program logic models will be informed by a scoping review. The objective of the review will be to identify categories of impact that will inform the benefits that may be expected from research about integrated quality improvement in Indigenous primary healthcare. It will also be used to identify potential values or sources of value associated with those anticipated benefits. Step 1 of the review will be conducted using combinations of the following freetext and MeSH terms in the titles and abstracts of articles: Indigenous health research, health services research, continuous quality improvement, integrated quality improvement, research impacts, knowledge generation, health impacts, health outcomes, economic impacts.

The review process will follow the Joanna Briggs Institute (JBI) guideline for scoping reviews. (The Joanna Briggs Institute 2015) While still methodical, scoping reviews are typically broader in their focus with less restrictive inclusion criteria than systematic reviews. (Arksey H and O'Malley L 2005) The review will be used to map the key concepts underpinning the measurement of impact on the delivery of health services to Indigenous populations. As outlined in the JBI guideline, a three-step search strategy will be used. Step 1 will involve an initial search of two relevant online databases. Step 2 will be an analysis of the text words contained in the title and abstract of any retrieved papers and of the index terms used to describe the articles. A second search will then be undertaken using all identified keywords and index terms across all included databases. Third, the reference list of all identified reports and articles will be hand-searched for additional studies. In this review, literature will be drawn from both economic (i.e. Econlit and JStore) and general health and medical academic databases (i.e. Medline, Embase,CINAHL, Cochrane Database of Systematic Reviews). The searches will also extend to Google scholar and Google to identify grey literature from government departments, international organisations and research funders. The searches will be limited to articles published in English between 1995 and 2017. This timeframe is considered to be appropriate because knowledge translation, a precursor to impact assessment, first gained prominence in the late 1990s.

The data from the review will be charted to record the key information. In line with recommended scoping review guidelines, the charting of results will be iterative. (Arksey H and O'Malley L 2005, Colquhoun, Levac et al. 2014) The tabulated results will be accompanied by a narrative aligned to the review objective. The findings will be used to inform the domains of benefit and valuations for inclusion in the Payback and economic assessment of Flagship projects. No formal assessment of the quality of the studies will be undertaken and the results will not be published.

2.2   Phase 2

Implementation of the FAIT Framework

Phase 2 of the study will be the implementation of the FAIT framework over the remaining 24 months of CRE-IQI operations until end July 2019. This will entail sharing the program logic models with all CRE-IQI associates, allowing for feedback and modifications to the five models and six-monthly updating of the models including any modifications to expectations and pre-defined activities. Through a process of audit and feedback, Flagship project teams will have the opportunity to assess how they are tracking against their output and impact goals and to refine their research translation and engagement activities

8

to maximize impact. In addition, CRE-IQI associates will be exposed to current thinking around research translation, implementation and impact through CRE-IQI's research capacity strengthening program.

Data collection for this stage of the study will involve a series of online and telephone surveys of CRE-IQI management and associates to elicit their perceptions of FAIT, determine if the framework encourages translational behaviours and how the implementation of the framework can be improved. Participants will also be asked to articulate which aspects of the framework work well and which aspects need refinement.

2.3　　Phase 3

Research impact measurement and valuation

Currently, there is no single measurement method capable of capturing the impacts stemming from health and medical research. For this reason, FAIT employs a combination of three proven methods: quantified metrics (Buxton 2011) economic assessment (Buxton, Hanney et al. 2004) and narratives of the process by which the research in question translates and generates impact. Using qualitative project examples, the case studies are triangulated against the payback and economic assessment to validate the impact of the research in question.

Metrics

The metrics referred to in FAIT are a variation of the methods used in the Payback Framework (Buxton and Hanney 1996). Metrics will be organised under broad domains of benefit such as knowledge impacts, impacts on practice, economic impacts, policy impacts and community impacts. Semi-structured interviews and groups discussions with each Flagship project team will be used to generate process, output and impact metrics that will be used to populate the domains of benefit within Payback. These metrics will be structured to support the planned economic assessment. Robust metrics that are contextually relevant to Indigenous health research will be selected with consideration to objectivity, administrative efficiency, transparency and comparability as well as their ability to be verified.

In cases that involve the retrospective application of FAIT, examples of process metrics will include the historical level of engagement with key stakeholders as well as activities that could assist the translation of research outputs through to others in the research pipeline. With retrospective analysis, the metrics may necessarily be constrained to outcome measures selected at the research program outset to measure the efficacy of the research components - for example, changes in organisational systems that support the adoption of CQI within those health services that are involved in *Lessons from the Best.* Given resource constraints and the limitations of available data and evidence, the metrics that will be included in the final report will be based on what can feasibly be collected versus the ideal list of impact metrics. They will also be constrained, in some cases, by the lag between research translation and impact.

Economic assessment

The economic assessment component will entail a comparison of the costs associated with developing and implementing the five Flagship projects versus (where feasible) a calculated value for the expected impact or consequence of the funded research. The descriptive nature of much of the CRE-IQI work will

impact on the type of economic assessment that is feasible and useful. The planned assessment will collect the resources used to fund the research and any additional costs in utilizing the research outputs. For example, research that develops a minimum package of pregnancy care content for implementation will have used resources to develop and evaluate the package. Implementation of that package might increase the number of maternal prenatal care consults or diagnostic tests. These consults and tests are additional costs to the health system and can be modelled on the Co-operative Research Council endorsed evaluation framework – the Impact Tool – which uses cost benefit analysis as its foundation. Implementation of that minimum package might also have positive impacts on preterm birth, low birth weight and small-for-gestational age which can be reported as downstream savings to the health system. The appeal in using the tool to guide the economic assessment stems from the emphasis on the logic underpinning the research activity-output-usage-impact chain to give transparency and clarity to the research, which is also at the heart of FAIT. The program logic model will assist in articulating program inputs, expected outputs, uptake and ultimate impact. The total calculated expected costs and benefits will be combined by way of an impact map. Depending on the focus and stage of each Flagship project, three broad steps will be involved in the economic assessment: (1) Identification and measurement of resource use; (2) measurement and valuation of the expected impact, where possible, and (3) comparison of the costs and expected impacts, where possible, in a single metric. Where practical, the analysis will assume a societal perspective to ensure all possible costs and benefits are accounted for. The time horizon for the assessment will be bounded in the base case analysis by the period during which the program received core funding i.e. 2015-2019. Expected costs and impacts will be reported in net present value terms and streams of projected future costs and benefits will be discounted at a rate of 3 per cent.

(i)   Identification, measurement and valuation of resource use

Guided by the program logic model, resource use pertaining to (a) the development of the research, (b) delivery of any research outputs or interventions, (c) uptake of outputs by end users and (d) health service changes will be identified, measured and valued. The retrospective nature of the application of FAIT to a majority of the Flagship projects will hamper the collection of data to inform many of the costs and benefits. This is especially true for costs incurred as a result of adopting or using the research outputs of each CRE-IQI project.

Resource use associated with development and delivery of the various projects will be costed using financial and administrative records from the respective research teams. The costs associated with translation of the project findings and outputs will include any costs (including opportunity costs) incurred by the various health service organisations, such as costs related to practice change. As stated above, it will be problematic to collect data to inform these costs retrospectively. However, some attempt will be made to model these costs using administration records and detailed descriptions of uptake obtained from program managers and CQI facilitators to inform the modelling.

Unit costs for health service resource use, where appropriate and available, will be based on the best available data at the time including the Medicare Benefits Schedule (Department of Health 2017). Resource use of marketed goods and services outside the health sector will be valued at current market prices. Unmarketed goods and services such as travel time and the time of volunteers will be costed using opportunity cost prices.

(ii)   Measurement and valuation of the expected impact

10

Impact will be calculated for selected domains from each of the five program logic models. The calculations will be adjusted for risk to give the expected value of the impact. Attribution will be assigned at a conservative rate, the value of which will be informed by administrative and evaluation records and qualified during the researcher and health service staff interviews. Projected valuations will included a 'drop-off' factor to account for waning benefit over time. The sensitivity of the impact calculation to changes in attribution and drop-off will be extensively tested. Any and all assumptions underpinning the analysis will be made explicit in the reporting of the results. The economic assessment will be limited to assessments for which there is existing evidence or for which evidence can be collected. Given the time lag between translation and impact and the lack of any counterfactuals, attribution will be necessarily conservative and valuations may need to be undertaken with reference to interim rather than final impacts.

Narratives (case studies)

The FAIT approach also incorporates the use of illustrative examples or narratives which will be compiled for each Flagship project to describe in more qualitative terms how translation occurred and how research impact was generated for each project.(Searles, Doran et al. 2016) The use of case narratives or case studies will introduce a qualitative aspect to the measurement of research impact and has been the basis of the research evaluation system currently used in the United Kingdom. (Barker 2007) Feedback received by the ARC as part of the development of its EI Assessment Framework, indicates that a narrative approach is the most appropriate method to convey information and data on Indigenous research particularly regarding engagement and impact. In other applications of FAIT, these narratives have been important vehicles for verifying the consistency of the impact findings generated from the economic assessment and Payback. In this application, it is expected that the narratives will be informed by interviews with key CRE-IQI researchers and key stakeholders including end users of the research such as health service staff, representatives of peak bodies, government representatives and Indigenous community leaders.

2.4   Phase 4

Reporting and recommendations around the implementation of FAIT

The results, including the narratives, will be summarised and reported by way of a scorecard (see Figure 3 for hypothetical scorecard). This scorecards will form the basis of CRE-IQI reporting of the translation and impact of its five Flagship projects as well as feed into a more comprehensive evaluation of the CRE as an Innovation Platform (the details of which are not covered in this protocol).

The findings from the implementation of the FAIT Framework within CRE-IQI and specifically about its applicability within the Indigenous health research context will be compiled and a workshop with key CRE-IQI researchers and stakeholders will be employed to discuss the findings and to obtain feedback with a view to the final refining of the framework for future use.

11

3. Ethics and dissemination

The implementation of FAIT within CRE-IQI is funded as part of a nationally-competitive grant (Grant ID 1078927) through the Australian National Health and Medical Research Council. The study, as described in this protocol, has received ethics approval from the University of Newcastle's Human Research Ethics Committee (Ethics ID: H-2017-0026). While no participant details will be collected as part of the study, consent will be sought and recorded for each participant and associated organisation.

It is anticipated that the results from the study described in this protocol will be presented in several related publications. The first will focus on the implementation of the framework (development of the program logic) and its evaluation (did it work?). The second will summarise the learnings from the study and present recommendations for improving FAIT. The research impact assessment findings will be presented in a series of publications.

Authors' contributions:

Shanthi Ramanathan was responsible for writing the first draft of the protocol with significant contributions by penny Reeves. Simon Deeming, Andrew Searles, Ross Stewart Bailie and Karen McPahil-Bell reviewed and provided comprehensive feedback to the first draft. Jodie Bailie, Frances Cunningham, Roxanne Bainbridge and Christopher Doran reviewed and provided expert feedback to the second draft of the protocol. Jodie Bailie and Andrew Searles undertook final checks and Shanthi Ramanathan finalised the manuscript for submission. AS PR, SD and CD were part of the team that developed FAIT. RSB, JB, AS, SR, FC, CD and RB are part of the CRE-IQI Evaluation team.

Acknowledgement

This work was supported by the National Health and Medical Research Council Grant ID 1078927. The development of this protocol would not have been possible without the commitment and enthusiasm of members and affiliates of the Centre for Research Excellence in Integrated Quality Improvement.

Funding statement

The work as described in this manuscript is funded as part of a nationally-competitive grant (Grant ID 1078927) through the Australian National Health and Medical Research Council.

Competing interest statement

The authors have no competing interests to declare.

References

1. Arksey H and O'Malley L (2005). "Scoping studies: towards a methodological framework." International Journal of Social Research Methodology, **8**(1): 19-32.
2. Australian Research Council. (2010). "Excellence in Research Australia." Retrieved 20 June, 2017, from http://www.arc.gov.au/excellence-research-australia.
3. Australian Research Council. (2015). "Engagement and Impact Assessment." Retrieved 20 June, 2017, from http://www.arc.gov.au/engagement-and-impact-assessment.
4. Bailie, R., V. Matthews, J. Brands and G. Schierhout (2013). "A systems-based partnership learning model for strengthening primary healthcare." Implementation Science **8**(1): 143.
5. Bainbridge, R., K. Tsey, J. McCalman, I. Kinchin, V. Saunders, F. Watkin Lui, Y. Cadet-James, A. Miller and K. Lawson (2015). "No one's discussing the elephant in the room: contemplating questions of research impact and benefit in Aboriginal and Torres Strait Islander Australian health research." BMC Public Health **15**(1): 696.
6. Barker, K. (2007). "The UK Research Assessment Exercise: the evolution of a national research evaluation system." Research Evaluation **16**(1): 3-12.
7. Buxton, M. (2011). "The payback of "Payback": Challenges in assessing research impact." Res Eval **20**: 259–260.
8. Buxton, M. and S. Hanney (1996). "How can payback from health services research be assessed?" J Health Serv Res Policy **1**.
9. Buxton, M., S. Hanney and T. Jones (2004). "Estimating the economic value to societies of the impact of health research: a critical review." Bull World Health Organ **82**.
10. Colquhoun, H. L., D. Levac, K. K. O'Brien, S. Straus, A. C. Tricco, L. Perrier, M. Kastner and D. Moher (2014). "Scoping reviews: time for clarity in definition, methods, and reporting." Journal of clinical epidemiology **67**(12): 1291-1294.
11. Commonwealth of Australia (2017). Closing the Gap Prime Minister's Report C. o. Australia. Cenberra, Department of the Prime Minister and Cabinet.
12. Department of Health. (2015). "Medical Research Futures Fund." Retrieved 20 June, 2017, from http://health.gov.au/internet/main/publishing.nsf/Content/mrff.
13. Department of Health. (2017). "Medicare Benefits Schedule." Retrieved 20 June, 2017, from http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Home.
14. Green, L. W. and R. E. Glasgow (2006). "Evaluating the Relevance, Generalization, and Applicability of Research." Evaluation & the Health Professions **29**(1): 126-153.
15. Kinchin, I., J. Mccalman, R. Bainbridge, K. Tsey and F. W. Lui (2017). "Does Indigenous health research have impact? A systematic review of reviews." International Journal for Equity in Health **16**(52).
16. National Health and Medical Research Council. (2015). "Advanced Health Research and Translation Centres." Retrieved 20 June 2017, 2017, from https://www.nhmrc.gov.au/research/advanced-health-research-and-translation-centres.
17. National Health and Medical Research Council. (2016). "Centres for Innovation in Regional Health." Retrieved 20 June, 2017, from https://www.nhmrc.gov.au/research/centres-innovation-regional-health.
18. Neta, G., R. E. Glasgow, C. R. Carpenter, J. M. Grimshaw, B. A. Rabin, M. E. Fernandez and R. C. Brownson (2015). "A Framework for Enhancing the Value of Research for Dissemination and Implementation." American Journal of Public Health **105**(1): 49-57 49p.

19. Penfield, T., M. Baker, R. Scoble and M. Wykes (2014). "Assessment, evaluations, and definitions of research impact: a review." <u>Research Evaluation</u> **23**(1): 21-32.

20. Rubio, D., E. Schoenbaum, L. Lee, D. Schteingart, P. Marantz and K. Anderson (2010). "Defining translational research: Implications for training." <u>Acad Med</u> **85**.

21. Searles, A., C. Doran, J. Attia, D. Knight, J. Wiggers, S. Deeming, J. Mattes, B. Webb, S. Hannan, R. Ling, K. Edmunds, P. Reeves and M. Nilsson (2016). "An Approach to Measuring and Encouraging Research Translation and Research Impact." <u>Journal of Health Research Policy and Systems</u> **14**(60).

22. Vos, T., S. Begg, L. Stanley and A. D. Lopez (2009). "Burden of disease and injury in Aboriginal and Torres Strait Islander Peoples: the Indigenous health gap." <u>International Journal of Epidemiology</u> **38**: 470-477.

14

Table 1 CRE-IQI Flagship projects selected for implementation of FAIT

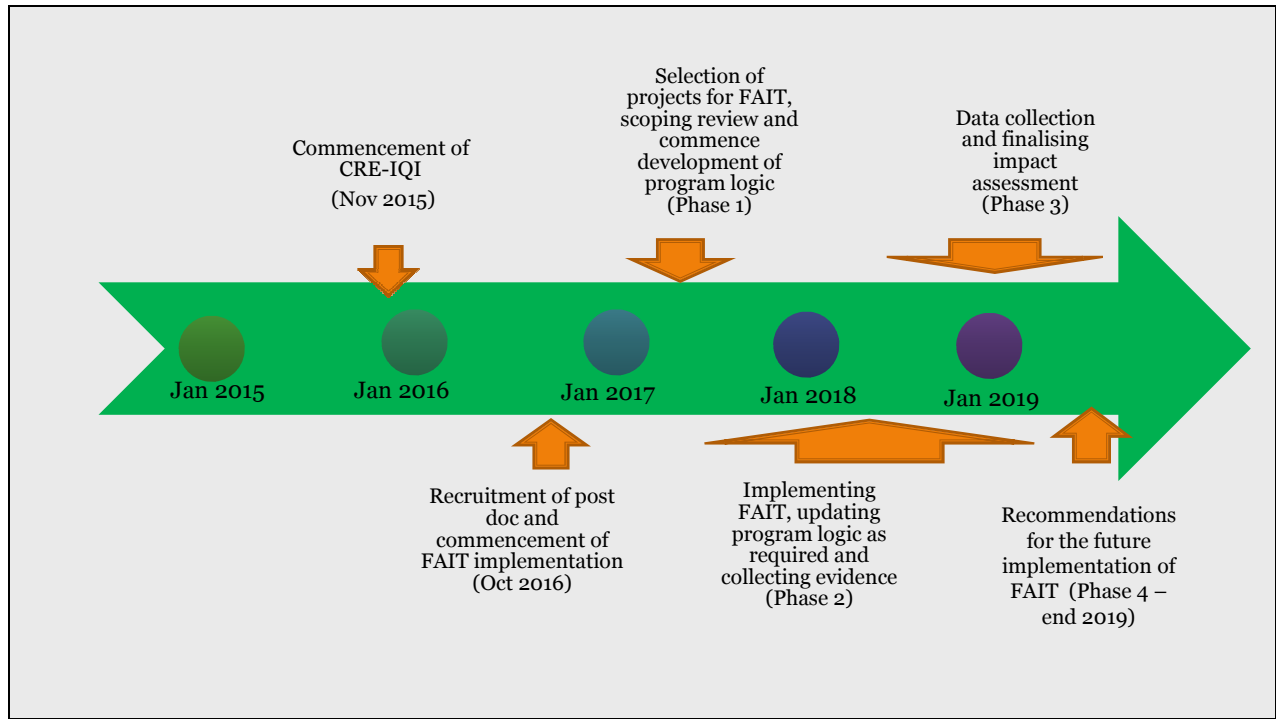| Project title	Project synopsis	Years in progress	Type of FAIT implementation
Engaging stakeholders in identifying priority evidence-practice gaps and strategies for improvement in primary health care (ESP Project)	The ESP Project brings together the concept of knowledge co-creation and evidence on how to achieve large scale change in quality of care. It engages a wide range of stakeholders in using aggregated continuous quality improvement data to identify priority gaps in care, barriers and enablers and strategies for improvement. [1]	2014-current	Retrospective and prospective
Ongoing collaborative analysis and reporting of data from the Audit and Best Practice in Chronic Disease National Research Project (ABCD Project)	The ABCD Project investigates the variation in quality of care in Indigenous primary health care centres. It also explores the underlying factors associated with variation at the health centre and regional level, examines specific strategies that have been effective in improving primary care clinical performance. This information will be used to work with health service staff, management and policy makers to enhance the effective implementation of successful strategies. [2]		Retrospective and prospective
Quality improvement in Aboriginal primary health care: Lessons from the best to better the rest	This project examines six 'high improving' PHC services within the ABCD cohort to enhance understanding of how contextual factors interact to facilitate the success of continuous quality improvement(CQI) initiatives within a service. The findings will be used to assist striving services to increase their success in implementing CQI initiatives. [3]	2014-2017	Retrospective and prospective
Strategies for improving provision of maternal care for Aboriginal and Torres Strait Islander women	This project aims to use the ABCD data to ascertain which combination of components of pregnancy care have the largest positive impact on birth outcomes. This information will be used to develop a list of essential pregnancy care items, a tool, and accompanying resources for health services to implement these essential care items. The project will also work with stakeholders to further develop strategies to improve maternal health outcomes.	2017-2019	Prospective
Sustainable Family Wellbeing (FWB) Implementation and Evaluation Using CQI Approaches	This project will define and develop implementation mechanisms that support Family Wellbeing empowerment program integration and implementation within family support programs. This includes the development of evidence-informed funding models, mechanisms and sustainable ways of embedding FWB and upscaling proven family support programs and services. [4](Bainbridge, McCalman et al. 2011)	2015 - 2019	Retrospective and prospective

---

[1] Laycock, A., J. Bailie, V. Matthews and R. Bailie (2016). "Interactive Dissemination: Engaging Stakeholders in the Use of Aggregated Quality Improvement Data for System-Wide Change in Australian Indigenous Primary Health Care." Frontiers in Public Health 4(84)

[2] Bailie, R., D. Si, C. Shannon, J. Semmens, K. Rowley, D. J. Scrimgeour, T. Nagel, I. Anderson, C. Connors, T. Weeramanthri, S. Thompson, R. McDermott, H. Burke, E. Moore, D. Leon, R. Weston, H. Grogan, A. Stanley and K. Gardner (2010). "Study protocol: national research partnership to improve primary health care performance and outcomes for Indigenous peoples." BMC Health Services Research 10(1): 129.

[3] Woods, C., K. Carlisle, S. Larkins, S. C. Thompson, K. Tsey, V. Matthews and R. Bailie (2017). "Exploring Systems That Support Good Clinical Care in Indigenous Primary Health-care Services: A Retrospective Analysis of Longitudinal Systems Assessment Tool Data from High-Improving Services." Frontiers in Public Health 5(45).

[4] Bainbridge, R., J. McCalman, K. Tsey and C. Brown (2011). "Inside-Out Approaches to Promoting Aboriginal Australian Wellbeing: evidence from a decade of community-based participatory research." The International Journal of Health, Wellness and Society 1(2)
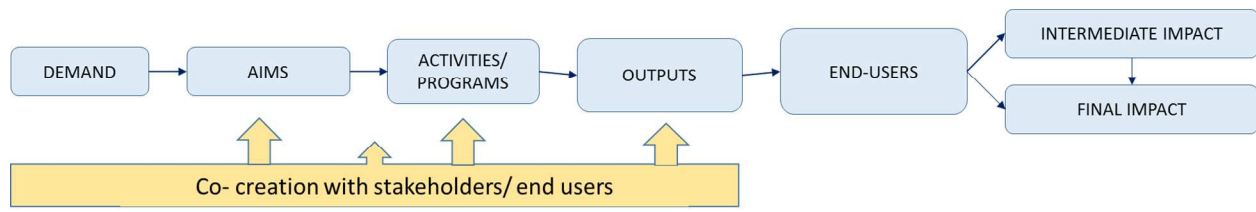
Figure 1 CRE-IQI Timeline for Implementation of a Framework to Assess the Impact of Translational Health Research

Figure 2 Modified program logic model

Figure 3

Figure 3

Hypothetical scorecard for a research project looking at increasing the delivery of cardiovascular risk assessments and follow-up for Aboriginal and Torres Strait Islander people			
Method	**Domain**	**Metric (Planned/potential)**	**Final value (TBC)**
Modified Payback	Knowledge translation	Presentation at a conference Citation index for journal article PhD completions	No. of attendees Citation count No. of completions
	Clinical implementation	Increased delivery of cardiovascular risk assessments (CVRA) to Indigenous adults Increased follow up to reduce cardiovascular risk Reduced complications	No. of CVRA performed No. of follow-up appointments No. of adverse events
	Community benefit	Reduced cardiovascular (CV) morbidity amongst Indigenous adults Reduced cardiovascular mortality amongst Indigenous adults Wellbeing, measure of stress	No. of CV episodes No. of CV deaths Overall wellbeing score
	Policy and legislation	Change in localised or state-based policy on regular delivery of CVRAs for Indigenous adults	Policy change
	Economic impact	Reduced hospitalisations of Indigenous adults for cardiovascular problems Reduced readmissions Shorter lengths of stay Reduced need for at home care Quicker return to work/normal duties	No. of CV hospitalisations No. of CV readmissions Average days in hospital No. of home care visits No. of days off work
Method	**Metric**	**Example**	**Final value**
Economic Assessment	Cost of research	Research budget	Total expenditure
	Cost of doing the CVRAs and follow up	Estimated cost of implementation (increased consultations and medications)	Total health service budget spent on CVRA
	Benefit that can be converted into $ value	Projections of reduced CV episodes, reduced hospitalisations and associated costs avoided for the patient (e.g. time off work)	Total costs avoided
	Cost: benefit ratio	For every $1 spent, the program delivered $X of benefit	To be confirmed (TBC)
Narrative		**Community need**: Aboriginal and Torres Strait Islander (Indigenous) people are disproportionately affected by cardiovascular disease and diabetes. The provision of adequate CVRAs and follow-up are shown to improve patient outcomes. **Research response**: The goal is to increase the provision of CVRAs and follow-up by investigating variations in care to identify factors that may contribute to this variation and address the gaps and barriers to undertaking CVRAs and follow-up. **Research outcome**: Increased provision of CVRAs and follow-up **Research impact**: Reduced CV morbidity and mortality and improved outcomes for Indigenous patients and the community	

Figure 3

BMJ Open

Encouraging translation and assessing impact of the Centre for Research Excellence in Integrated Quality Improvement: rationale and protocol for a research impact assessment

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2017-018572.R1
Article Type:	Protocol
Date Submitted by the Author:	29-Aug-2017
Complete List of Authors:	Ramanathan, Shanthi; University of Newcastle Hunter Medical Research Institute, Health Research Economics; University of Newcastle, Faculty of Health and Medicine, School of Medicine and Public Health Reeves, Penny; University of Newcastle Hunter Medical Research Institute, Health Research Economics; University of Newcastle, Faculty of Health and Medicine, School of Medicine and Public Health Deeming, Simon; University of Newcastle Hunter Medical Research Institute, Health Research Economics; University of Newcastle, Faculty of Health and Medicine, School of Medicine and Public Health Bailie, Ross; The University of Sydney, University Centre for Rural Health Bailie, Jodie; The University of Sydney, University Centre for Rural Health Bainbridge, Roxanne; Central Queensland University, Centre for Indigenous Health Equity Research, School of Health, Medical and Applied Science; James Cook University, The Cairns Institute Cunningham, Frances; Charles Darwin University, Menzies School of Health Research Doran, Christopher; Central Queensland University, School of Human, Health and Social Sciences McPhail-Bell, Karen; University of Sydney, University Centre for Rural Health Searles, Andrew; Hunter Medical Research Institute, Health Research Economics; University of Newcastle, Faculty of Health and Medicine, School of Medicine and Public Health
\Primary Subject Heading\:	Health services research
Secondary Subject Heading:	Health economics
Keywords:	Research translation, Return on Investment, Health Services, Indigenous, Impact Assessment

SCHOLARONE™
Manuscripts

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Title page

Encouraging translation and assessing impact of the Centre for Research Excellence in Integrated Quality Improvement: rationale and protocol for a research impact assessment

Authors

Shanthi Ramanathan [1,2] *

Penny Reeves [1,2]

Simon Deeming [1,2]

Ross Stewart Bailie [3]

Jodie Bailie [3]

Roxanne Bainbridge [4,5]

Frances Cunningham [6]

Christopher Doran [4]

Karen McPhail Bell [3]

Andrew Searles [1,2]

Corresponding author *

Dr Shanthi Ramanathan

Hunter Medical Research Institute

Locked Bag 100

New Lambton Heights 2305

Email: shanthi.ramanathan@hmri.org.au

Phone: 61-2-4042-0555

Affiliations

1.   Health Research Economics, Hunter Medical Research Institute, Newcastle, NSW, Australia
2.   School of Medicine and Public Health, Faculty of Health and Medicine, University of Newcastle, NSW, Australia

1

3.   The University of Sydney, University Centre for Rural Health – North Coast, Lismore, NSW, Australia
4.   Centre for Indigenous Health Equity Research, School of Health Medical and Applied Sciences, Central Queensland University, Brisbane, Queensland, Australia
5.   The Cairns Institute, James Cook University, Cairns, Queensland, Australia
6.   Menzies School of Health Research, Charles Darwin University, Brisbane, Queensland, Australia

Word count: 4340 words

2

ABSTRACT

Introduction:

There is growing recognition amongst health researchers and funders that the wider benefits of research such as economic, social, and health impacts ought to be assessed and valued alongside academic outputs such as peer-reviewed papers. Research translation needs to increase and the pathways to impact ought to be more transparent. These processes are particularly pertinent to the Indigenous health sector given continued concerns that Indigenous communities are over-researched with little corresponding improvement in health outcomes. This paper describes the research protocol of a mixed methods study to apply FAIT (Framework to Assess the Impact from Translational health research) to the Centre for Research Excellence in Integrated Quality Improvement (CRE-IQI). FAIT will be applied to five selected CRE-IQI Flagship projects to encourage research translation and assess the wider impact of that research.

Methods and analysis:

Phase 1 will develop a modified program logic model for each Flagship project including identifying process, output and impact metrics so progress can be monitored. A scoping review will inform potential benefits. In Phase 2 program logic models will be updated to account for changes in the research pathways over time. Audit and feedback will be used to encourage research translation and collect evidence of achievement of any process, output and interim impacts. In Phase 3 three proven methodologies for measuring research impact - Payback, economic assessment, and narratives- will be applied. Data on the application of FAIT will be collected and analysed to inform and improve FAIT's performance.

Ethics and dissemination:

This study is funded by a nationally-competitive grant (ID 1078927) from the Australian National Health and Medical Research Council. Ethics approval was obtained from the University of Newcastle's Human Research Ethics Committee (ID: H-2017-0026). The results from the study will be presented in several peer-reviewed publications, through conference presentations and via social media.

3

Strengths and limitations of this study

- The proposed study uses a comprehensive mixed method four-phase design to validate a framework to encourage research translation and measure research impact.
- The study incorporates a process evaluation to understand users' experience of the framework.
- Measurement of impact uses three proven methods for impact assessment – Payback (modified), economic evaluation and narratives.
- The time lag between translation and impact means impacts may not have been realised at the point of assessment.
- Impact assessment in this study is limited to five research projects rather than the Centre for Research Excellence in Integrated Quality Improvement as a whole programme.

4

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

1. Introduction

A substantial amount of health and medical research does not translate, is not implemented by healthcare systems, is not used by end users in policy and practice, and does not create impact. (1) Research translation is the process of knowledge generation and transfer that enables those utilising the developed knowledge to apply it. (2) The definition for 'research impact' modified for the health and medical research context and used in this protocol is *the demonstrable effect from basic, health systems, patient and population-orientated research, and clinical trials, that ultimately improves healthcare delivery, human health and quality of life, and generates benefits for the economy, society, culture, public policy, or the environment*. (3) Any level of suboptimal translation means the returns earned from research investments do not achieve their potential. Further, in terms of the broader fiscal environment, there is a growing demand for more accountability in public spending across all sectors, including health. (4)

A contributor to suboptimal translation and impact is that research translation has not been systematically encouraged and impact measurement beyond academic outputs such as peer-reviewed publications while becoming more common in countries like the United Kingdom (5) is still not standard practice in most other countries.(6) There are a plethora of impact measurement frameworks available and several studies including two recent systematic reviews of these frameworks, models and applications. (7-9) However, there is a lack of evidence to suggest that the availability of these frameworks and models has actually increased the proportion of health and medical research projects that actually measure and report on impact, rather than just outputs. There is growing recognition that translation of research into policy and practice needs to increase and that the pathways to realising impact ought to be more transparent. (10) There have been several studies trialing the use of impact measurement applications in Australia (11-15) but a national framework for measurement of research impact has not yet been implemented. However, there have been major developments in this space. Key initiatives include:

- The Excellence in Research for Australia (ERA) a national framework to examine how universities are translating their research into economic, social and other benefits (13)
- Australia's National Health and Medical Research Council's (NHMRCs) Advanced Health Research and Translation Centres Program (16)
- Medical Research Futures Fund (MRFF) to support translational medical research (17)
- Australian Research Council's development and piloting of a national engagement and impact assessment framework to sit alongside the current ERA (12)
- NHMRC's Centres for Innovation in Regional Health (18)
- Australia's National Innovation and Science Agenda which has dedicated $9million to assess and report on the engagement and impact of university research. (19)

These initiatives confirm that research translation and impact assessment are high on Australia's research agenda and attempts to close the gap between research outputs and impacts will be highly regarded.

In Australia, this need for greater accountability is particularly evident in the area of Aboriginal and Torres Strait Islander (thereafter respectfully referred to as Indigenous Australians) health where health

5

disparities continue between Indigenous and non-Indigenous Australians. (20, 21) There remain serious concerns that Indigenous Australians have been over-researched without corresponding improvements in health outcomes. (22) One reason for this has been the over-abundance of descriptive studies in Indigenous health that, of themselves, rarely translate to changes in policy and practice. A recent systematic review of reviews of Indigenous health and wellbeing research identified knowledge and methodological gaps in documenting Indigenous health research impact and found that not one of the reviews assessed the impact of research nor explicitly referred to research impact. (23) More needs to be done to ensure that Indigenous health research improves the quality of health and health-related services delivered to Indigenous communities and, ultimately, improves the health and wellbeing of the Indigenous community. Consideration of 'value for money' must be a component of determining the success or failure of health and wellbeing programs. Currently, government agency reporting is based largely on inputs and outputs rather than impacts, and the absence of robust and available outcome data has been a significant barrier to assessing impacts. In a debate-style article on the benefits of Indigenous health research, the authors concluded that adopting a benefit-led approach and embedding the assessment of benefit from the outset of the research is a vital pre-requisite to maximizing research impact. (22)

Recognising a need to enhance continuous quality improvement initiatives in Indigenous primary healthcare, the NHMRC funded the Centre for Research Excellence for Integrated Quality Improvement in Indigenous Primary Healthcare (CRE-IQI) from 2015-2019. The vision for the CRE-IQI is to improve Aboriginal and Torres Strait Islander health outcomes by accelerating and strengthening large-scale primary healthcare (PHC) quality improvement efforts. Building on the Partnership Learning Model (24) developed through earlier research, and on innovation platform concepts, the CRE-IQI brings together stakeholders from across different levels of the health system (clinical, policy, service coordination and support) to share and exchange their experiences, knowledge, skills, ideas, and resources to accelerate and strengthen systems-level PHC improvement efforts. A significant portion of CRE-IQI resources are dedicated to the functioning and improvement of the Innovation Platform and cross cutting programs including research capacity-strengthening, strengthening collaboration and research translation. Specifically, a portion of its funding has been allocated to adopting a framework to encourage research translation and assess impact of its research program. The selected Framework to Assess the Impact from Translational health research (FAIT) was developed by a team of health economists and health and medical researchers based at the Hunter Medical Research Institute (HMRI) with the specific aim of encouraging and measuring research translation and impact. The Framework was based on a mixed methods study involving: (1) a scoping review of existing research impact frameworks and techniques to inform the development of FAIT; (2) a development stage to design the prototype and (3) a feedback stage where iterations of the prototype were presented to selected researchers for discussion and refinement.(25) The adoption of FAIT by CRE-IQI presents an opportunity to pilot the framework's implementation and trial its research impact assessment methodology. The framework will be applied to five selected Flagship projects to present transparency to the translation process, provide capacity to improve the speed of translation (when applied prospectively) and ultimately to assess the impact of these research projects (see Table 1 for details of each project).

Table 1 CRE-IQI Flagship projects selected for implementation of FAIT

Project title	Project synopsis	Years in progress	Type of FAIT implementation
Engaging stakeholders in identifying priority evidence-practice gaps and strategies for improvement in primary health care (ESP Project)	The ESP Project brings together the concept of knowledge co-creation and evidence on how to achieve large scale change in quality of care. It engages a wide range of stakeholders in using aggregated continuous quality improvement data to identify priority gaps in care, barriers and enablers and strategies for improvement. [1]	2014-current	Retrospective and prospective
Ongoing collaborative analysis and reporting of data from the Audit and Best Practice in Chronic Disease National Research Project (ABCD Project)	The ABCD Project investigates the variation in quality of care in Indigenous primary health care centres. It also explores the underlying factors associated with variation at the health centre and regional level, examines specific strategies that have been effective in improving primary care clinical performance. This information will be used to work with health service staff, management and policy makers to enhance the effective implementation of successful strategies. [2]		Retrospective and prospective
Quality improvement in Aboriginal primary health care: Lessons from the best to better the rest	This project examines six 'high improving' PHC services within the ABCD cohort to enhance understanding of how contextual factors interact to facilitate the success of continuous quality improvement(CQI) initiatives within a service. The findings will be used to assist striving services to increase their success in implementing CQI initiatives. [3]	2014-2017	Retrospective and prospective
Strategies for improving provision of maternal care for Aboriginal and Torres Strait Islander women	This project aims to use the ABCD data to ascertain which combination of components of pregnancy care have the largest positive impact on birth outcomes. This information will be used to develop a list of essential pregnancy care items, a tool, and accompanying resources for health services to implement these essential care items. The project will also work with stakeholders to further develop strategies to improve maternal health outcomes.	2017-2019	Prospective
Sustainable Family Wellbeing (FWB) Implementation and Evaluation Using CQI Approaches	This project will define and develop implementation mechanisms that support Family Wellbeing empowerment program integration and implementation within family support programs. This includes the development of evidence-informed funding models, mechanisms and sustainable ways of embedding FWB and upscaling proven family support programs and services. [4](26)	2015 - 2019	Retrospective and prospective

---

[1] Laycock, A., J. Bailie, V. Matthews and R. Bailie (2016). "Interactive Dissemination: Engaging Stakeholders in the Use of Aggregated Quality Improvement Data for System-Wide Change in Australian Indigenous Primary Health Care." Frontiers in Public Health 4(84)

[2] Bailie, R., D. Si, C. Shannon, J. Semmens, K. Rowley, D. J. Scrimgeour, T. Nagel, I. Anderson, C. Connors, T. Weeramanthri, S. Thompson, R. McDermott, H. Burke, E. Moore, D. Leon, R. Weston, H. Grogan, A. Stanley and K. Gardner (2010). "Study protocol: national research partnership to improve primary health care performance and outcomes for Indigenous peoples." BMC Health Services Research 10(1): 129.

[3] Woods, C., K. Carlisle, S. Larkins, S. C. Thompson, K. Tsey, V. Matthews and R. Bailie (2017). "Exploring Systems That Support Good Clinical Care in Indigenous Primary Health-care Services: A Retrospective Analysis of Longitudinal Systems Assessment Tool Data from High-Improving Services." Frontiers in Public Health 5(45).

[4] Bainbridge, R., J. McCalman, K. Tsey and C. Brown (2011). "Inside-Out Approaches to Promoting Aboriginal Australian Wellbeing: evidence from a decade of community-based participatory research." The International Journal of Health, Wellness and Society 1(2)

7

The remainder of this paper focusses on the research protocol of a mixed methods study to document the pathway to translation (including engagement with stakeholders and barriers and enablers of translation) and measure the impact of the five aforementioned projects – all of which are at different stages of the research pipeline. There are four objectives for this study, to:

1. Provide transparency about the pathway to generating research impact
2. Examine process issues associated with the implementation of FAIT
3. Test the feasibility of using FAIT's package of validated impact assessment methodologies
4. Assess the impact of the five Flagship projects

The anticipated outcome of this study will be greater translation of research amongst CRE-IQI associates and others working in this field. It is also anticipated that the study will provide an evidence-based report of the impact of the five CRE-IQI projects and evidence to other health services researchers wishing to implement a framework to encourage greater translation and optimise and measure their research impact.

2.   Methods and analysis

This study involves the application of a specific framework (FAIT) to encourage research translation and measure research impact. (25) The setting will be the CRE-IQI. While the CRE has a Project Coordinating Centre in Lismore, New South Wales, its work is largely carried out through collaborative teams from multiple organisations including community-controlled health services, government health services, policy organisations, universities and research institutions across New South Wales, Queensland, the Northern Territory, South Australia and Western Australia. Participants in data collection will be a mix of researchers and students who are associated with CRE-IQI and collaborators in related fields such as health service staff, clinicians, policy makers, representatives of peak Indigenous health organisations and Indigenous community members.

The study design will involve a four-stage sequential mixed method design, summarized below:

Phase 1: A modified program logic model of the CRE-IQI's five selected flagship research programs will be developed with input from key stakeholders. The models will be developed retrospectively for ongoing research projects and prospectively for newly instigated initiatives. Part of this process will include a scoping review to identify categories of impact that will inform the type of benefits that may be expected to result from research into integrated quality improvement in Indigenous primary healthcare and to identify potential values or sources of value associated with those benefits.

Phase 2: The implementation of FAIT focusing on data collection (process, outcome and impact metrics). This stage will also incorporate a process evaluation to collect participants' perceptions of FAIT and its implementation.

Phase 3: The impact of the five Flagship projects will be measured and evaluated using the package of FAIT methodologies for impact assessment namely Payback(27) economic assessment and case studies. The results will be summarized and presented by way of a scorecard, including narratives describing the process by which the research translated and generated impact.

8

Phase 4: The outcomes of both the implementation of FAIT and the results of the assessment of the five Flagship projects will be compiled. This report will include recommendations for the future implementation of FAIT in Indigenous health research settings.

The approximate timelines for the various activities and key dates are summarised in Figure 1.

The following sections provide details about the methods for each of these four phases of the study.

2.1   Phase 1

A modified program logic model

The first phase will be the creation of five modified program logic models. (25) One of the modifications to the logic model as used in FAIT relates to the insertion of 'end users' which has the advantage for impact assessment purposes of identifying who will use the research outputs. However, in the context of CRE-IQI, end users are defined as collaborators along the pathway to impact that are both co-creators and co-users of the research outputs, including CQI coordinators, other health service staff, clinicians, policy makers, representatives of peak Indigenous health organisations and Indigenous community members. This definition includes both interim and final users. A further modification is the introduction of process and output metrics in addition to impact metrics to provide greater transparency between the aims and intended impacts of the research. The purpose of the logic models will be to provide a strategic map of how each of the five Flagship projects plan to generate impact. The logic models link community and other needs to the research priorities and activities. These activities should produce an output that when utilized by an end user, creates an opportunity for the generation of impact. While recognizing that translation is a multidirectional phenomenon, this approach provides "line of sight" from need to research to impact (see Figure 2).

The value in articulating these processes in a program logic model gives transparency to how the research producers believe their project will generate impact. The program logic model provides insights about the planned activities, expected outputs and intended impacts. This information is used to determine a series of metrics to measure the project's progress against plans. Process metrics not only allow researchers to determine if the research is going to plan, they are an opportunity to include activities that have, in the literature, been associated with successful translation and the generation of impact. Output metrics help identify when key outputs or products of the research activity have been generated. Impact metrics are measures that reflect the consequence of the research output being used by end users. For example, a new clinical guideline might be the product of a Flagship project but it will need to be used or implemented by clinicians before it can generate impact such as improved patient outcomes.

Data for the given program logic models will be obtained through a series of semi-structured individual and group telephone interviews with key stakeholders from each project and group feedback sessions to ensure all perspectives are covered. For projects that are further along the research pipeline, information obtained from researchers and collaborators will be triangulated against existing documents such as published papers, and other project documents including meeting minutes and progress reports.

9

With the prospective application of FAIT, the modified program logic model will be used to discern the relevant research outputs and to describe the expected impacts when used by the end users. In a retrospective application, it will be used to give clarity to the extent to which research translation and impact were given consideration at the program outset. While the program logic model appears linear within this diagrammatic representation (necessary for the development of a logic model); its application including project development, stakeholder engagement and project refinement are in most part non-linear and iterative in nature. Hence the program logic models will be living documents open to change at all stages of the research to ensure they capture the actual translational pathways to impact.

Scoping review

The development of the program logic models will be informed by a scoping review. The objective of the review will be to identify categories of impact that will inform the benefits that may be expected from research about integrated quality improvement in Indigenous primary healthcare. It will also be used to identify potential values or sources of value associated with those anticipated benefits

The review process will follow the Joanna Briggs Institute (JBI) guideline for scoping reviews. (28) While still methodical, scoping reviews are typically broader in their focus with less restrictive inclusion criteria than systematic reviews. (29) The review will be used to map the key concepts underpinning the measurement of impact on the delivery of health services to Indigenous populations. As outlined in the JBI guideline, a three-step search strategy will be used and a provisional search strategy is described here. Step 1 of the review will be conducted using combinations of the following freetext and MeSH terms in the titles and abstracts of articles from two online databases: Indigenous health research, health services research, continuous quality improvement, integrated quality improvement, research impacts, knowledge generation, health impacts, health outcomes, economic impacts. Step 2 will be an analysis of the text words contained in the title and abstract of any retrieved papers and of the index terms used to describe the articles. A second search will then be undertaken using all identified keywords and index terms across all included databases. Third, the reference list of all identified reports and articles will be hand-searched for additional studies. In this review, literature will be drawn from both economic (i.e. Econlit and JStore) and general health and medical academic databases (i.e. Medline, Embase, CINAHL, Cochrane Database of Systematic Reviews). The searches will also extend to Google Scholar and Google to identify grey literature from government departments, international organisations and research funders including information of potential grey and published literature identified by CRE-IQI members and affiliates during the program logic development phase. The searches will be limited to articles published in English between 1995 and 2017. This timeframe is considered to be appropriate because knowledge translation, a precursor to impact assessment, first gained prominence in the late 1990s.

The data from the review will be charted to record the key information. In line with recommended scoping review guidelines, the charting of results will be iterative. (28, 29) The tabulated results will be accompanied by a narrative aligned to the review objective. The findings will be used to inform the domains of benefit and valuations for inclusion in the Payback and economic assessment of Flagship projects. No formal assessment of the quality of the studies will be undertaken and the results will not be published.

2.2   Phase 2

Implementation of the FAIT Framework

Phase 2 of the study will be the implementation of the FAIT framework over the remaining 24 months of CRE-IQI operations until end July 2019. This will entail sharing the program logic models with all CRE-IQI associates, allowing for feedback and modifications to the five models and six-monthly updating of the models including any modifications to expectations and pre-defined activities. Through a process of audit and feedback, Flagship project teams will have the opportunity to assess how they are tracking against their output and impact goals and to refine their research translation and engagement activities to maximize impact. In addition, CRE-IQI associates will be exposed to current thinking around research translation, implementation and impact through CRE-IQI's research capacity strengthening program.

Data collection for this stage of the study will involve a series of online and telephone surveys of CRE-IQI management and associates to elicit their perceptions of FAIT, determine if the framework encourages translational behaviours and how the implementation of the framework can be improved. Participants will also be asked to articulate which aspects of the framework work well and which aspects need refinement.

2.3   Phase 3

Research impact measurement and valuation

Currently, there is no single measurement method capable of capturing the impacts stemming from health and medical research. For this reason, FAIT employs a combination of three integrated but separate proven impact assessment methods: quantified metrics (30) economic assessment (31) and narratives of the process by which the research in question translates and generates impact. Using qualitative project examples, the case studies will be triangulated against the payback and economic assessment to validate the impact of the research in question.

Metrics – modified Payback

The metrics referred to in FAIT are a variation of the methods used in the Payback Framework (32). Metrics will be organised under broad domains of benefit such as knowledge impacts, impacts on practice, economic impacts, policy impacts and community impacts. Semi-structured interviews and groups discussions with each Flagship project team will be used to generate process, output and impact metrics that will be used to populate the domains of benefit within Payback. These metrics will be structured to support the planned economic assessment. Robust metrics that are contextually relevant to Indigenous health research will be selected with consideration to objectivity, administrative efficiency, transparency and comparability as well as their ability to be verified.

In cases that involve the retrospective application of FAIT, examples of process metrics will include the historical level of engagement with key stakeholders as well as activities that could assist the translation of research outputs through to others in the research pipeline. With retrospective analysis, the metrics may necessarily be constrained to outcome measures selected at the research program outset to measure the efficacy of the research components - for example, changes in organisational systems that

11

support the adoption of CQI within those health services that are involved in translation of findings from *Lessons from the Best.*

Economic assessment

The economic assessment component will entail a comparison of the costs associated with developing and implementing the five Flagship projects versus (where feasible) a calculated value for the expected impact or consequence of the funded research. The descriptive nature of much of the CRE-IQI work will impact on the type of economic assessment that is feasible and useful. The planned assessment will collect, on a case-by-case basis, the resources used to fund the research including non-CRE funding expended on each project prior to the commencement of CRE-IQI. The cost of running the CRE-IQI Program will be appropriately apportioned across the five Flagship Projects (these projects represent the major investment of the CRE), keeping in mind that programs such as the Capacity Strengthening Program benefit a range of other CRE-IQI affiliated projects and partners. Additional costs in utilizing the research outputs of each project will also be included. For example, research that develops a minimum package of pregnancy care content for implementation will have used resources to develop and evaluate the package. Implementation of that package might increase the number of maternal prenatal care consults or diagnostic tests. These consults and tests are additional costs to the health system and can be modelled on the Co-operative Research Council endorsed evaluation framework – the Impact Tool – which uses cost benefit analysis as its foundation. Implementation of that minimum package might also have positive impacts on preterm birth, low birth weight and small-for-gestational age which can be reported as downstream savings to the health system. The appeal in using the tool to guide the economic assessment stems from the emphasis on the logic underpinning the research activity-output-usage-impact chain to give transparency and clarity to the research, which is also at the heart of FAIT. The program logic model will assist in articulating program inputs, expected outputs, uptake and ultimate impact. The total calculated expected costs and benefits will be combined by way of an impact map. Depending on the focus and stage of each Flagship project, three broad steps will be involved in the economic assessment: (1) Identification and measurement of resource use; (2) measurement and valuation of the expected impact, where possible, and (3) comparison of the costs and expected impacts, where possible, in a single metric. Where practical, the analysis will assume a societal perspective to ensure all possible costs and benefits are accounted for. Expected costs and impacts will be reported in net present value terms and streams of projected future costs and benefits will be discounted at a rate of 3 per cent.

(i)   Identification, measurement and valuation of resource use

Guided by the program logic model, resource use pertaining to (a) the development of the research, (b) delivery of any research outputs or interventions, (c) uptake of outputs by end users and (d) health service changes will be identified, measured and valued. The retrospective nature of the application of FAIT to a majority of the Flagship projects will hamper the collection of data to inform many of the costs and benefits. This is especially true for costs incurred as a result of adopting or using the research outputs of each CRE-IQI project.

Resource use associated with development and delivery of the various projects will be costed using financial and administrative records from the respective research teams. Where appropriate, the costs associated with translation of the project findings and outputs will include any costs (including opportunity costs) incurred by the various health service organisations, such as costs related to practice

12

change. As stated above, it will be problematic to collect data to inform these costs retrospectively. However, some attempt will be made to model these costs using administration records and detailed descriptions of uptake obtained from program managers and CQI facilitators to inform the modelling.

Unit costs for health service resource use, where appropriate and available, will be based on the best available data at the time including the Medicare Benefits Schedule (33). Resource use of marketed goods and services outside the health sector will be valued at current market prices. Unmarketed goods and services such as travel time and the time of volunteers will be costed using opportunity cost prices.

(ii)   Measurement and valuation of the expected impact

Impact will be calculated for selected domains from each of the five program logic models. The calculations will be adjusted for risk to give the expected value of the impact. Attribution will be assigned at a conservative rate, the value of which will be informed by administrative and evaluation records and qualified during the researcher and health service staff interviews. Projected valuations will included a 'drop-off' factor to account for waning benefit over time. The sensitivity of the impact calculation to changes in attribution and drop-off will be extensively tested. Any and all assumptions underpinning the analysis will be made explicit in the reporting of the results. The economic assessment will be limited to assessments for which there is existing evidence or for which evidence can be collected.

Narratives (case studies)

The FAIT approach also incorporates the use of illustrative examples or narratives which will be compiled for each Flagship project to describe in more qualitative terms how translation occurred and how research impact was generated for each project.(25) Case narratives or case studies have been the basis of the research evaluation system currently used in the United Kingdom. (5) Narratives are useful for describing the often complex pathways for research translation and can be powerful tools for communicating the nature and extent of research translation and, ultimately, research impact. They also enable quantitative findings to be placed in context and are an opportunity to explain variances in research costs, outputs and impacts. Feedback received by the ARC as part of the development of its EI Assessment Framework, indicates that a narrative approach is the most appropriate method to convey information and data on Indigenous research particularly regarding engagement and impact. In other applications of FAIT, these narratives have been important vehicles for verifying the consistency of the impact findings generated from the economic assessment and Payback. In this application, it is expected that the narratives are supported with evidence extracted from the modified Payback and economic assessments and will be informed by interviews with key CRE-IQI researchers and key stakeholders including end users of the research such as health service staff, representatives of peak bodies, government representatives and Indigenous community leaders. It is hoped that the collaborative and prospective approach to the development of the narratives will render them less likely to be impacted by the biases that often characterise case narratives based only on self-reports such as selective memory. (34)

2.4   Limitations

This study is being conducted in a real-world setting which presents some obvious limitations. Impact assessments are resource intensive and although the prospective collection of evidence is more cost-effective, not all the CRE-IQI Flagship projects will allow prospective collection of the required data. Final metrics for the Payback assessment and data for the narratives and economic assessments for each project will be based on what can feasibly be collected versus the ideal list of impact metrics and evidence. The lag between research translation and impact means that valuations may need to be undertaken with reference to interim rather than final impacts. For CRE-IQI Flagship projects that are further along the research pipeline, this constraint will be less problematic compared to projects that have commenced more recently. Conduct of the study in a real world setting means there are no controls (counterfactuals), thus attribution of impact for all five projects will be necessarily conservative. And finally, the FAIT framework is project-based and is being applied (as intended) to a select number of CRE-IQI projects that represent a major investment of the CRE. A limitation, therefore, is that this study will not assess the impact of CRE-IQI as a whole.

2.5 Phase 4

Reporting and recommendations around the implementation of FAIT

The results, including the narratives, will be summarised and reported by way of a scorecard (see Figure 3 for hypothetical scorecard). This scorecard will form the basis of CRE-IQI reporting of the translation and impact of its five Flagship projects as well as feed into a more comprehensive evaluation of the CRE as an Innovation Platform (the details of which are not covered in this protocol).

The findings from the implementation of the FAIT Framework within CRE-IQI and specifically about its applicability within the Indigenous health research context will be compiled and a workshop with key CRE-IQI researchers and stakeholders will be employed to discuss the findings and to obtain feedback with a view to the final refining of the framework for future use.

3. Ethics and dissemination

It is anticipated that the results from the study described in this protocol will be presented in several related publications. The first will focus on the implementation of the framework (development of the program logic) and its evaluation (did it work?). The second will summarise the learnings from the study and present recommendations for improving FAIT. The research impact assessment findings will be presented in a series of publications.

Authors' contributions:

14

1
2
3 Shanthi Ramanathan was responsible for writing the first draft of the protocol with significant
4 contributions by Penny Reeves. Simon Deeming, Andrew Searles, Ross Stewart Bailie and Karen McPhail-
5 Bell reviewed and provided comprehensive feedback to the first draft. Jodie Bailie, Frances Cunningham,
6 Roxanne Bainbridge and Christopher Doran reviewed and provided expert feedback to the second draft
7 of the protocol. Jodie Bailie and Andrew Searles undertook final checks and Shanthi Ramanathan
8 finalised the manuscript for submission. AS PR, SD and CD were part of the team that developed FAIT.
9 RSB, JB, AS, SR, FC, CD and RB are part of the CRE-IQI Evaluation team.

Acknowledgement

Funding statement

Competing interest statement

The authors have no competing interests to declare.

Figure legends

There are no accompanying legends for the three figures.

15

References

1.   Gila N, Glasgow RE, Carpenter CR, Grimshaw JM, Rabin BA, Fernandez ME, et al. A Framework for Enhancing the Value of Research for Dissemination and Implementation. American Journal of Public Health. 2015;105(1):49-57

2.   Rubio D, Schoenbaum E, Lee L, Schteingart D, Marantz P, Anderson K. Defining translational research: Implications for training. Acad Med. 2010;85.

3.   Penfield T, Baker MJ, Scoble R, Wykes MC. Assessment, evaluations, and definitions of research impact: a review. Research Evaluation. 2014;23(1):21-32.

4.   Australian Research Council. Research impact principles and framework 2013 [cited 2017 15 August 2017]. Available from: http://www.arc.gov.au/research-impact-principles-and-framework

5.   Rosenberg G. Research Excellence Framework 2014: Manager's report UK: REF2014; 2015 [cited 2017 15 August 2017]. Available from: http://www.ref.ac.uk/.

6.   Bornmann L. What is societal impact of research and how can it be assessed? A literature survey. J Am Soc Inf Sci Technol. 2013;64.

7.   Deeming S, Searles A, Reeves P, Nilsson M. Measuring research impact in Australia's medical research institutes: a scoping literature review of the objectives for and an assessment of the capabilities of research impact assessment frameworks. Health Research Policy and Systems. 2017;15(1):22.

8.   Raftery J, Hanney S, Greenhalgh T, Glover M, Blatch-Jones A. Models and applications for measuring impact of health research:update of a systematic review for the Health Technology Assessment programme. Health Technology Assessment. 2016;20(76).

9.   Rivera SC, Kyte DG, Aiyegbusi OL, Keeley TJ, Calvert MJ. Assessing the impact of healthcare research: a systematic review of methodological framework. PLoS Med. 2017;14(8).

10.   McKeon S, Alexander E, Brodaty H, Ferris B, Frazer I, Little M. Strategic Review of Health and Medical Research in Australia – Better Health Through Research. Canberra: Commonwealth of Australia, Department of Health and Ageing, 2013.

11.   Kalucy EC, Jackson-Bowers E, McIntyre E, Reed R. The feasibility of determining the impact of primary health care research projects using the Payback Framework. Health Research Policy and Systems. 2009;7(1):11.

12.   Australian Research Council. Engagement and Impact Assessment Canberra: Australian Research Council; 2015 [cited 2017 20 June]. Available from: http://www.arc.gov.au/engagement-and-impact-assessment.

13.   Australian Research Council. Excellence in Research Australia Canberra: Australian Research Council; 2010 [cited 2017 20 June]. Available from: http://www.arc.gov.au/excellence-research-australia.

14.   Cohen G, Schroeder J, Newson R, King L, Rychetnik L, Milat AJ, et al. Does health intervention research have real world policy and practice impacts: testing a new impact assessment tool. Health Research Policy and Systems. 2015;13(1):3.

15.   Donovan C, Butler L, Butt AJ, Jones TH, Hanney SR. Evaluation of the impact of National Breast Cancer Foundation-funded research. Medical Journal of Australia. 2014;200(4):214-8.

16.   National Health and Medical Research Council. Advanced Health Research and Translation Centres Canberra: National Helath and medical Research Council; 2015 [cited 2017 20 June 2017]. Available from: https://www.nhmrc.gov.au/research/advanced-health-research-and-translation-centres.

17.   Department of Health. Medical Research Futures Fund Canberra: Australian Department of Health 2015 [cited 2017 20 June]. Available from: http://health.gov.au/internet/main/publishing.nsf/Content/mrff.

16

18.   National Health and Medical Research Council. Centres for Innovation in Regional Health Canberra: NHMRC; 2016 [cited 2017 20 June]. Available from: https://www.nhmrc.gov.au/research/centres-innovation-regional-health.

19.   Australian Government. National Innovation and Science Agenda Report Canberra: Commonwealth of Australia; 2015 [cited 2017 15 August 2017]. Available from: https://www.innovation.gov.au/page/agenda.

20.   Vos T, Begg S, Stanley L, Lopez AD. Burden of disease and injury in Aboriginal and Torres Strait Islander Peoples: the Indigenous health gap. International Journal of Epidemiology. 2009;38:470-7.

21.   Commonwealth of Australia. Closing the Gap Prime Minister's Report In: Australia Co, editor. Cenberra: Department of the Prime Minister and Cabinet; 2017.

22.   Bainbridge R, Tsey K, McCalman J, Kinchin I, Saunders V, Watkin Lui F, et al. No one's discussing the elephant in the room: contemplating questions of research impact and benefit in Aboriginal and Torres Strait Islander Australian health research. BMC Public Health. 2015;15(1):696.

23.   Kinchin I, Mccalman J, Bainbridge R, Tsey K, Lui FW. Does Indigenous health research have impact? A systematic review of reviews. International Journal for Equity in Health. 2017;16(52).

24.   Bailie R, Matthews V, Brands J, Schierhout G. A systems-based partnership learning model for strengthening primary healthcare. Implementation Science. 2013;8(1):143.

25.   Searles A, Doran C, Attia J, Knight D, Wiggers J, Deeming S, et al. An Approach to Measuring and Encouraging Research Translation and Research Impact. Health Research Policy and Systems 2016;14(60).

26.   Bainbridge R, McCalman J, Tsey K, Brown C. Inside-Out Approaches to Promoting Aboriginal Australian Wellbeing: evidence from a decade of community-based participatory research. The International Journal of Health, Wellness and Society. 2011;1(2).

27.   M B, S H. How can payback from health services research be assessed? Health Services Research Policy. 1996;1(1):35-40.

28.   Colquhoun H, Levac D, O'Brien K, Straus S, Tricco A, Perrier L, et al. Scoping reviews: time for clarity in definition, methods, and reporting. Journal of Clinical Epidemiology. 2014;67(12):1291-4.

29.   Arksey H, O'Malley L. Scoping studies: towards a methodological framework. International Journal of Social Research Methodology,. 2005;8(1):19-32.

30.   Buxton M. The payback of "Payback": Challenges in assessing research impact. Res Eval. 2011;20:259–60.

31.   Buxton M, Hanney S, Jones T. Estimating the economic value to societies of the impact of health research: a critical review. Bull World Health Organ. 2004;82.

32.   Buxton M, Hanney S. How can payback from health services research be assessed? J Health Serv Res Policy. 1996;1.

33.   Department of Health. Medicare Benefits Schedule: Australian Government Department of Health; 2017 [cited 2017 20 June]. Available from: http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Home.

34.   Banzi R, Moja L, Pistotti V, Facchini A, Liberati A. Conceptual frameworks and empirical approaches used to assess the impact of health research: an overview of reviews. Health Res Policy Syst. 2011;9.
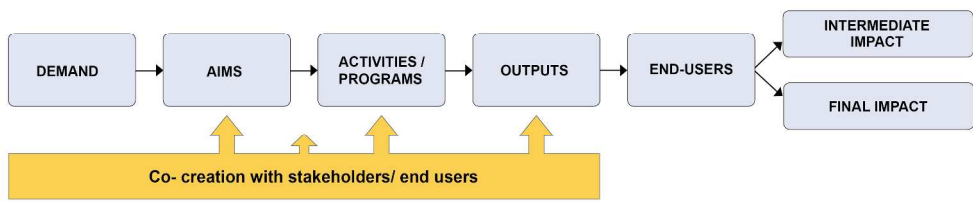
17

CRE-IQI Timeline for Implementation of a Framework to Assess the Impact of Translational Health Research

310x177mm (300 x 300 DPI)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

```
DEMAND → AIMS → ACTIVITIES / PROGRAMS → OUTPUTS → END-USERS → INTERMEDIATE IMPACT
                                                              → FINAL IMPACT
```

Co- creation with stakeholders/ end users

Modified program logic model

297x209mm (300 x 300 DPI)

Hypothetical scorecard for a research project looking at increasing the delivery of cardiovascular risk assessments and follow-up for Aboriginal and Torres Strait Islander people			
Method	**Domain**	**Metric (Planned/potential)**	**Final value (TBC)**
Modified Payback	Knowledge translation	Presentation at a conference Citation index for journal article PhD completions	No. of attendees Citation count No. of completions
	Clinical implementation	Increased delivery of cardiovascular risk assessments (CVRA) to Indigenous adults Increased follow up to reduce cardiovascular risk Reduced complications	No. of CVRA performed No. of follow-up appointments No. of adverse events
	Community benefit	Reduced cardiovascular (CV) morbidity amongst Indigenous adults Reduced cardiovascular mortality amongst Indigenous adults Wellbeing, measure of stress	No. of CV episodes No. of CV deaths Overall wellbeing score
	Policy and legislation	Change in localised or state-based policy on regular delivery of CVRAs for Indigenous adults	Policy change
	Economic impact	Reduced hospitalisations of Indigenous adults for cardiovascular problems Reduced readmissions Shorter lengths of stay Reduced need for at home care Quicker return to work/normal duties	No. of CV hospitalisations No. of CV readmissions Average days in hospital No. of home care visits No. of days off work
Method	**Metric**	**Example**	**Final value**
Economic Assessment	Cost of research	Research budget	Total expenditure
	Cost of doing the CVRAs and follow up	Estimated cost of implementation (increased consultations and medications)	Total health service budget spent on CVRA
	Benefit that can be converted into $ value	Projections of reduced CV episodes, reduced hospitalisations and associated costs avoided for the patient (e.g. time off work)	Total costs avoided
	Cost: benefit ratio	For every $1 spent, the program delivered $X of benefit	To be confirmed (TBC)
Narrative	**Community need:** Aboriginal and Torres Strait Islander (Indigenous) people are disproportionately affected by cardiovascular disease and diabetes. The provision of adequate CVRAs and follow-up are shown to improve patient outcomes. **Research response:** The goal is to increase the provision of CVRAs and follow-up by investigating variations in care to identify factors that may contribute to this variation and address the gaps and barriers to undertaking CVRAs and follow-up. **Research outcome:** Increased provision of CVRAs and follow-up **Research impact:** Reduced CV morbidity and mortality and improved outcomes for Indigenous patients and the community			

Hypothetical scorecard for a research project looking at increasing the delivery of cardiovascular risk assessments and follow-up for Aboriginal and Torres Strait Islander people

173x230mm (300 x 300 DPI)

BMJ Open

Encouraging translation and assessing impact of the Centre for Research Excellence in Integrated Quality Improvement: rationale and protocol for a research impact assessment

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Title page

Encouraging translation and assessing impact of the Centre for Research Excellence in Integrated Quality Improvement: rationale and protocol for a research impact assessment

Authors

Shanthi Ramanathan [1,2] *

Penny Reeves [1,2]

Simon Deeming [1,2]

Ross Stewart Bailie [3]

Jodie Bailie [3]

Roxanne Bainbridge [4,5]

Frances Cunningham [6]

Christopher Doran [4]

Karen McPhail Bell [3]

Andrew Searles [1,2]

Corresponding author *

Dr Shanthi Ramanathan

Hunter Medical Research Institute

Locked Bag 100

New Lambton Heights 2305

Email: shanthi.ramanathan@hmri.org.au

Phone: 61-2-4042-0555

Affiliations

1. Health Research Economics, Hunter Medical Research Institute, Newcastle, NSW, Australia
2. School of Medicine and Public Health, Faculty of Health and Medicine, University of Newcastle, NSW, Australia

1

3. The University of Sydney, University Centre for Rural Health – North Coast, Lismore, NSW, Australia
4. Centre for Indigenous Health Equity Research, School of Health Medical and Applied Sciences, Central Queensland University, Brisbane, Queensland, Australia
5. The Cairns Institute, James Cook University, Cairns, Queensland, Australia
6. Menzies School of Health Research, Charles Darwin University, Brisbane, Queensland, Australia

Word count: 4753 words (excluding abstract, tables, figures, authors contributions and references)

2

ABSTRACT

Introduction:

There is growing recognition amongst health researchers and funders that the wider benefits of research such as economic, social, and health impacts ought to be assessed and valued alongside academic outputs such as peer-reviewed papers. Research translation needs to increase and the pathways to impact ought to be more transparent. These processes are particularly pertinent to the Indigenous health sector given continued concerns that Indigenous communities are over-researched with little corresponding improvement in health outcomes. This paper describes the research protocol of a mixed methods study to apply FAIT (Framework to Assess the Impact from Translational health research) to the Centre for Research Excellence in Integrated Quality Improvement (CRE-IQI). FAIT will be applied to five selected CRE-IQI Flagship projects to encourage research translation and assess the wider impact of that research.

Methods and analysis:

Phase 1 will develop a modified program logic model for each Flagship project including identifying process, output and impact metrics so progress can be monitored. A scoping review will inform potential benefits. In Phase 2 program logic models will be updated to account for changes in the research pathways over time. Audit and feedback will be used to encourage research translation and collect evidence of achievement of any process, output and interim impacts. In Phase 3 three proven methodologies for measuring research impact - Payback, economic assessment, and narratives- will be applied. Data on the application of FAIT will be collected and analysed to inform and improve FAIT's performance.

Ethics and dissemination:

This study is funded by a nationally-competitive grant (ID 1078927) from the Australian National Health and Medical Research Council. Ethics approval was obtained from the University of Newcastle's Human Research Ethics Committee (ID: H-2017-0026). The results from the study will be presented in several peer-reviewed publications, through conference presentations and via social media.

3

Strengths and limitations of this study

- The proposed study uses a comprehensive mixed method four-phase design to validate a framework to encourage research translation and measure research impact.
- The study incorporates a process evaluation to understand users' experience of the framework.
- Measurement of impact uses three proven methods for impact assessment – Payback (modified), economic evaluation and narratives.
- The time lag between translation and impact means impacts may not have been realised at the point of assessment.
- Impact assessment in this study is limited to five research projects rather than the Centre for Research Excellence in Integrated Quality Improvement as a whole programme.

1. Introduction

A substantial amount of health and medical research does not translate, is not implemented by healthcare systems, is not used by end users in policy and practice, and does not create impact. (1) Research translation is the process of knowledge generation and transfer that enables those utilising the developed knowledge to apply it. (2) The definition for 'research impact' modified for the health and medical research context and used in this protocol is *the demonstrable effect from basic, health systems, patient and population-orientated research, and clinical trials, that ultimately improves healthcare delivery, human health and quality of life, and generates benefits for the economy, society, culture, public policy, or the environment*. (3) Any level of suboptimal translation means the returns earned from research investments do not achieve their potential. Further, in terms of the broader fiscal environment, there is a growing demand for more accountability in public spending across all sectors, including health. (4)

A contributor to suboptimal translation and impact is that research translation has not been systematically encouraged and impact measurement beyond academic outputs such as peer-reviewed publications while becoming more common in countries like the United Kingdom (5) is still not standard practice in most other countries.(6) There are a plethora of impact measurement frameworks available and several studies including two recent systematic reviews of these frameworks, models and applications. (7-9) However, there is a lack of evidence to suggest that the availability of these frameworks and models has actually increased the proportion of health and medical research projects that actually measure and report on impact, rather than just outputs. There is growing recognition that translation of research into policy and practice needs to increase and that the pathways to realising impact ought to be more transparent. (10) There have been several studies trialing the use of impact measurement applications in Australia (11-15) but a national framework for measurement of research impact has not yet been implemented. However, there have been major developments in this space. Key initiatives include:

- The Excellence in Research for Australia (ERA) a national framework to examine how universities are translating their research into economic, social and other benefits (13)
- Australia's National Health and Medical Research Council's (NHMRCs) Advanced Health Research and Translation Centres Program (16)
- Medical Research Futures Fund (MRFF) to support translational medical research (17)
- Australian Research Council's development and piloting of a national engagement and impact assessment framework to sit alongside the current ERA (12)
- NHMRC's Centres for Innovation in Regional Health (18)
- Australia's National Innovation and Science Agenda which has dedicated $9million to assess and report on the engagement and impact of university research. (19)

These initiatives confirm that research translation and impact assessment are high on Australia's research agenda and attempts to close the gap between research outputs and impacts will be highly regarded.

In Australia, this need for greater accountability is particularly evident in the area of Aboriginal and Torres Strait Islander (thereafter respectfully referred to as Indigenous Australians) health where health

5

disparities continue between Indigenous and non-Indigenous Australians. (20, 21) There remain serious concerns that Indigenous Australians have been over-researched without corresponding improvements in health outcomes. (22) One reason for this has been the over-abundance of descriptive studies in Indigenous health that, of themselves, rarely translate to changes in policy and practice. A recent systematic review of reviews of Indigenous health and wellbeing research identified knowledge and methodological gaps in documenting Indigenous health research impact and found that not one of the reviews assessed the impact of research nor explicitly referred to research impact. (23) More needs to be done to ensure that Indigenous health research improves the quality of health and health-related services delivered to Indigenous communities and, ultimately, improves the health and wellbeing of the Indigenous community. Consideration of 'value for money' must be a component of determining the success or failure of health and wellbeing programs. Currently, government agency reporting is based largely on inputs and outputs rather than impacts, and the absence of robust and available outcome data has been a significant barrier to assessing impacts. In a debate-style article on the benefits of Indigenous health research, the authors concluded that adopting a benefit-led approach and embedding the assessment of benefit from the outset of the research is a vital pre-requisite to maximizing research impact. (22)

Recognising a need to enhance continuous quality improvement initiatives in Indigenous primary healthcare, the NHMRC funded the Centre for Research Excellence for Integrated Quality Improvement in Indigenous Primary Healthcare (CRE-IQI) from 2015-2019. The vision for the CRE-IQI is to improve Aboriginal and Torres Strait Islander health outcomes by accelerating and strengthening large-scale primary healthcare (PHC) quality improvement efforts. Building on the Partnership Learning Model (24) developed through earlier research, and on innovation platform concepts, the CRE-IQI brings together stakeholders from across different levels of the health system (clinical, policy, service coordination and support) to share and exchange their experiences, knowledge, skills, ideas, and resources to accelerate and strengthen systems-level PHC improvement efforts. A significant portion of CRE-IQI resources are dedicated to the functioning and improvement of the Innovation Platform and cross cutting programs including research capacity-strengthening, strengthening collaboration and research translation. Specifically, a portion of its funding has been allocated to adopting a framework to encourage research translation and assess impact of its research program. The selected Framework to Assess the Impact from Translational health research (FAIT) was developed by a team of health economists and health and medical researchers based at the Hunter Medical Research Institute (HMRI) with the specific aim of encouraging and measuring research translation and impact. The Framework was based on a mixed methods study involving: (1) a scoping review of existing research impact frameworks and techniques to inform the development of FAIT; (2) a development stage to design the prototype and (3) a feedback stage where iterations of the prototype were presented to selected researchers for discussion and refinement.(25) The adoption of FAIT by CRE-IQI presents an opportunity to pilot the framework's implementation and trial its research impact assessment methodology. The framework will be applied to five selected Flagship projects to present transparency to the translation process, provide capacity to improve the speed of translation (when applied prospectively) and ultimately to assess the impact of these research projects (see Table 1 for details of each project).

Table 1 CRE-IQI Flagship projects selected for implementation of FAIT

Project title	Project synopsis	Years in progress	Type of FAIT implementation
Engaging stakeholders in identifying priority evidence-practice gaps and strategies for improvement in primary health care (ESP Project)	The ESP Project brings together the concept of knowledge co-creation and evidence on how to achieve large scale change in quality of care. It engages a wide range of stakeholders in using aggregated continuous quality improvement data to identify priority gaps in care, barriers and enablers and strategies for improvement. [1]	2014-current	Retrospective and prospective
Ongoing collaborative analysis and reporting of data from the Audit and Best Practice in Chronic Disease National Research Project (ABCD Project)	The ABCD Project investigates the variation in quality of care in Indigenous primary health care centres. It also explores the underlying factors associated with variation at the health centre and regional level, examines specific strategies that have been effective in improving primary care clinical performance. This information will be used to work with health service staff, management and policy makers to enhance the effective implementation of successful strategies. [2]		Retrospective and prospective
Quality improvement in Aboriginal primary health care: Lessons from the best to better the rest	This project examines six 'high improving' PHC services within the ABCD cohort to enhance understanding of how contextual factors interact to facilitate the success of continuous quality improvement(CQI) initiatives within a service. The findings will be used to assist striving services to increase their success in implementing CQI initiatives. [3]	2014-2017	Retrospective and prospective
Strategies for improving provision of maternal care for Aboriginal and Torres Strait Islander women	This project aims to use the ABCD data to ascertain which combination of components of pregnancy care have the largest positive impact on birth outcomes. This information will be used to develop a list of essential pregnancy care items, a tool, and accompanying resources for health services to implement these essential care items. The project will also work with stakeholders to further develop strategies to improve maternal health outcomes.	2017-2019	Prospective
Sustainable Family Wellbeing (FWB) Implementation and Evaluation Using CQI Approaches	This project will define and develop implementation mechanisms that support Family Wellbeing empowerment program integration and implementation within family support programs. This includes the development of evidence-informed funding models, mechanisms and sustainable ways of embedding FWB and upscaling proven family support programs and services. [4](26)	2015 - 2019	Retrospective and prospective

[1] Laycock, A., J. Bailie, V. Matthews and R. Bailie (2016). "Interactive Dissemination: Engaging Stakeholders in the Use of Aggregated Quality Improvement Data for System-Wide Change in Australian Indigenous Primary Health Care." Frontiers in Public Health 4(84)

[2] Bailie, R., D. Si, C. Shannon, J. Semmens, K. Rowley, D. J. Scrimgeour, T. Nagel, I. Anderson, C. Connors, T. Weeramanthri, S. Thompson, R. McDermott, H. Burke, E. Moore, D. Leon, R. Weston, H. Grogan, A. Stanley and K. Gardner (2010). "Study protocol: national research partnership to improve primary health care performance and outcomes for Indigenous peoples." BMC Health Services Research 10(1): 129.

[3] Woods, C., K. Carlisle, S. Larkins, S. C. Thompson, K. Tsey, V. Matthews and R. Bailie (2017). "Exploring Systems That Support Good Clinical Care in Indigenous Primary Health-care Services: A Retrospective Analysis of Longitudinal Systems Assessment Tool Data from High-Improving Services." Frontiers in Public Health 5(45).

[4] Bainbridge, R., J. McCalman, K. Tsey and C. Brown (2011). "Inside-Out Approaches to Promoting Aboriginal Australian Wellbeing: evidence from a decade of community-based participatory research." The International Journal of Health, Wellness and Society 1(2)

7

The remainder of this paper focusses on the research protocol of a mixed methods study to document the pathway to translation (including engagement with stakeholders and barriers and enablers of translation) and measure the impact of the five aforementioned projects – all of which are at different stages of the research pipeline. There are four objectives for this study, to:

1. Provide transparency about the pathway to generating research impact
2. Examine process issues associated with the implementation of FAIT
3. Test the feasibility of using FAIT's package of validated impact assessment methodologies
4. Assess the impact of the five Flagship projects

The anticipated outcome of this study will be greater translation of research amongst CRE-IQI associates and others working in this field. It is also anticipated that the study will provide an evidence-based report of the impact of the five CRE-IQI projects and evidence to other health services researchers wishing to implement a framework to encourage greater translation and optimise and measure their research impact.

2.   Methods and analysis

This study involves the application of a specific framework (FAIT) to encourage research translation and measure research impact. (25) The setting will be the CRE-IQI. While the CRE has a Project Coordinating Centre in Lismore, New South Wales, its work is largely carried out through collaborative teams from multiple organisations including community-controlled health services, government health services, policy organisations, universities and research institutions across New South Wales, Queensland, the Northern Territory, South Australia and Western Australia. Participants in data collection will be a mix of researchers and students who are associated with CRE-IQI and collaborators in related fields such as health service staff, clinicians, policy makers, representatives of peak Indigenous health organisations and Indigenous community members.

The study design will involve a four-stage sequential mixed method design, summarized below:

Phase 1: A modified program logic model of the CRE-IQI's five selected flagship research programs will be developed with input from key stakeholders. The models will be developed retrospectively for ongoing research projects and prospectively for newly instigated initiatives. Part of this process will include a scoping review to identify categories of impact that will inform the type of benefits that may be expected to result from research into integrated quality improvement in Indigenous primary healthcare and to identify potential values or sources of value associated with those benefits.

Phase 2: The implementation of FAIT focusing on data collection (process, outcome and impact metrics). This stage will also incorporate a process evaluation to collect participants' perceptions of FAIT and its implementation.

Phase 3: The impact of the five Flagship projects will be measured and evaluated using the package of FAIT methodologies for impact assessment namely Payback(27) economic assessment and case studies. The results will be summarized and presented by way of a scorecard, including narratives describing the process by which the research translated and generated impact.

8

Phase 4: The outcomes of both the implementation of FAIT and the results of the assessment of the five Flagship projects will be compiled. This report will include recommendations for the future implementation of FAIT in Indigenous health research settings.

The approximate timelines for the various activities and key dates are summarised in Figure 1 .

The following sections provide details about the methods for each of these four phases of the study.

2.1 Phase 1

A modified program logic model

The first phase will be the creation of five modified program logic models. (25) One of the modifications to the logic model as used in FAIT relates to the insertion of 'end users' which has the advantage for impact assessment purposes of identifying who will use the research outputs. However, in the context of CRE-IQI, end users are defined as collaborators along the pathway to impact that are both co-creators and co-users of the research outputs, including CQI coordinators, other health service staff, clinicians, policy makers, representatives of peak Indigenous health organisations and Indigenous community members. This definition includes both interim and final users. A further modification is the introduction of process and output metrics in addition to impact metrics to provide greater transparency between the aims and intended impacts of the research. The purpose of the logic models will be to provide a strategic map of how each of the five Flagship projects plan to generate impact. The logic models link community and other needs to the research priorities and activities. These activities should produce an output that when utilized by an end user, creates an opportunity for the generation of impact. While recognizing that translation is a multidirectional phenomenon, this approach provides "line of sight" from need to research to impact (see Figure 2)

The value in articulating these processes in a program logic model gives transparency to how the research producers believe their project will generate impact. The program logic model provides insights about the planned activities, expected outputs and intended impacts. This information is used to determine a series of metrics to measure the project's progress against plans. Process metrics not only allow researchers to determine if the research is going to plan, they are an opportunity to include activities that have, in the literature, been associated with successful translation and the generation of impact. Output metrics help identify when key outputs or products of the research activity have been generated. Impact metrics are measures that reflect the consequence of the research output being used by end users. For example, a new clinical guideline might be the product of a Flagship project but it will need to be used or implemented by clinicians before it can generate impact such as improved patient outcomes.

Data for the given program logic models will be obtained through a series of semi-structured individual and group telephone interviews with key stakeholders from each project and group feedback sessions to ensure all perspectives are covered. For projects that are further along the research pipeline, information obtained from researchers and collaborators will be triangulated against existing documents such as published papers, and other project documents including meeting minutes and progress reports.

9

With the prospective application of FAIT, the modified program logic model will be used to discern the relevant research outputs and to describe the expected impacts when used by the end users. In a retrospective application, it will be used to give clarity to the extent to which research translation and impact were given consideration at the program outset. While the program logic model appears linear within this diagrammatic representation (necessary for the development of a logic model); its application including project development, stakeholder engagement and project refinement are in most part non-linear and iterative in nature. Hence the program logic models will be living documents open to change at all stages of the research to ensure they capture the actual translational pathways to impact.

Scoping review

The development of the program logic models will be informed by a scoping review. The objective of the review will be to identify categories of impact that will inform the benefits that may be expected from research about integrated quality improvement in Indigenous primary healthcare. It will also be used to identify potential values or sources of value associated with those anticipated benefits

The review process will follow the Joanna Briggs Institute (JBI) guideline for scoping reviews. (28) While still methodical, scoping reviews are typically broader in their focus with less restrictive inclusion criteria than systematic reviews. (29) The review will be used to map the key concepts underpinning the measurement of impact on the delivery of health services to Indigenous populations. As outlined in the JBI guideline, a three-step search strategy will be used and a provisional search strategy is described here. Step 1 of the review will be conducted using combinations of the following freetext and MeSH terms in the titles and abstracts of articles from two online databases: Indigenous health research, health services research, continuous quality improvement, integrated quality improvement, research impacts, knowledge generation, health impacts, health outcomes, economic impacts. Step 2 will be an analysis of the text words contained in the title and abstract of any retrieved papers and of the index terms used to describe the articles. A second search will then be undertaken using all identified keywords and index terms across all included databases. Third, the reference list of all identified reports and articles will be hand-searched for additional studies. In this review, literature will be drawn from both economic (i.e. Econlit and JStore) and general health and medical academic databases (i.e. Medline, Embase, CINAHL, Cochrane Database of Systematic Reviews). The searches will also extend to Google Scholar and Google to identify grey literature from government departments, international organisations and research funders including information of potential grey and published literature identified by CRE-IQI members and affiliates during the program logic development phase. The searches will be limited to articles published in English between 1995 and 2017. This timeframe is considered to be appropriate because knowledge translation, a precursor to impact assessment, first gained prominence in the late 1990s.

The data from the review will be charted to record the key information. In line with recommended scoping review guidelines, the charting of results will be iterative. (28, 29) The tabulated results will be accompanied by a narrative aligned to the review objective. The findings will be used to inform the domains of benefit and valuations for inclusion in the Payback and economic assessment of Flagship projects. No formal assessment of the quality of the studies will be undertaken and the results will not be published.

10

2.2 Phase 2

Implementation of the FAIT Framework

Phase 2 of the study will be the implementation of the FAIT framework over the remaining 24 months of CRE-IQI operations until end July 2019. This will entail sharing the program logic models with all CRE-IQI associates, allowing for feedback and modifications to the five models and six-monthly updating of the models including any modifications to expectations and pre-defined activities. Through a process of audit and feedback, Flagship project teams will have the opportunity to assess how they are tracking against their output and impact goals and to refine their research translation and engagement activities to maximize impact. In addition, CRE-IQI associates will be exposed to current thinking around research translation, implementation and impact through CRE-IQI's research capacity strengthening program.

Data collection for this stage of the study will involve a series of online and telephone surveys of CRE-IQI management and associates to elicit their perceptions of FAIT, determine if the framework encourages translational behaviours and how the implementation of the framework can be improved. Participants will also be asked to articulate which aspects of the framework work well and which aspects need refinement.

2.3 Phase 3

Research impact measurement and valuation

Currently, there is no single measurement method capable of capturing the impacts stemming from health and medical research. For this reason, FAIT employs a combination of three integrated but separate proven impact assessment methods: quantified metrics (30) economic assessment (31) and narratives of the process by which the research in question translates and generates impact. Using qualitative project examples, the case studies will be triangulated against the payback and economic assessment to validate the impact of the research in question.

Metrics – modified Payback

The metrics referred to in FAIT are a variation of the methods used in the Payback Framework. (27) Metrics will be organised under broad domains of benefit such as knowledge impacts, impacts on practice, economic impacts, policy impacts and community impacts. Semi-structured interviews and groups discussions with each Flagship project team will be used to generate process, output and impact metrics that will be used to populate the domains of benefit within Payback. These metrics will be structured to support the planned economic assessment. Robust metrics that are contextually relevant to Indigenous health research will be selected with consideration to objectivity, administrative efficiency, transparency and comparability as well as their ability to be verified.

In cases that involve the retrospective application of FAIT, examples of process metrics will include the historical level of engagement with key stakeholders as well as activities that could assist the translation of research outputs through to others in the research pipeline. With retrospective analysis, the metrics may necessarily be constrained to outcome measures selected at the research program outset to

11

measure the efficacy of the research components - for example, changes in organisational systems that support the adoption of CQI within those health services that are involved in translation of findings from *Lessons from the Best.*

Economic assessment

The economic assessment component will entail a comparison of the costs associated with developing and implementing the five Flagship projects versus (where feasible) a calculated value for the expected impact or consequence of the funded research. The descriptive nature of much of the CRE-IQI work will impact on the type of economic assessment that is feasible and useful. The planned assessment will collect, on a case-by-case basis, the resources used to fund the research including non-CRE funding expended on each project prior to the commencement of CRE-IQI. The cost of running the CRE-IQI Program will be appropriately apportioned across the five Flagship Projects (these projects represent the major investment of the CRE), keeping in mind that programs such as the Capacity Strengthening Program benefit a range of other CRE-IQI affiliated projects and partners. Additional costs in utilizing the research outputs of each project will also be included. For example, research that develops a minimum package of pregnancy care content for implementation will have used resources to develop and evaluate the package. Implementation of that package might increase the number of maternal prenatal care consults or diagnostic tests. These consults and tests are additional costs to the health system and can be modelled on the Co-operative Research Council endorsed evaluation framework – the Impact Tool – which uses cost benefit analysis as its foundation. Implementation of that minimum package might also have positive impacts on preterm birth, low birth weight and small-for-gestational age which can be reported as downstream savings to the health system. The appeal in using the tool to guide the economic assessment stems from the emphasis on the logic underpinning the research activity-output-usage-impact chain to give transparency and clarity to the research, which is also at the heart of FAIT. The program logic model will assist in articulating program inputs, expected outputs, uptake and ultimate impact. The total calculated expected costs and benefits will be combined by way of an impact map. Depending on the focus and stage of each Flagship project, three broad steps will be involved in the economic assessment: (1) Identification and measurement of resource use; (2) measurement and valuation of the expected impact, where possible, and (3) comparison of the costs and expected impacts, where possible, in a single metric. Where practical, the analysis will assume a societal perspective to ensure all possible costs and benefits are accounted for. Expected costs and impacts will be reported in net present value terms and streams of projected future costs and benefits will be discounted at a rate of 3 per cent.

(i)　　　　Identification, measurement and valuation of resource use

Guided by the program logic model, resource use pertaining to (a) the development of the research, (b) delivery of any research outputs or interventions, (c) uptake of outputs by end users and (d) health service changes will be identified, measured and valued. The retrospective nature of the application of FAIT to a majority of the Flagship projects will hamper the collection of data to inform many of the costs and benefits. This is especially true for costs incurred as a result of adopting or using the research outputs of each CRE-IQI project.

Resource use associated with development and delivery of the various projects will be costed using financial and administrative records from the respective research teams. Where appropriate, the costs associated with translation of the project findings and outputs will include any costs (including

12

opportunity costs) incurred by the various health service organisations, such as costs related to practice change. As stated above, it will be problematic to collect data to inform these costs retrospectively. However, some attempt will be made to model these costs using administration records and detailed descriptions of uptake obtained from program managers and CQI facilitators to inform the modelling.

Unit costs for health service resource use, where appropriate and available, will be based on the best available data at the time including the Medicare Benefits Schedule (32). Resource use of marketed goods and services outside the health sector will be valued at current market prices. Unmarketed goods and services such as travel time and the time of volunteers will be costed using opportunity cost prices.

(ii)   Measurement and valuation of the expected impact

Impact will be calculated for selected domains from each of the five program logic models. The calculations will be adjusted for risk to give the expected value of the impact. Attribution will be assigned at a conservative rate, the value of which will be informed by administrative and evaluation records and qualified during the researcher and health service staff interviews. Projected valuations will included a 'drop-off' factor to account for waning benefit over time. The sensitivity of the impact calculation to changes in attribution and drop-off will be extensively tested. Any and all assumptions underpinning the analysis will be made explicit in the reporting of the results. The economic assessment will be limited to assessments for which there is existing evidence or for which evidence can be collected.

Narratives (case studies)

The FAIT approach also incorporates the use of illustrative examples or narratives which will be compiled for each Flagship project to describe in more qualitative terms how translation occurred and how research impact was generated for each project.(25) Narratives can be powerful tools for communicating the nature and extent of research translation and, ultimately, research impact. They also enable quantitative findings to be placed in context and are an opportunity to explain variances in research costs, outputs and impacts. Feedback received by the ARC as part of the development of its EI Assessment Framework, indicates that a narrative approach is the most appropriate method to convey information and data on Indigenous research particularly regarding engagement and impact.

Case studies have been the basis of the research evaluation system currently used in the United Kingdom. (5) Within the Payback Framework, case studies are developed retrospectively for selected research projects and used to validate impact data and to provide illustrations of high impact for different Payback categories.(15) In FAIT, narratives are developed progressively along the research pathway and used for describing the often complex pathways for research translation.

In other applications of FAIT, these narratives have also been important vehicles for verifying the consistency of the impact findings generated from the economic assessment and Payback quantified metrics. In this application, it is expected that the narratives are supported with evidence extracted from the quantified metrics and economic assessments and will be informed by interviews at different points along the research pathway with key CRE-IQI researchers and key stakeholders including end users of the research such as health service staff, representatives of peak bodies, government representatives and Indigenous community leaders. It is hoped that the collaborative and prospective

13

approach to the development of the narratives will render them less likely to be impacted by the biases that often characterise case studies based only on self-reports such as selective memory. (33)

2.4　　Limitations

This study is being conducted in a real-world setting which presents some obvious limitations. Impact assessments are resource intensive and although the prospective collection of evidence is more cost-effective, not all the CRE-IQI Flagship projects will allow prospective collection of the required data. Final metrics for the Payback assessment and data for the narratives and economic assessments for each project will be based on what can feasibly be collected versus the ideal list of impact metrics and evidence. The lag between research translation and impact means that valuations may need to be undertaken with reference to interim rather than final impacts. For CRE-IQI Flagship projects that are further along the research pipeline, this constraint will be less problematic compared to projects that have commenced more recently. Conduct of the study in a real world setting means there are no controls (counterfactuals), thus attribution of impact for all five projects will be necessarily conservative. And finally, the FAIT framework is project-based and is being applied (as intended) to a select number of CRE-IQI projects that represent a major investment of the CRE. A limitation, therefore, is that this study will not assess the impact of CRE-IQI as a whole.

2.5　　Phase 4

Reporting and recommendations around the implementation of FAIT

The results, including the narratives, will be summarised and reported by way of a scorecard (see Figure 3 for hypothetical scorecard). This scorecards will form the basis of CRE-IQI reporting of the translation and impact of its five Flagship projects as well as feed into a more comprehensive evaluation of the CRE as an Innovation Platform (the details of which are not covered in this protocol).

The findings from the implementation of the FAIT Framework within CRE-IQI and specifically about its applicability within the Indigenous health research context will be compiled and a workshop with key CRE-IQI researchers and stakeholders will be employed to discuss the findings and to obtain feedback with a view to the final refining of the framework for future use.

3.　　Ethics and dissemination

The implementation of FAIT within CRE-IQI is funded as part of a nationally-competitive grant (Grant ID 1078927) through the Australian National Health and Medical Research Council. The study, as described in this protocol, has received ethics approval from the University of Newcastle's Human Research Ethics Committee (Ethics ID: H-2017-0026). While no participant details will be collected as part of the study, consent will be sought and recorded for each participant and associated organisation.

It is anticipated that the results from the study described in this protocol will be presented in several related publications. The first will focus on the implementation of the framework (development of the program logic) and its evaluation (did it work?). The second will summarise the learnings from the study

14

and present recommendations for improving FAIT. The research impact assessment findings will be presented in a series of publications.

References

1.   Gila N, Glasgow RE, Carpenter CR, Grimshaw JM, Rabin BA, Fernandez ME, et al. A framework for enhancing the value of research for dissemination and implementation. American Journal of Public Health. 2015;105(1):49-57

2.   Rubio D, Schoenbaum E, Lee L, Schteingart D, Marantz P, Anderson K. Defining translational research: Implications for training. Acad Med. 2010;85.

3.   Penfield T, Baker MJ, Scoble R, Wykes MC. Assessment, evaluations, and definitions of research impact: a review. Research Evaluation. 2014;23(1):21-32.

4.   Australian Research Council. Research impact principles and framework 2013 [cited 2017 15 August 2017]. Available from: http://www.arc.gov.au/research-impact-principles-and-framework

5.   Rosenberg G. Research Excellence Framework 2014: Manager's report UK: REF2014; 2015 [cited 2017 15 August 2017]. Available from: http://www.ref.ac.uk/.

6.   Bornmann L. What is societal impact of research and how can it be assessed? A literature survey. J Am Soc Inf Sci Technol. 2013;64.

7.   Deeming S, Searles A, Reeves P, Nilsson M. Measuring research impact in Australia's medical research institutes: a scoping literature review of the objectives for and an assessment of the capabilities of research impact assessment frameworks. Health Research Policy and Systems. 2017;15(1):22.

8.   Raftery J, Hanney S, Greenhalgh T, Glover M, Blatch-Jones A. Models and applications for measuring impact of health research:update of a systematic review for the Health Technology Assessment programme. Health Technology Assessment. 2016;20(76).

9.   Rivera SC, Kyte DG, Aiyegbusi OL, Keeley TJ, Calvert MJ. Assessing the impact of healthcare research: a systematic review of methodological framework. PLoS Med. 2017;14(8).

10.   McKeon S, Alexander E, Brodaty H, Ferris B, Frazer I, Little M. Strategic Review of Health and Medical Research in Australia – Better Health Through Research. Canberra: Commonwealth of Australia, Department of Health and Ageing, 2013.

11.   Kalucy EC, Jackson-Bowers E, McIntyre E, Reed R. The feasibility of determining the impact of primary health care research projects using the Payback Framework. Health Research Policy and Systems. 2009;7(1):11.

12.   Australian Research Council. Engagement and Impact Assessment Canberra: Australian Research Council; 2015 [cited 2017 20 June]. Available from: http://www.arc.gov.au/engagement-and-impact-assessment.

13.   Australian Research Council. Excellence in Research Australia Canberra: Australian Research Council; 2010 [cited 2017 20 June]. Available from: http://www.arc.gov.au/excellence-research-australia.

14.   Cohen G, Schroeder J, Newson R, King L, Rychetnik L, Milat AJ, et al. Does health intervention research have real world policy and practice impacts: testing a new impact assessment tool. Health Research Policy and Systems. 2015;13(1):3.

15.   Donovan C, Butler L, Butt AJ, Jones TH, Hanney SR. Evaluation of the impact of National Breast Cancer Foundation-funded research. Medical Journal of Australia. 2014;200(4):214-8.

16.   National Health and Medical Research Council. Advanced Health Research and Translation Centres Canberra: National Helath and medical Research Council; 2015 [cited 2017 20 June 2017].

15

Available from: https://www.nhmrc.gov.au/research/advanced-health-research-and-translation-centres.

17.   Department of Health. Medical Research Futures Fund Canberra: Australian Department of Health 2015 [cited 2017 20 June]. Available from: http://health.gov.au/internet/main/publishing.nsf/Content/mrff.

18.   National Health and Medical Research Council. Centres for Innovation in Regional Health Canberra: NHMRC; 2016 [cited 2017 20 June]. Available from: https://www.nhmrc.gov.au/research/centres-innovation-regional-health.

19.   Australian Government. National Innovation and Science Agenda Report Canberra: Commonwealth of Australia; 2015 [cited 2017 15 August 2017]. Available from: https://www.innovation.gov.au/page/agenda.

20.   Vos T, Begg S, Stanley L, Lopez AD. Burden of disease and injury in Aboriginal and Torres Strait Islander Peoples: the Indigenous health gap. International Journal of Epidemiology. 2009;38:470-7.

21.   Commonwealth of Australia. Closing the Gap Prime Minister's Report In: Australia Co, editor. Cenberra: Department of the Prime Minister and Cabinet; 2017.

22.   Bainbridge R, Tsey K, McCalman J, Kinchin I, Saunders V, Watkin Lui F, et al. No one's discussing the elephant in the room: contemplating questions of research impact and benefit in Aboriginal and Torres Strait Islander Australian health research. BMC Public Health. 2015;15(1):696.

23.   Kinchin I, Mccalman J, Bainbridge R, Tsey K, Lui FW. Does Indigenous health research have impact? A systematic review of reviews. International Journal for Equity in Health. 2017;16(52).

24.   Bailie R, Matthews V, Brands J, Schierhout G. A systems-based partnership learning model for strengthening primary healthcare. Implementation Science. 2013;8(1):143.

25.   Searles A, Doran C, Attia J, Knight D, Wiggers J, Deeming S, et al. An Approach to Measuring and Encouraging Research Translation and Research Impact. Health Research Policy and Systems 2016;14(60).

26.   Bainbridge R, McCalman J, Tsey K, Brown C. Inside-Out Approaches to Promoting Aboriginal Australian Wellbeing: evidence from a decade of community-based participatory research. The International Journal of Health, Wellness and Society. 2011;1(2).

27.   Buxton M, Hanney S. How can payback from health services research be assessed? Health Services Research Policy. 1996;1(1):35-40.

28.   Colquhoun H, Levac D, O'Brien K, Straus S, Tricco A, Perrier L, et al. Scoping reviews: time for clarity in definition, methods, and reporting. Journal of Clinical Epidemiology. 2014;67(12):1291-4.

29.   Arksey H, O'Malley L. Scoping studies: towards a methodological framework. International Journal of Social Research Methodology,. 2005;8(1):19-32.

30.   Buxton M. The payback of "Payback": Challenges in assessing research impact. Res Eval. 2011;20:259–60.

31.   Buxton M, Hanney S, Jones T. Estimating the economic value to societies of the impact of health research: a critical review. Bull World Health Organ. 2004;82.

32.   Department of Health. Medicare Benefits Schedule: Australian Government Department of Health; 2017 [cited 2017 20 June]. Available from: http://www.mbsonline.gov.au/internet/mbsonline/publishing.nsf/Content/Home.

33.   Banzi R, Moja L, Pistotti V, Facchini A, Liberati A. Conceptual frameworks and empirical approaches used to assess the impact of health research: an overview of reviews. Health Res Policy Syst. 2011;9.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

Authors' contributions:

Shanthi Ramanathan was responsible for writing the first draft of the protocol with significant contributions by Penny Reeves. Simon Deeming, Andrew Searles, Ross Stewart Bailie and Karen McPhail-Bell reviewed and provided comprehensive feedback to the first draft. Jodie Bailie, Frances Cunningham, Roxanne Bainbridge and Christopher Doran reviewed and provided expert feedback to the second draft of the protocol. Jodie Bailie and Andrew Searles undertook final checks and Shanthi Ramanathan finalised the manuscript for submission. AS PR, SD and CD were part of the team that developed FAIT. RSB, JB, AS, SR, FC, CD and RB are part of the CRE-IQI Evaluation team.
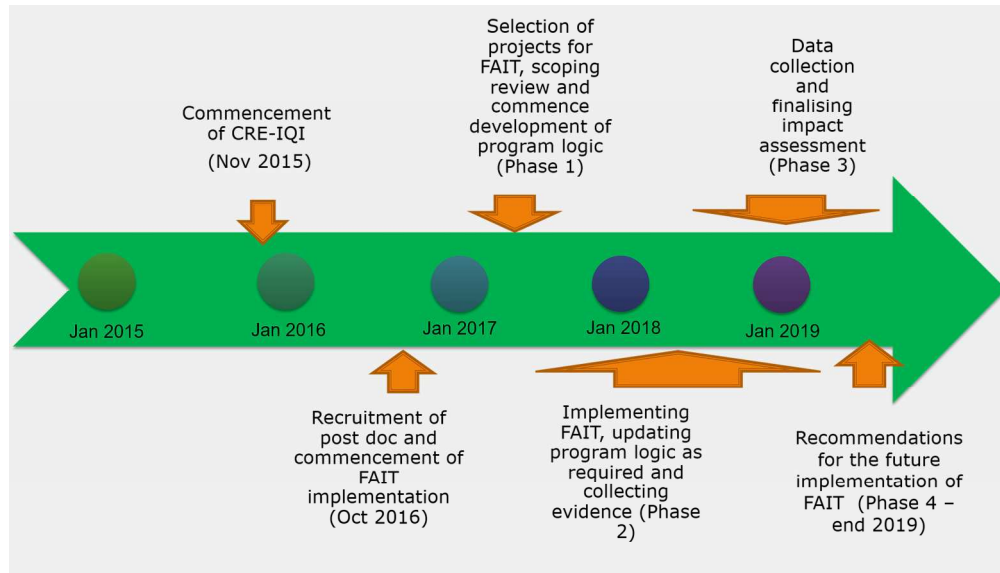
Competing interest statement

The authors have no competing interests to declare.

Figure legends

Figure 1: CRE-IQI Timeline for Implementation of a Framework to Assess the Impact of Translational Health Research. CRE-IQI = Centre for Research Excellence in Integrated Quality Improvement in Indigenous Primary Healthcare. FAIT= Framework to Assess the Impact of Translational Health Research

Figure 2: Modified program logic model

Figure 3: Hypothetical scorecard for a research project looking at increasing the delivery of cardiovascular risk assessments and follow-up for Aboriginal and Torres Strait Islander people

17

CRE-IQI Timeline for Implementation of a Framework to Assess the Impact of Translational Health Research

310x177mm (300 x 300 DPI)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60

| DEMAND | → | AIMS | → | ACTIVITIES / PROGRAMS | → | OUTPUTS | → | END-USERS |

INTERMEDIATE IMPACT

FINAL IMPACT

Co- creation with stakeholders/ end users

Modified program logic model

297x209mm (300 x 300 DPI)

Hypothetical scorecard for a research project looking at increasing the delivery of cardiovascular risk assessments and follow-up for Aboriginal and Torres Strait Islander people
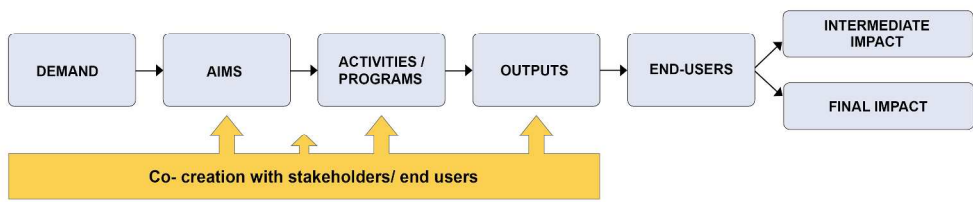
Method	Domain	Metric (Planned/potential)	Final value (TBC)
Modified Payback	Knowledge translation	Presentation at a conference Citation index for journal article PhD completions	No. of attendees Citation count No. of completions
	Clinical implementation	Increased delivery of cardiovascular risk assessments (CVRA) to Indigenous adults Increased follow up to reduce cardiovascular risk Reduced complications	No. of CVRA performed No. of follow-up appointments No. of adverse events
	Community benefit	Reduced cardiovascular (CV) morbidity amongst Indigenous adults Reduced cardiovascular mortality amongst Indigenous adults Wellbeing, measure of stress	No. of CV episodes No. of CV deaths Overall wellbeing score
	Policy and legislation	Change in localised or state-based policy on regular delivery of CVRAs for Indigenous adults	Policy change
	Economic impact	Reduced hospitalisations of Indigenous adults for cardiovascular problems Reduced readmissions Shorter lengths of stay Reduced need for at home care Quicker return to work/normal duties	No. of CV hospitalisations No. of CV readmissions Average days in hospital No. of home care visits No. of days off work

Method	Metric	Example	Final value
Economic Assessment	Cost of research	Research budget	Total expenditure
	Cost of doing the CVRAs and follow up	Estimated cost of implementation (increased consultations and medications)	Total health service budget spent on CVRA
	Benefit that can be converted into $ value	Projections of reduced CV episodes, reduced hospitalisations and associated costs avoided for the patient (e.g. time off work)	Total costs avoided
	Cost: benefit ratio	For every $1 spent, the program delivered $X of benefit	To be confirmed (TBC)

Narrative	**Community need:** Aboriginal and Torres Strait Islander (Indigenous) people are disproportionately affected by cardiovascular disease and diabetes. The provision of adequate CVRAs and follow-up are shown to improve patient outcomes. **Research response:** The goal is to increase the provision of CVRAs and follow-up by investigating variations in care to identify factors that may contribute to this variation and address the gaps and barriers to undertaking CVRAs and follow-up. **Research outcome:** Increased provision of CVRAs and follow-up **Research impact:** Reduced CV morbidity and mortality and improved outcomes for Indigenous patients and the community

Hypothetical scorecard for a research project looking at increasing the delivery of cardiovascular risk assessments and follow-up for Aboriginal and Torres Strait Islander people

173x230mm (300 x 300 DPI)