



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

Chronic Care Service Enhancements Program Evaluation



Final Report

Report prepared by the Health Behaviour Research Group

University of Newcastle

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Abbreviations

ACCHS(s)	Aboriginal Community Controlled Health Services
AH&MRC	Aboriginal Health & Medical Research Council
BMI	Body Mass Index
CAH	Centre for Aboriginal Health
CCSEP	Chronic Care Service Enhancements Program
CEO	Chief Executive Officer
COAG	Council of Australian Governments
CReDDITSS	Clinical Research Design, IT and Statistical Support
DCP	Doctors Control Panel
GP	General practitioner
LHD	Local Health District
MBS	Medicare Benefits Scheme
MD	Medical Director
MOU	Memorandum of Understanding
NACCHO	National Aboriginal Community Controlled Health Organisation
NSW	New South Wales
NHMRC	National Health and Medical Research Council
PenCAT	Pen Clinical Audit Tool
RACGP	Royal Australian College of General Practitioners
SIP	Service Incentive Payment
UoN	University of Newcastle

Executive summary

The New South Wales (NSW) Chronic Care Service Enhancement Program (CCSEP) aimed to reduce the burden of chronic disease amongst NSW Aboriginal people by partnering with Aboriginal Community Controlled Health Services (ACCHSs) to develop, implement and evaluate strategies to improve chronic disease screening and management. An extensive collaborative process was undertaken to develop and implement the evaluation of the CCSEP. The CCSEP evaluation involved NSW ACCHSs, the Centre for Aboriginal Health (CAH) (NSW Ministry of Health), the Centre for Epidemiology and Evidence (NSW Ministry of Health) and the Evaluation Team led by the University of Newcastle.

The CCSEP evaluation aimed to: (i) support ACCHSs' management and clinical staff to identify local priorities in chronic disease prevention and care; (ii) identify best-practice strategies based on current knowledge and experience; and (iii) evaluate these strategies to develop evidence that is useful to ACCHSs, potentially with broader relevance to ACCHSs across NSW.

Through the collaboration, participating ACCHSs identified four priority areas for evaluation: improving **screening** for chronic disease; improving **diabetes management**; improving **data quality**; and improving community **reach** of ACCHSs. ACCHSs selected a range of interventions for each priority area. Separate evaluation frameworks were then developed for each priority area, with individual ACCHSs choosing to participate in their priority area(s) of interest.

Seven NSW ACCHSs participated in the CCSEP evaluation. Of these, five participated in the Screening priority area, six participated in the Diabetes Management priority area and four participated in the Data Quality priority area. Three ACCHSs opted to participate in the Reach priority area, but withdrew prior to commencement, resulting in the abandonment of the Reach priority area. From August 2011 to December 2014, the participating ACCHSs worked in partnership with the CAH and the University of Newcastle led Evaluation Team. The Evaluation Team co-ordinated the evaluation and supported ACCHSs in implementing the agreed upon strategies. System variation across ACCHSs was managed through flexible interventions and implementation plans.

Intervention strategies

Screening

The Screening priority area comprised of a range of organisational change and enhanced care strategies for supporting the integration of preventive screening into usual care for ACCHS clients. These strategies included:

- **Staff training** in screening requirements for diabetes, cardiovascular disease and kidney disease in line with National Aboriginal Community Controlled Health Organisation (NACCHO) guidelines, as well as training in using clinical desktop systems Medical Director (MD) or Communicare for recording screening information
- **Health Assessment templates** for administering patient screening
- **Electronic reminder systems** for supporting opportunistic screening of patients

- **Clinical audit and feedback** to update ACCHSs in relation to screening performance¹ and set goals
- **Shared problem solving**, with ACCHSs encouraged to exchange information about practical steps taken to improve screening performance.

Management

The Diabetes Management priority area included the following intervention components aimed at improving and standardising diabetes care at ACCHSs:

- **A Diabetes Register** for the purpose of tracking and contacting patients with diabetes to attend appointments as necessary
- **Staff training** in diabetes care according to Royal Australian College of General Practitioners (RACGP) guidelines, as well as training in completing diabetes-related information in clinical desktop systems MD or Communicare
- **Clinical audit and feedback** to update ACCHSs in relation to diabetes management and set goals
- **Shared problem solving** with ACCHSs encouraged to exchange information about practical steps taken to improve diabetes care.

Data Quality

The Data Quality priority area sought to determine the level of data accuracy at ACCHSs by comparing data on matching clinical items collected from three different sources including patient self-report using a touchscreen survey; staff audit of clinic records; and Pen Clinical Audit Tool (PenCAT) data extracted from clinic records. To support improvements in data quality, site-specific feedback was provided to ACCHSs in relation to the level of agreement between each set of data, with likely reasons for identified discrepancies discussed. Training in data entry was also provided to ACCHSs as part of the interventions for the Screening and Management priority areas.

Evaluation approach

Screening and Management

A multiple baseline design was used to evaluate the impact of the interventions implemented as part of the Screening and Management priority areas. Interventions were implemented in a phased approach across ACCHSs at three-month intervals from September 2013. Due to time constraints, ACCHSs commenced the interventions in pairs. The outcomes of interest were as follows:

- **Screening:** the proportion of patients with an up-to-date Aboriginal Adult Health Assessment (Medicare Item 715), and the proportion of patients with up-to-date diabetes screening as per national guidelines
- **Management:** the proportion of patients with diabetes receiving diabetes management care in line with best-practice guidelines, and the proportion of patients with diabetes with blood test results meeting recommended levels for optimum diabetes management.

¹ In this report, the term 'performance' is used in relation to local service delivery and data quality, and does not relate to performance-based contractual obligations and reporting requirements to the Ministry of Health.

Routinely collected medical record data were used to assess outcomes within each of the identified priority areas, and tailored PenCAT software was developed to assist ACCHSs with data extraction. Data were collected between March 2013 and December 2014, including 6 months of baseline data prior to the commencement of the interventions. The Evaluation Team provided regular site-specific feedback to ACCHSs based on collected data.

Data Quality

The Data Quality priority area was intended to be implemented using a pre-post design, where data quality of patient records related to chronic disease screening and diabetes management could be assessed before and after the implementation of improvement strategies if ACCHSs elected. Improvement strategies included site-specific feedback reports and staff training in using MD or Communicare. However, due to time and resource constraints at ACCHSs, data were not collected again post-intervention, and the Data Quality priority area was therefore evaluated as a cross-sectional study. Analyses compared the level of agreement between data extracted from clinical audits of MD or Communicare versus PenCAT and patient self-report.

Acceptability of interventions

Towards the end of the evaluation from October 2014 to December 2014, ACCHS staff and patients were invited to provide feedback about the acceptability and implementation of strategies used for the Diabetes Management and Screening priority areas. For the Diabetes Management priority area, the Evaluation Team undertook qualitative interviews with ACCHS staff and patients about the implementation and acceptability of the interventions. Interviews were conducted either face-to-face or via telephone or Skype, using a semi-structured interview guide. For the Screening priority area, ACCHS staff and patients were invited to provide feedback by completing short questionnaires.

Key findings

The CCSEP evaluation demonstrated a number of key findings, including:

1. Significant variation exists across ACCHSs for both preventive health screening rates and management of diabetes.
2. When data for all ACCHSs were combined, the interventions were associated with a statistically significant increase in the proportion of patients being screened for diabetes using random blood glucose measurements.
3. When data for all ACCHSs were combined, there was no significant change in rates of Aboriginal Health Assessments, screening for diabetes using fasting blood glucose measurements, completion of minimum annual cycles of care for patients with diabetes, completion of General Practitioner (GP) Management Plans for patients with diabetes, and patient health outcomes related to recommended goals for optimum diabetes management. However, improvements in these outcomes were observed at some individual sites.
4. Interventions were found to be acceptable to ACCHS staff and patients, with some local modification to suit individual ACCHSs and their patient populations. Importantly, ACCHSs indicated that the evaluation components did not interfere with clinical services.

5. Data accuracy across ACCHSs for most data items is reasonably sound, but improvement is needed in recording of glucose, LDL cholesterol and physical activity. However, limitations of the Data Quality component may limit the accuracy and generalisability of findings.
6. The evaluation demonstrated that robust methodological research design is feasible as part of health services research in Aboriginal health. Indirectly, the evaluation established the stakeholder collaboration, PenCAT software, and an evidence-based quality improvement process that will continue beyond the evaluation phase.

Future directions for service delivery and provision of care

Numerous insights have been attained from this evaluation that will support ongoing improvements in service delivery and provision of care, and assist future research efforts in Aboriginal health. These are summarised below, and presented in more detail in the body of the report.

- Interventions that are system-based and can be readily integrated into usual care offer key opportunities for clinical improvements. Interventions that have been designed to enhance usual care while minimising disruption are likely to be more feasible and acceptable to ACCHSs and patients.
- There is an opportunity to increase the uptake of health check, screening and chronic disease management MBS items in ACCHS settings. System approaches could include mechanisms to make better use of available revenue opportunities.
- Quality feedback loops could be enhanced. For example, feedback could be provided more regularly (potentially monthly), by a central agency or a managed Continuous Quality Improvement network of ACCHSs, and be tailored to highlight relevant information to different stakeholders.
- Clinical improvements could be targeted towards younger adult Aboriginal patients given that these age groups are considerably less likely to receive screening and/or management care in line with evidence-based guidelines.
- Clinical software systems that are Health Level-7 (HL-7) compliant can improve data accuracy. Such systems allow sharing of data across systems, reduce manual data entry (minimising the opportunity for human error) and streamline identification of patients requiring recall for diabetes-related check-ups.
- System-level approaches within ACCHSs for addressing data quality are more effective if well resourced. Priority could be given to data management roles through multi-skilling of workforce for data entry tasks, funding schemes for dedicated staff, and/or regular in-house training on enhanced features of existing software systems.
- Screening activities could be linked with evaluations of treatments and patient outcomes. It is important to determine the standard of care provided to patients who require treatment, and to investigate the extent to which these treatments improve patient outcomes. Future research could aim to identify the types of individuals who are less likely to receive recommended screening and/or management care.

Guide to the report

This report describes the findings of an evaluation of the CCSEP. The body of the report consists of nine chapters, with important supplementary material included in appendices.

Chapter 1 provides an overview of the CCSEP and the evaluation, including the purpose of establishing the CCSEP, the aims of the evaluation, and the underlying principles and objectives which guided the evaluation.

Chapter 2 details the key stakeholder groups involved in the CCSEP evaluation, and describes the process of building a working collaborative and establishing governance arrangements that ensured Aboriginal community control over the evaluation.

Chapter 3 describes the process of planning the evaluation in collaboration with participating ACCHSs, focusing on the consultation process and the principles underpinning the collaboration. This chapter identifies factors that contributed to the success of the collaborative process as well as challenges to the process.

Chapter 4 describes the four priority areas identified by ACCHSs as the focus of the CCSEP evaluation – preventive health screening, diabetes management, improving data quality, and improving the reach of ACCHSs. The chapter outlines the evaluation framework for addressing each priority area including the research aims, design and outcomes measures.

Chapter 5 describes the interventions that were implemented by ACCHSs to address each priority area. This chapter outlines organisational support provided to ACCHSs for the implementation of strategies, including the development of tailored software to facilitate data collection.

Chapter 6 describes the evaluation methods and indicators that were used to assess each priority area, including approaches to data management and statistical analyses.

Chapter 7 presents quantitative data assessing the impact of the interventions for each priority area, detailing outcomes for individual ACCHSs and combined ACCHSs. This chapter identifies specific areas in which improvements were observed over the course of the CCSEP.

Chapter 8 presents qualitative data describing the acceptability of the CCSEP strategies to ACCHS staff and clients, including details about how strategies were implemented at ACCHSs and suggested barriers to and enablers for effective clinical care.

Chapter 9 discusses limitations of the evaluation and offers reflections about factors which may have influenced the extent to which the CCSEP achieved its objectives. This chapter synthesises the evaluation findings and key learnings from the evaluation process to present recommendations and future directions.

Appendices provide additional information related to project governance and data collection tools.

Chapter 1

Background to the evaluation of the Chronic Care Service Enhancements Program (CCSEP)

1. Background to the evaluation of the Chronic Care Service Enhancements Program (CCSEP)

1.1 Background

The significant health disparities between Aboriginal and non-Aboriginal Australians are well established. Chronic conditions including diabetes, cardiovascular disease, kidney disease and chronic respiratory disease are responsible for 70% of the health gap between Aboriginal and Torres Strait Islander people and non-Indigenous people in Disability-Adjusted Life Years, and 59% of excess mortality of Aboriginal and Torres Strait Islander people.¹ The high burden of chronic conditions contributes significantly to the disparity in life expectancy between Aboriginal and non-Aboriginal people life expectancy for Aboriginal men is 10.6 years less than non-Aboriginal men, and Aboriginal women live about 9.5 years less than non-Aboriginal women.²

An estimated 220,000 Aboriginal people live in NSW, which is the largest Aboriginal population of any State or Territory.³ In NSW, more than 50 Aboriginal Community Controlled Health Services (ACCHSs) play an important role in improving the health of Aboriginal people through the provision of culturally competent, holistic and comprehensive primary health care.

Whilst a range of factors contribute to chronic health conditions in Aboriginal people, evidence suggests that by focusing on modifiable risk factors through the provision of primary health care, the burden of chronic diseases can be significantly reduced.⁴

1.2 Overview of the Chronic Care Service Enhancements Program (CCSEP)

The Council of Australian Governments National Partnership Agreement on Closing the Gap in Indigenous Health Outcomes oversaw an investment of \$1.6 billion into a range of initiatives to improve the health of Aboriginal people nationally. In 2010, the NSW Ministry of Health began to roll out Closing the Gap funding under the *Living Well: the NSW Aboriginal Health Chronic Care Initiative* (the 'Living Well Initiative'). The Living Well Initiative aimed to develop, implement and evaluate a range of evidence-based and culturally responsive secondary prevention and chronic disease management initiatives for Aboriginal people in NSW. The target group for the initiative was Aboriginal people aged 15 years and over who were diagnosed with, or are at risk of developing, the chronic conditions of diabetes, cardiovascular disease, chronic respiratory disease, renal disease, musculoskeletal and connective tissue disorders, and malignant cancer.

The Chronic Care Service Enhancements Program (CCSEP) was a key project funded under the Living Well Initiative. Phase 1 of the CCSEP provided enhancement funding to existing health service providers to deliver and evaluate best-practice approaches to reduce the burden of chronic disease among Aboriginal people living in NSW.

The CCSEP aimed to:

- Improve access to, and uptake of, chronic care services by Aboriginal people with chronic disease in primary health care and Local Health District settings
- Enhance the capacity of services to deliver best-practice care for Aboriginal people with chronic disease
- Enhance planning and co-ordination of patient care within and between primary and secondary health services
- Improve the health outcomes of Aboriginal people with chronic disease.

1.3 Aims of the CCSEP evaluation

A comprehensive and rigorous evaluation was embedded within the CCSEP. Generally the CCSEP evaluation aimed to measure the impact of the program on health service delivery, improve health outcomes and contribute towards the development of evidence in Aboriginal health. ACCHSs agreed to participate in the evaluation when securing enhancement funding.

The overall aims of the evaluation were to:

- Support ACCHSs' management and clinical staff to identify local priorities in chronic disease prevention and care
- Identify best-practice strategies to address these local priorities, based on current knowledge and experience
- Evaluate these strategies to develop evidence that is useful to ACCHSs, potentially with broader relevance to ACCHSs across NSW.

1.4 Evaluation overview

In collaboration with the University of Newcastle (UoN) and Centre for Aboriginal Health (CAH), participating ACCHSs identified four priority areas in chronic disease prevention and care to target in the CCSEP evaluation:

- improving **screening** for chronic disease
- improving **diabetes management**
- improving **data quality**
- improving community **reach** of ACCHSs.

ACCHSs selected a range of interventions for each priority area. Separate evaluation frameworks were then developed for each priority area, with individual ACCHSs choosing to participate in their priority areas of interest.

Seven NSW ACCHSs participated in the CCSEP evaluation. Of these, five participated in the Screening priority area, six participated in the Diabetes Management priority area and four participated in the Data Quality priority area. Three ACCHSs opted to participate in the Reach priority area, but withdrew prior to commencement, resulting in the abandonment of the Reach priority area.

ACCHSs adopted a range of organisational change and enhanced care strategies to improve preventive health screening and diabetes management. Interventions were flexible enabling ACCHSs to integrate into usual patient care. Examples include: i) staff training; ii) health assessment templates; iii) reminder/recall systems; and iv) clinical audits.

From August 2011 to December 2014, the participating ACCHSs worked in partnership with CAH and the UoN led Evaluation Team. The Evaluation Team co-ordinated the evaluation and supported ACCHSs in implementing the agreed upon strategies. System variation across ACCHSs was managed through flexible interventions and implementation plans.

The evaluation used a multiple baseline design to assess the impact of the intervention on a range of outcomes related to chronic disease screening and diabetes management. The evaluation was undertaken with a view to developing reliable evidence about the effectiveness of culturally appropriate chronic care service models and/or programs that could be applied to other health services for Aboriginal people.

1.5 Evaluation timeframe

Planning and development of the CCSEP evaluation began in December 2010 and continued up to August 2013. The implementation phase ran from September 2013 to December 2014.

1.6 Principles and objectives guiding the CCSEP evaluation

The CCSEP evaluation was designed to provide information that will improve the health of Aboriginal people in NSW. The evaluation was based on a number of fundamental principles that were discussed and agreed to by all participating ACCHSs as follows:

- **Improved health and delivery of services.** The evaluation outcomes will be used to support improved health and better planning and delivery of health services. ACCHSs identified the benefit of working together and sharing data for the purpose of collaborative quality improvement.
- **Collaborative and consultative process.** All activities undertaken as part of the evaluation occurred in full consultation with and collaboration between participating ACCHSs, CAH, and the Evaluation Team through workshops and both formal and informal communications. This included decision-making about data collection, the implementation of strategies and models of care, the indicators used, analysis, sharing of information, and reporting of Aboriginal health-related information.
- **Respect for management of data and information.** The management of health and health-related information about Aboriginal peoples must be ethical, meaningful and useful to Aboriginal peoples, based on an agreed view negotiated between the relevant parties, and consistent with current guidelines

related to ethics in Aboriginal health research, including Aboriginal Health & Medical Research Council (AH&MRC) Guidelines for Research into Aboriginal Health (2009)⁵ and National Health and Medical Research Council (NHMRC) Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Islander Health Research (2003).⁶ Based on these guidelines, all ACCHSs discussed, negotiated, and agreed to a final version of a Data Governance Protocol (see Appendix 1.1, Data Governance Protocol) before data collection commenced.

- **Building capacity within ACCHSs.** ACCHSs were supported in developing the capacity of staff in evaluating and using data to inform health service delivery. All ACCHSs have the ongoing opportunity to contribute to the development of reports and publications that arise from the evaluation.
- **Methodologically rigorous to provide the best evidence.** The evaluation approach sought to be methodologically sound, and where possible, was consistent across ACCHSs. Standardised indicators were used to provide the strongest level of evidence about the effectiveness of strategies implemented.
- **Efficient data collection methods.** The evaluation sought to utilise existing data collection systems wherever possible to ensure that participation in the evaluation did not place an unnecessary burden on ACCHSs. The utilisation, rather than the collection, of information has therefore been maximised to ensure that data collection was both efficient and cost-effective.
- **Culturally and ethically sound.** All of the activities undertaken as part of the evaluation have been conducted in a way that supports Aboriginal community governance and self-determination, and is constructive and respectful of the autonomy of ACCHSs and the communities they serve. The privacy and confidentiality of Aboriginal peoples and ACCHSs have been protected in accordance with the NSW Ministry of Health Information Privacy Code of Practice, as endorsed by the Privacy Committee of NSW, and any other legislation or guidelines pertaining to the NSW health sector.

Chapter 2

Establishing a working collaborative

2. Establishing a working collaborative

2.1 Participants in the CCSEP Evaluation

NSW Ministry of Health

Two Centres within the Population and Public Health Division of NSW Ministry of Health supported the evaluation. The policy lead, the Centre for Aboriginal Health (CAH), partners with Aboriginal Community Controlled Health Services (ACCHSs) across NSW to deliver a range of health services for Aboriginal people and implements strategies to address health and service delivery disparities between Aboriginal and non-Aboriginal people in NSW. The Centre for Epidemiology and Evidence supports the evaluation of population health and health service policies and programs.

Aboriginal Community Controlled Health Services (ACCHSs)

ACCHSs that secured Chronic Care Service Enhancements Program (CCSEP) funding agreed to participate in the evaluation. ACCHSs worked in partnership with the University of Newcastle (UoN) led Evaluation Team and the Centre for Aboriginal Health to design, implement and evaluate a range of strategies seeking to address the key objectives.

Eight ACCHSs initially agreed to participate in Phase 1 of the CCSEP Evaluation, with seven sites proceeding to the implementation stage. Participating ACCHSs received funding to implement strategies that aimed to increase the accessibility of services, provide early intervention for clients at risk of chronic disease, and improve care co-ordination and management for Aboriginal people with chronic diseases. Each ACCHS directed funding to different strategies including the recruitment of other health professionals (such as Nurse Practitioners, Enrolled Nurses and Aboriginal Health Workers), brokering additional services (such as allied health and specialist services), as well as transport.

ACCHSs participating in the evaluation were:

- Aboriginal Medical Service Western Sydney
- Awabakal Newcastle Aboriginal Co-operative Ltd
- Casino Aboriginal Medical Service
- Coonamble Aboriginal Health Service Incorporated
- Durri Aboriginal Corporation Medical Service
- Galambila Aboriginal Health Service Incorporated
- Orange Aboriginal Medical Service.

Evaluation Team

Through an open competitive tender process, the CAH commissioned a consortium of researchers led by the University of Newcastle to undertake a comprehensive and rigorous evaluation of the CCSEP.

The Evaluation Team was led by L/Prof Rob Sanson-Fisher of the University of Newcastle, and brought together leading researchers from four Universities (University of Newcastle, Open University, University of New South Wales and University of Sydney) with expertise in health behaviour, biostatistics, epidemiology, primary care and health economics. Members of the Evaluation team have extensive experience in the fields of chronic care, primary health care, Aboriginal health, program evaluation and intervention based research. The Evaluation Team provided support to the CAH to implement and oversee the evaluation.

Details of the members of the Evaluation Team are listed in Appendix 2.1, Members of the Evaluation Team.

Within the Evaluation Team, an Executive Group oversaw the day-to-day management of all aspects of the evaluation. This included liaising with all stakeholders to:

- Facilitate the evaluation's development
- Coordinate, monitor and support the implementation of strategies by the Project Delivery Group
- Manage all administrative tasks pertaining to the evaluation, including drafting documents, ethics submissions, data analysis, and reporting.

A Consultative Group liaised with the Executive Group throughout, providing relevant skills and expertise to the project and completing specific tasks as needed. Specific members of the Consultative group were also responsible for overseeing each of the four priority areas in detail.

Within the collaborative framework, the specific roles and responsibilities of participating stakeholders were further defined (see Appendix 2.2, Roles and responsibilities of participating stakeholders).

2.2 Building collaborative relationships with ACCHSs

The National Aboriginal and Torres Strait Islander Health Plan⁷ as well as the NSW Aboriginal Health Plan⁸ emphasise partnership and collaboration as crucial for working to improve the health and wellbeing of Aboriginal and Torres Strait Islander communities. A participatory, integrated and collaborative approach was adopted for the development of the evaluation framework. Advantages of this collaborative approach were:

- Inclusion of priority areas and preferred strategies of the partners
- Interventions grounded in best practice⁹⁻¹¹
- Interventions tailored to the needs of individual ACCHSs and their communities and reflecting their resourcing levels
- Benefits from the sharing of expertise among ACCHSs, researchers and policy makers
- Flexibility in developing and implementing frameworks
- Increased likelihood of translation of the strategies used into policy and practice.¹²⁻¹⁴

To further support collaboration and build capacity within ACCHSs, the Evaluation Team facilitated culturally appropriate professional development workshops as part of the evaluation. These workshops ensured all partners were engaged in all aspects of the project, that feedback was fluent, communication was regular and the project was flexible regarding the changing needs of ACCHS.

Also, in recognising the resource burden involved in evaluation, each ACCHS was provided with funding to reimburse participation in the evaluation. This included project funding to cover on-costs, as well a 0.2 FTE

appointment to assist with data collection and evaluation activities. Developing the evaluation skills of ACCHS staff was achieved through workshops and regular interactions with the Evaluation Team. Support in data collection and opportunities to contribute to publications as outlined in the Data Governance Protocol were also provided (see Appendix 1.1, Data Governance Protocol).

2.3 Governance arrangements to facilitate collaboration

The CCSEP was undertaken as a collaborative effort among ACCHSs, CAH and the Evaluation Team. ACCHSs governed the program, CAH oversaw the CCSEP, and the Evaluation Team managed the evaluation.

Fundamental to the CCSEP aims were efforts by the collaborative to:

- Support ACCHSs' management and clinical staff to identify local priorities in chronic disease prevention and care
- Identify best-practice strategies based on current knowledge and experience
- Evaluate these strategies to develop evidence that is useful to ACCHSs, potentially with broader relevance to ACCHSs across NSW.

Project Working Group

CAH initially established a Project Working Group to oversee and guide the development, implementation, and evaluation of the CCSEP. The functions of the CCSEP Working Group were to:

- Oversee and advise on the development and evaluation of the program and procure an external organisation to implement the evaluation
- Provide expert clinical and operational advice
- Identify any issues with the development and delivery of the projects
- Develop solutions to resolve project management issues.

In the early stages of the CCSEP, the Project Working Group met approximately every six months and comprised members from CAH, Chronic Disease Management Office, and Centre for Epidemiology and Evidence. The Aboriginal Health & Medical Research Centre (AH&MRC) were invited to be members of this group, but decided their involvement would be best through participation at the workshops, scheduled meetings, informal discussions, and input into evaluation documentation.

Group expansion

Following further development of the program and the evaluation plan, leading into the implementation phase, five collaborative groups emerged, both formally and informally, to replace the Project Working Group (see Appendix 2.3, Overview of group membership, role and meeting frequency).

A diagrammatic representation of the governance model is shown in Figure 2.1 below.

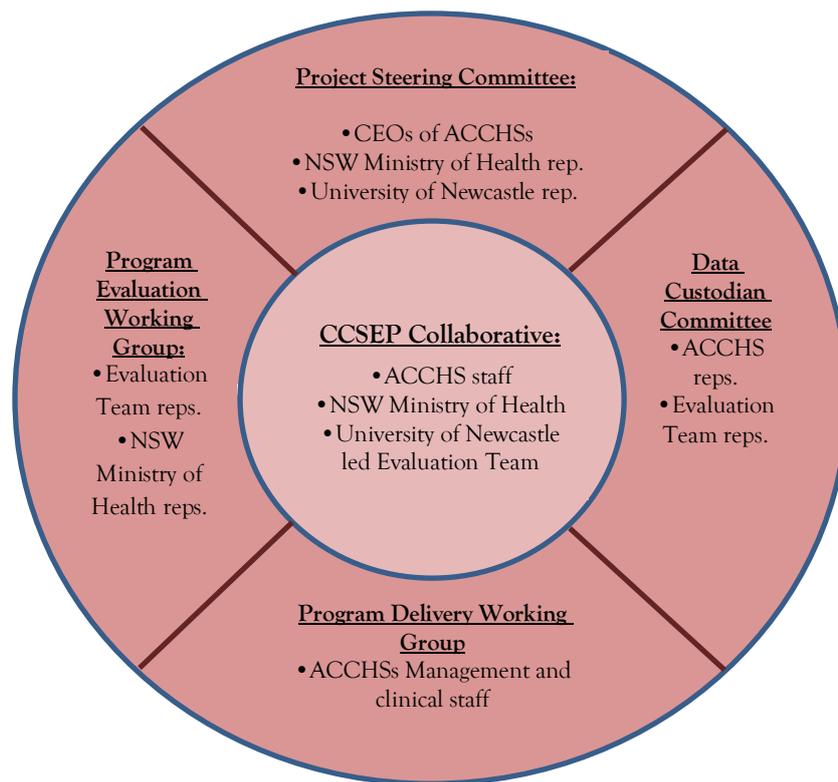


FIGURE 2.1 CCSEP GOVERNANCE STRUCTURE

Data Governance Protocol and Memorandum of Understanding

In consultation with participating ACCHSs, the Evaluation Team and CAH developed a Data Governance Protocol (the ‘Protocol’) that described all key issues and considerations regarding the collection, storage and use of data for the evaluation. This Protocol outlined clear community governance, ownership and protection of ACCHS data, and documented agreement on information sharing and publication (See Appendix 1.1, Data Governance Protocol). The Protocol followed the NSW Aboriginal Health Information Guidelines (1998)¹⁵ and was guided by other data governance protocols^{16 17} that ACCHSs and the AH&MRC identified as exemplary for community control and protection of data.

The Protocol includes clarification of the roles and responsibilities of participants with respect to:

- Data collection
- Access to, and use and sharing of data arising from the evaluation
- Data ownership and custodianship of information
- Consent
- Storage, confidentiality and storage of data.

Additionally, a Memorandum of Understanding (MOU) was established to formally outline the roles of participating ACCHSs and the University of Newcastle to ensure that the CCSEP evaluation was run as an effective collaboration that serves the interests of ACCHSs (see Appendix 2.4, Memorandum of Understanding). It was agreed that the University of Newcastle would not receive data from ACCHSs without the consent of each Chief Executive Officer (CEO) or Board as indicated by a signed MOU agreement. Participating ACCHSs provided signed MOUs prior to forwarding any data.

2.4 Aboriginal community control in governance and decision-making

Governance of the evaluation followed the key principles set out in current guidelines including the *AH&MRC Guidelines for Research into Aboriginal Health (2009)*,⁵ the *NHMRC Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Islander Health Research (2003)*,⁶ and *NSW Aboriginal Health Information Guidelines (1999)*.¹⁵

Aboriginal community control in regard to governance and ongoing decision-making was present for all aspects of the evaluation, including the design and conduct of the intervention strategies. Aboriginal community control over ownership and interpretation of the data, and the reporting and publication of findings was agreed to as part of the consultative process [See Chapter 3] and was a fundamental feature of the evaluation (see Appendix 1.1, Data Governance Protocol).

The CAH and/or Evaluation Team adopted the following approach to ensure Aboriginal community control during evaluation planning, development and implementation.

<p>Collaboration. Through collaborative workshops and teleconferences, initial discussions with all ACCHSs occurred to ensure ACCHS management and staff guided the evaluation concept and priority areas in chronic care service delivery that ACCHSs were interested in evaluating.</p>
<p>Progress updates. ACCHSs were provided with regular progress updates on actions decided at the workshops including all the information and explanations on the content, processes and methodology for the evaluation and timeframes for implementation.</p>
<p>ACCHS feedback. The Evaluation Team provided all draft documentation to gain input from ACCHSs as it was developed, provided additional information to ACCHSs when requested, and held teleconferences with ACCHSs to discuss any further issues.</p>
<p>Formal consent. The CAH obtained formal consent from the CEO of each ACCHS to participate in the evaluation in accordance with information outlined in the <i>AH&MRC Guidelines for Research in Aboriginal Health (2009)</i>.⁵</p>
<p>ACCHS guidance. The Evaluation Team ensured the appropriate cultural protocols and procedures were in place throughout the evaluation development by providing opportunity at each teleconference or workshop for ACCHSs to guide development and raise any issues. The Evaluation Team also conducted process evaluations on the acceptability of the development process as perceived by ACCHS representatives. This provided further opportunity to raise any issues.</p>
<p>Data Governance Protocol and Memorandum of Understanding. The Data Governance Protocol and MOU, which formally acknowledge Aboriginal community control of the evaluation, were developed in consultation with and approved by ACCHSs.</p>
<p>Tailoring interventions. Working with individual ACCHSs provided the opportunity for sites to adapt implementation plans to meet their specific needs. The intervention packages for some evaluation components acknowledge that there are differences in the populations, staff numbers and expertise within each ACCHS. Sites have been able to identify their own areas for potential improvement and guide training towards addressing these specific areas.</p>

Feedback from ACCHSs. Feedback was sought from ACCHSs throughout the CCSEP evaluation. To assist with implementation, written materials outlining the Screening and Management intervention packages were distributed to ACCHSs in July 2013. Follow-up phone calls were made to each site to obtain feedback, with all sites indicating their approval for the packages as presented. Mock data analyses for Screening and Management were presented to ACCHSs to help establish a useful format for presenting analyses to ACCHSs. Practical feedback was obtained from the first site to implement the Data Quality component that was used to help prepare other sites for implementation.

Consent to access data. Further to the formal approval from CEOs and Boards, which indicated a willingness to participate in the CCSEP evaluation, additional formal approval was also sought from ACCHSs in relation to the Governance Data Protocol and a derived MOU between each ACCHS and the Evaluation Team for accessing and using data. The MOU was signed by the CEOs of respective ACCHSs and the lead investigator of the Evaluation Team before any data were provided to the Evaluation Team.

Data Custodian Committee. The Data Custodian Committee was established to monitor and oversee adherence to the responsibilities of data custodianship as outlined in the Data Governance Protocol. The members comprised four staff representatives from four ACCHSs, as well as three members of the Evaluation Team. Other ACCHSs declined invitations to appoint representatives to the committee. Upon the establishment of the Data Custodian Committee, a Terms of Reference was discussed, and subsequently drafted and distributed to Committee members for approval.

Chapter 3

Collaborative planning, development and implementation of the evaluation

3. Collaborative planning, development and implementation of the evaluation

3.1 Collaborative planning

An extensive consultation process was undertaken to develop the Chronic Care Service Enhancements Program (CCSEP) evaluation framework. This process involved all key stakeholders including the participating Aboriginal Community Controlled Health Services (ACCHSs), the Evaluation Team, and the Centre for Aboriginal Health (CAH). Fundamental to the evaluation aims were efforts by the collaborative to:

- Support ACCHSs' management and clinical staff to identify local priorities in chronic disease prevention and care
- Identify best-practice strategies based on current knowledge and experience
- Evaluate these strategies to develop evidence that is useful to ACCHSs, potentially with broader relevance to ACCHSs across NSW.

A detailed summary of the consultation process is included in Appendix 3.1, Summary of the consultation process. Ensuring the cultural competency of the evaluation was a priority for the CAH and the Evaluation Team. It involved an ongoing process of guidance from ACCHSs, regular feedback, listening and checking-in throughout the evaluation. From the early stages of development, decision-making was collaborative among ACCHSs, the CAH and the Evaluation Team. ACCHSs decided whether they would participate in an individual evaluation as part of the CCSEP, or work with other ACCHSs to evaluate strategies using a collaborative quality improvement model.

Participating ACCHSs worked together during the initial planning workshops to identify which areas they wanted to evaluate, and drew on each other's experience to propose what they felt were the most effective strategies for improving service delivery and health outcomes. Once these were properly defined, each ACCHS decided which strategies they wanted to be involved in for the evaluation.

Practices guiding the consultation

The consultation was planned and managed to maximise the opportunity for engagement among service representatives, members of the Evaluation Team, and the CAH. To facilitate meaningful interaction between participants and ensure all workshop activities adhered to the overriding principles previously established for the CCSEP Evaluation, the following practices were applied to proceedings:

- **Open discussion.** Presentations adopted a flexible, semi-structured format which encouraged open discussion. Table seating was arranged in a U-shape with a presentation screen displayed at the open end of the room. This layout ensured face-to-face interaction and facilitated ongoing exchanges of dialogue. Presenters and non-presenters alike instigated discussions at various stages throughout the process.
- **Sharing of ideas and experiences.** There was a clear willingness from service representatives to speak about their particular circumstances, including details of how their respective sites are managed. As a result, some common experiences were identified which led to agreed changes to the evaluation plan. Service representatives reported different experiences and approaches for other areas, which required tailored consideration.

- **Consensus seeking.** All decisions were made by group consensus. To facilitate this process, a research assistant typed a running summary of the various issues under consideration as they were discussed. This information was displayed on the presentation screen whenever decisions needed to be made. Participants were then asked to indicate their preferences, either by a show of hands or by verbal acknowledgement.
- **Recognition of best-practice.** To ensure an evidence-based evaluation, workshop materials were based on 'best-practice' guidelines as recommended by the National Aboriginal Community Controlled Health Organisation (NACCHO)/Royal Australian College of General Practitioners (RACGP).^{9 10} Overall, the service representatives welcomed these evidence-based standards as a benchmark for evaluation. However, adherence to these guidelines was also balanced against the practical realities of how services were equipped to manage patient care.
- **Seeking service feedback.** The pursuit of benefit to services was the leading priority of the workshop activities. Feedback was continually sought from service representatives about the proposed intervention strategies and planned outcome measures. Consideration was given to practical issues expressed by the service representatives (e.g. feasibility of implementing strategies), as well as the value of data being sought.

As a result of workshop discussions, a variety of issues were identified and addressed in relation to the four evaluation proposals and their planned implementation.

Consultation process during planning, development and implementation

A stepped approach to collaboration was employed, as outlined below (a detailed summary of the consultation process is also included in Appendix 3.1, Summary of the consultation process). In the early phases of the evaluation, collaboration occurred in a larger group with representatives from all participating ACCHSs, the CAH (NSW Ministry of Health) and the Evaluation Team. As the evaluation progressed, collaboration funneled down to the smaller groups involved in each evaluation priority area, and finally to individual ACCHSs to ensure the specific needs and capacities of each were being supported.

Step 1: Workshops. To facilitate collaboration among the CCSEP partners in planning processes, a series of workshops were conducted in which all aspects of the CCSEP and its evaluation were addressed in an open forum. There was good engagement from all participating groups despite initial uncertainty about the degree of collaboration that would be achieved. The four workshops held during 2011 and 2012 were vital for developing shared views about which items to measure as part of the evaluation. These workshops also provided ACCHSs with the opportunity to collaborate while still maintaining autonomy, as each ACCHS was able to select which priority areas to participate in. Throughout the series of workshops, the Evaluation Team drafted an evaluation framework which was iteratively developed and refined to reflect ACCHSs' preferences for the evaluation.

Step 2: Small working groups. Following the development of the evaluation framework, small working groups, which included representatives from participating ACCHSs and the Evaluation team, were established to oversee the development and implementation of each intervention. These groups provided opportunities for participants to review intervention plans, resolve any outstanding issues from the workshops, prepare ACCHSs for implementation and allow ACCHSs to identify any support needs for their participation.

Step 3: Feedback from ACCHSs. To assist with implementation, written materials outlining the agreed interventions and implementation plans were distributed to ACCHSs prior to commencing data collection. The Evaluation Team made follow-up phone calls to each ACCHS to obtain feedback, with all ACCHSs indicating their approval for the implementation plans as presented. Mock data analyses were presented to

ACCHSs for feedback and to help establish a useful format for presenting analyses. The first ACCHSs to start the implementation provided practical feedback that was used to prepare implementation plans for subsequent ACCHSs.

Step 4: Shared experiences. ACCHS representatives valued the process of sharing experiences among ACCHSs and collective problem solving. Therefore, this aspect of collaboration was integrated into the implementation phases for any ACCHSs wishing to continue sharing ideas and experiences about the practical aspects of implementing the approved strategies.

Step 5: Working with individual ACCHSs. The Evaluation Team worked with individual ACCHSs to address the specific needs of each ACCHS and support implementation of the interventions. The practical needs and circumstances of each ACCHS were discussed, with implementation plans arranged to be flexible in relation to time-frames, how the evaluation of each priority area would interact, and various other site-specific issues. Working with individual ACCHSs provided the opportunity for ACCHSs to adapt implementation plans to meet their specific needs. Implementation plans for each ACCHS were tailored to meet the needs of each service, taking into account the intervention strategies and evaluation protocols to be used within the site.

Step 6: Feedback to ACCHSs. The Evaluation Team gave regular site-specific feedback to ACCHSs about the analyses. ACCHSs were able to identify their own areas for potential improvement and guide training towards addressing these specific areas.

Practical feedback from ACCHSs about their experience of implementing the various enhancement strategies was key to helping prepare subsequent ACCHSs for commencement, establishing expectations of staff, and making slight alterations to the instructions provided.

3.2 Challenges to the collaborative process

Whilst the collaborative process proved successful, several challenges and limitations were experienced during the planning, development and implementation phase as follows:

Developing shared views takes time. The four workshops proved vital for the consultation process and developing shared views about the evaluation components, intervention strategies and measured outcomes. However, the time and resources needed to enable such collaboration were significant.

Complexity of clinical guidelines. The clinical guidelines in relation to standards of care for Aboriginal people widely lack consensus and understanding. This lack of clarity complicated efforts to gain agreement about which items the evaluation should target and how they should be measured, which prolonged the process of evaluation development.

Ethics delays. The time taken to gain ethics approval took considerably longer than anticipated due to the extended discussions to resolve agreement on partners listed for the purposes of the application. This significantly delayed the evaluation and affected the collaborative momentum of the study.

Timing of resource provision. Given the delays that occurred during the development stages, ACCHSs were utilising enhancement funds for a significant period prior to the commencement of the evaluation. This meant that some of the agreed interventions were implemented prior to evaluation, which limited the extent to which the CCSEP could be rigorously evaluated.

Staff turnover. Numerous changes to key staff at ACCHSs occurred throughout the evaluation, creating challenges for ongoing collaboration, implementation of strategies and data collection.

Formal communication frameworks. Whilst emails, phone calls, teleconferences and videoconferences occurred throughout the study, there was a lack of consistency of formal communication channels to

inform the wider group of progress. Initiatives such as a Webpage and a regular newsletter were either not introduced or not maintained as originally planned.

Key learnings

- An extensive collaboration process is essential for engagement and effective participation of ACCHSs in research
- Culturally appropriate activities and respect for data management are fundamental aspects of health services research in Aboriginal health
- Effective collaboration underpins methodological rigour and data collection
- Opportunities for feedback from ACCHSs throughout the evaluation helps to consolidate and refine the study design
- Challenges and limitations during planning and development, such as ethics delays and timing of resource provision, need to be accounted for in study design
- Staff turnover can significantly impact the collaborative process
- Formalised communication frameworks (e.g. newsletters) would help maximise the collaborative process and efficiency of the evaluation.

Chapter 4

Developing the evaluation framework

4. Developing the evaluation framework

4.1 Identifying local priorities in chronic disease prevention and care

While services initially proposed to implement a diverse range of strategies when applying to Centre for Aboriginal Health (CAH) for funding, as a result of the consultation process, common themes were identified across the submitted proposals. These included a desire to increase the accessibility of services, provide early intervention for clients at risk of chronic disease, and improve the care co-ordination and management of Aboriginal people with chronic diseases. As part of the collaborative process outlined previously, all Aboriginal Community Controlled Health Services (ACCHSs) agreed that data quality was important for the accuracy of the evaluation and for quality improvement processes.

As a result of the collaborative process, ACCHSs identified four key areas for the evaluation.

Key areas for evaluation identified by ACCHSs:

- Improving preventive health screening by increasing the number of patients who have Aboriginal Health Assessments (Medicare item 715) and screening for diabetes in line with evidence-based guidelines **[Screening]**
- Improving management of diabetes by improving the number of diabetic patients who are managed according to best-practice guidelines **[Diabetes Management]**
- Improving data quality by improving the recording of health information in patient information management systems in order to increase the accuracy of service level data for quality improvement processes **[Data Quality]**
- Improving the reach of ACCHSs by increasing the number of Aboriginal people who a) access the service for the first time; and b) re-engage with the service after a period of non-attendance **[Reach]**

Of the seven participating ACCHSs, five participated in the Screening component, six participated in the Diabetes Management component and four participated in the Data Quality component of the Chronic Care Service Enhancements Program (CCSEP) evaluation. An overview of each of the evaluation strategies is presented at the end of this Chapter in Table 4.2.

Screening

Chronic disease is a major contributor to the poor health experienced by Aboriginal Australians.^{1,2} Improving screening and early detection of chronic disease is important for improving the health of Aboriginal people.

In 2004, the Australian Government implemented the Adult Health Check to tailor general practice visits to the needs of Aboriginal and Torres Strait Islander people and improve preventive health screening consistent with evidence-based guidelines. Adult health checks involve assessment of a patient's health and physical,

psychological and social function and providing advice and education to patients. A medical practitioner must complete the Medical Benefits Scheme (MBS) health assessment. Other registered health professionals, including practice nurses and Aboriginal Health Workers, may assist medical practitioners in information collection and at the direction of the medical practitioner, provide patients with information about recommended interventions. MBS health assessments (MBS Item 715) are available to all people of Aboriginal and Torres Strait Islander descent, with assessments divided into age categories: <15 years; 15-54 years; and 55 years plus. Health assessments are to be completed annually (but not more than once in a 9-month period).

The Aboriginal Health Assessment is a fundamental tool for determining a patient’s overall health status. Health assessments benefit patients by increasing preventive health opportunities, detecting chronic disease risk factors, and enabling better management of chronic disease. MBS health assessments (MBS 715) are also important for ACCHSs as they attract a MBS rebate of \$212.25 per eligible patient. Despite these benefits, usage rates of MBS 715 are typically low. In NSW from July 2013 until June 2014, there were 41,968 instances of service provision using MBS 715 representing a state-wide usage rate of 19%.¹⁸ The national usage rate during this period was similarly low at 21.1%.¹⁸ Some recognised barriers to conducting MBS health assessments include the time needed to conduct, lack of understanding on the part of clinician and lack of confidence in asking sensitive questions.¹⁹

The Screening component aimed to examine the effectiveness of an ‘organisational change’ strategy at increasing preventive health screening among patients by:

- Increasing the number of clients who have a Health Assessment for Aboriginal and Torres Strait Islander People (MBS item 715).
- Increasing the number of clients who are appropriately screened in line with evidence-based guidelines for diabetes.

Diabetes management

Diabetes is an important cause of coronary heart disease²⁰ and renal failure in Aboriginal people.²¹ The AIHW National Mortality Database shows that death rates related to diabetes are three times higher among Aboriginal people compared to non-Aboriginal people in Australia. The prevalence of diabetes in Aboriginal people is higher than that in the non-Aboriginal population. One study found that the incidence of diabetes in Aboriginal people is nearly four times higher than for the non-Aboriginal population and 50% higher than the incidence reported 10 years ago in Aboriginal people.²² In order to ‘Close the Gap’ in health outcomes between Aboriginal and non-Aboriginal people, it is important that diabetes care for Aboriginal patients is improved.

People with diabetes may achieve better health outcomes if this disease is well managed. An annual cycle of care is a set of steps general practitioners (GPs) can undertake with patients to clinically manage diabetes according to national guidelines.¹⁰ Service Incentive Payments (SIP) from Medicare are available to GPs upon completion of the minimum requirements for an annual cycle of care (see Table 4.1) within a period of 11 to 13 months.

TABLE 4.1: MINIMUM REQUIREMENTS OF THE ANNUAL DIABETES CYCLE OF CARE

Activity	Frequency and description
Assess diabetes control by measuring HbA1c	At least once
Carry out a comprehensive eye examination	The patient must have had at least one comprehensive eye examination over the current and previous cycle of care. The examination isn’t needed if the patient is blind or doesn’t have both eyes.
Measure weight and height and calculate Body Mass Index (BMI)	Measure height and weight and calculate the BMI on the patient’s first visit and weigh them at least twice more
Measure blood pressure	At least twice

Activity	Frequency and description
Examine feet	At least twice. This isn't needed if the patient doesn't have both feet.
Measure total cholesterol, triglycerides and HDL cholesterol	At least once
Test for microalbuminuria	At least once
Measurement of the patient's estimated Glomerular Filtration Rate (eGFR).	At least once
Provide self-care education	Provide patient education about diabetes management
Review diet	Review the patient's diet and give them information on appropriate dietary choices
Review levels of physical activity	Review the patient's physical activity and give them information on appropriate levels of physical activity
Check smoking status	Encourage the patient to stop smoking
Review medication	Review patient's medicine

Table sourced from: <https://www.humanservices.gov.au/health-professionals/services/medicare/practice-incentives-program>.

The Management component aimed to examine the effectiveness of an 'enhanced care' strategy to improve diabetes management for ACCHS clients according to best-practice guidelines by examining the number of Aboriginal patients with confirmed diabetes who:

- Had a GP Management Plan developed and updated annually
- Received the complete annual cycle of care recommended in the Royal Australian College of General Practitioners (RACGP) guidelines¹⁰
- Had clinical indicators within the target ranges recommended in the RACGP guidelines.¹⁰

Data Quality

Many of the outcomes explored in the CCSEP evaluation rely on data recorded in Medical Director (MD) and Communicare that are then extracted via the data extraction software Pen Clinic Audit Tool (PenCAT). Most participating ACCHSs also regularly use PenCAT data for reporting their activities and to support funding applications. These activities are best supported by electronic health information which adheres to Health Level-7 (HL-7) standards. HL-7 is a commonly used set of rules that allows clinical information to be processed and exchanged in a standardised format. Experience from the collaborative group suggested that PenCAT might under-report the true activities of a service due to:

- Health care providers not recording some aspects of the consultation into MD or Communicare (e.g. whether they asked about smoking status)
- Health care providers recording items in a way that PenCAT does not recognise or is unclear (e.g. recording a diabetes diagnosis as free text rather than in dedicated fields/menus or recording a diabetes diagnosis without indicating the type of diabetes)
- Difficulties with the format (non-HL7) of uploaded data on blood tests from some pathology laboratories.

The data quality component aimed to identify the amount or proportion of 'missing' information for each service when relying on PenCAT as the outcome measure, so that decisions could be made about how best to

address data quality issues to produce reliable and valid data both for the evaluation and for each service's ongoing reporting needs. The Data Quality component had the following specific aims:

- Establish how accurate the data extracted from PenCAT is at each participating ACCHS
- Identify which aspects of data recording can be improved at each service
- Provide site feedback to ensure recording of data is as accurate as possible. Training in the use of MD or Communicare systems, including on how to correctly enter data into appropriate fields to allow PenCAT extraction, was also provided under the Screening and Management strategies. Due to time and resource constraints at ACCHSs, the impact of the site-specific feedback and training on improving data quality was not assessed.

Reach

Access to the culturally appropriate and effective health services provided by ACCHSs is a critical contributor to improving the health of Aboriginal Australians in at least two ways: preventing the development of disease risk factors in Aboriginal communities; and providing ongoing monitoring and management of existing patients. ACCHSs currently implement strategies aimed at increasing access to their services by engaging and screening people in the community and by monitoring and following up their existing patients. The effectiveness of these strategies, however, is yet to be quantified. This knowledge gap makes it difficult to recommend to ACCHSs the most cost-effective strategies for increasing access to their services. The Reach component therefore aimed to:

- Assess the effectiveness of strategies to improve access to ACCHSs by people in the community
- Re-engage patients who have not been to the ACCHS more than twice in the last 24 months.

4.2 Identifying intervention strategies

Five principles guided the development of the interventions, agreed to by all at during the workshops:

- Culturally appropriate and ethically sound.** It was vital that research activities were guided by the values that are identified by Aboriginal peoples as central to maintaining respect for their culture and beliefs. A key principle underlying the development of the evaluation framework was a consultative process involving key stakeholders in the development and selection of the chronic disease enhancement strategies so that they comply with National Health and Medical Research Council (NHMRC) and Aboriginal Health & Medical Research Council (AH&MRC) principles and guidelines.^{5 6 23 24}
- Evidence-based.** There have been relatively few high quality studies to evaluate chronic disease strategies in Aboriginal populations. Therefore, it was suggested that evidence derived from other chronic disease settings and populations should be used to inform the selection of strategies.
- Potential for broad adoption.** In order to maximise the chance of improving outcomes for Aboriginal people across NSW, strategies should have the potential to be implemented in any ACCHS if found effective.
- Practical and feasible to implement within the timeline and funding.** It was important that strategies were able to be feasibly implemented within the timeline and funding of CCSEP.

- v. **Strategies can be replicated.** It was important that the chosen treatment approaches were described well enough and followed throughout the evaluation period so that other groups could replicate the study design.

4.3 Finalising intervention strategies

Once the various strategies for the four priority areas were developed and agreed to by the participating ACCHSs, the Evaluation Team began working with sites to determine specific implementation plans. To facilitate this, the following process was undertaken.

Shared experiences. ACCHS representatives valued the process of sharing experiences among ACCHSs and collective problem solving. Therefore, this aspect of collaboration was integrated into the implementation phases for any ACCHSs wishing to continue sharing ideas and experiences about the practical aspects of implementing the approved strategies.

Working with individual ACCHSs. To facilitate implementation, the Evaluation Team worked with individual ACCHSs to address the specific needs of each ACCHS and support implementation of the interventions. The practical needs and circumstances of each ACCHS were discussed, with implementation plans arranged to be flexible in relation to time-frames, how the evaluation of each priority area would interact, and various other site-specific issues. Working with individual ACCHSs provided the opportunity for ACCHSs to adapt implementation plans to meet their specific needs. Implementation plans for each ACCHS were tailored to meet the needs of each service, taking into account the intervention strategies and evaluation protocols to be used within the site.

Feedback to ACCHSs. The Evaluation Team provided regular site-specific feedback to ACCHSs about the analyses. ACCHSs were able to identify their own areas for potential improvement and guide training towards addressing these specific areas.

An overview of the evaluation strategies, detailing strategy aims, design, interventions and outcome measures, is given in Table 4.2 below.

TABLE 4.2: OVERVIEW OF CCSEP STRATEGIES

Strategy 1 Improving the Reach of ACCHSs	Strategy 2 Improving preventive health screening	Strategy 3 Improving the management of diabetic patients	Strategy 4 Improving data quality
<p>Aims Improve access to ACCHSs by people in the community; Re-engage inactive patients who have not been to the ACCHS for a while</p>	<p>Aims Increase number of ACCHS clients who have a Health Assessment; Increase appropriate screening for diabetes, CVD & CKD</p>	<p>Aims Improving the management of diabetes care for clients of ACCHSs according to best-practice guidelines</p>	<p>Aims Establish accuracy of PenCAT data; Identify aspects of data recording that can be improved; Implement training and support to improve accurate recording of data</p>
<p>Design Multiple Baseline</p>	<p>Design Multiple Baseline</p>	<p>Design Multiple Baseline</p>	<p>Design Cross-sectional</p>
<p>No. participating ACCHSs Three ACCHSs</p>	<p>No. participating ACCHSs Five ACCHSs</p>	<p>No. participating ACCHSs Six ACCHSs</p>	<p>Participating ACCHSs Four ACCHSs</p>
<p>Intervention Strategies Open information day; Invitation to patients who have not been to the ACCHS for 12 months to come in for a check-up</p>	<p>Intervention Strategies Staff training; Set up of reminder system; Self-completed Health Risk Assessments in waiting rooms; Scheduled time for Adult Health Checks</p>	<p>Intervention Strategies Staff training; Developing individual diabetes care plans; Regular multidisciplinary team case management meetings; Smoking cessation plans; Audit of care plans</p>	<p>Intervention Strategies Touch screen survey of self-reported behaviours, medical record extraction and PenCAT extraction; Provide site-specific feedback Staff training on use of Medical Director/Communicare (provided as part of Screening/Management strategies)</p>
<p>Outcome Measures Number of new, active and inactive patients attending ACCHSs; Acceptability questions</p>	<p>Outcome Measures No. of patients who have had the Health Assessment (MBS item 715) Number of people who were appropriately screened according to guidelines</p>	<p>Outcome Measures No. of patients: with GP Management Plan, have all 10 diabetes cycle of care components completed, who have had clinical diabetes outcomes assessed</p>	<p>Outcome Measures Level of agreement between touch screen survey, Medical Director and PenCAT extraction</p>

Chapter 5

Implementing the intervention strategies

5. Implementing the intervention strategies

5.1 Implementation approach

The Chronic Care Service Enhancements Program (CCSEP) evaluation provided a framework to measure the impact of the CCSEP on health service delivery, improve health outcomes and contribute towards the development of evidence in Aboriginal health.

Of the seven participating Aboriginal Community Controlled Health Services (ACCHS)s, five participated in the Screening component, six participated in the Diabetes Management component and four participated in the Data Quality component of the CCSEP evaluation.

The implementation strategies followed those agreed to in the collaborative workshops and teleconferences. These plans were underpinned by the following guiding principles:

Grounded in the experimental literature. While there is a limited amount of literature in the implementation science field, audit and feedback has shown promise as an effective strategy²⁵ as have collaborative groups.¹²⁻¹⁴ These strategies have been trialed within ACCHSs.

Mission orientated. Given the difficulties in getting change to occur in clinical practice^{11 26} it was decided to combine, as necessary, all interventions in an effort to obtain a clinically significant treatment effect. While the interventions were sequentially added, given the time limitations of the evaluation, it was not feasible to examine the contribution that each intervention component made towards achieving any found treatment effect. Instead, it was hoped that a synergistic effect would occur with all components producing desired clinical changes.

Acknowledging differences among ACCHSs. The approach acknowledged that there are significant differences in the populations, staff numbers and expertise within each ACCHS. As a consequence, the design allowed individual clinical units to be treated as a single case, overcoming many of the disadvantages inherent in randomised controlled trials^{27 28} and ensuring that all groups have equal opportunity for achieving treatment changes.

Study design

The study design for both the Screening and Diabetes Management priority areas used a multiple baseline design,²⁹ involving the sequential implementation of interventions across participating ACCHS sites. The multiple baseline design model is described in Section 6.2, Identifying evaluation designs. Due to time constraints, the design allowed for ACCHSs to commence the interventions in pairs. The order in which sites commenced was intended to be randomised. However, this was not possible due to practical circumstances at some ACCHS sites. Instead, the order of commencement was determined according to ACCHS preference. The planned 3-month intervals between commencement dates were maintained as per the study design. The study commenced in March 2013 and concluded in December 2014.

5.2 Screening interventions

The commencement dates of the interventions were implemented according to a multiple baseline design (see Table 5.1).

TABLE 5.1 SITE PAIRS AND COMMENCEMENT DATES (SCREENING)

Pair	Sites	Interventions commenced
Pair 1	Sites 1 & 2	4 September 2013
Pair 2	Sites 3 & 4	2 December 2013
Pair 3	Site 5 (single site)	3 March 2014

Systems were implemented within the ACCHS to help ensure that preventive screening is integrated into usual care for all clients:

- **Staff training.** Training covered requirements related to screening for diabetes, cardiovascular (CVD) and kidney disease (in line with the National Aboriginal Community Controlled Health Organisation (NACCHO) guidelines⁹) and entering data into Medical Director (MD) or Communicare.
- **Health Assessments for every client.** Each adult patient was provided with a health assessment in order to determine eligibility.
- **Setting up a reminder system in MD to support opportunistic screening.** A reminder system was set up within MD or similar Pen Clinical Audit Tool (PenCAT) compatible software to flag the records of patients who require preventive screening.
- **Audit and feedback.** ACCHSs were provided with updated data analyses and summary feedback in relation to screening performance and set goals.
- **Problem solving.** ACCHSs were encouraged to consult with each other about practical steps their ACCHSs are taking to achieve set targets, or provide advice about successful strategies that had been used to increase adherence.

Screening outcome indicators

Data on the screening received by eligible patients was extracted from MD and Communicare using PenCAT. Data were extracted weekly by an ACCHS staff member, saved, and emailed to the research team. The main outcome measures included:

- **Adult health assessments.** Data on the number of patients with an up-to-date (i.e. performed within the last 12 months) Health Assessment for Aboriginal and Torres Strait Islander People (MBS item 715).
- **Evidence-based screening.** Data on the number of patients who are appropriately screened according to evidence-based NACCHO/RACGP guidelines for diabetes.⁹ Compliance with recommended screening intervals and appropriate tests for diabetes was examined.
- **Feasibility and acceptability.** It was important to examine whether staff and patients found the strategies feasible to implement and acceptable (see Chapter 8, Acceptability of interventions).

A summary of the data extracted from PenCAT is presented in Table 5.2 below.

TABLE 5.2 DATA EXTRACTED FROM PENCAT

Screening activity	PenCAT data extracted
Aboriginal Health Assessments	Number of MBS Adult health Assessments (item 715) charged
Diabetes risk	Number of eligible patients, without a previous diabetes diagnosis, who have a fasting venous blood glucose test recorded
	Number of eligible patients, without a previous diabetes diagnosis, who have a random venous blood glucose test recorded

5.3 Diabetes Management interventions

The commencement dates for each ACCHS participating in the Diabetes Management priority area are shown in Table 5.3.

TABLE 5.3 SITE PAIRS AND COMMENCEMENT DATES (DIABETES MANAGEMENT)

Pair	Sites	Interventions commenced
Pair 1	Sites 1 & 2	4 September 2013
Pair 2	Sites 3 & 4	2 December 2013
Pair 3	Sites 5 & 6	25 February 2014

All active Aboriginal and/or Torres Strait Islander patients (aged 15 years and over) diagnosed with diabetes (Types I and II) were eligible for this evaluation component. Patients with gestational diabetes were excluded since they were unlikely to still be needing diabetes care within the evaluation timeframe.

The 'best practice enhanced care' strategy used an organisational change approach by developing and implementing systems within the ACCHSs that will be sustained beyond the life of the project.

Interventions include the following components aimed at improving and standardising diabetes care.

- **Develop and maintain a Diabetes Register and recall/reminder system.** Staff members were trained in the development and maintenance of a Diabetes Register for the purpose of contacting patients to come in for appointments as necessary.
- **Training in RACGP Diabetes Guidelines.** Staff were offered training in diabetes care according to RACGP guidelines.¹⁰ This included development of care plans, team care, indications for medication change, and the annual cycle of care requirements.
- **MD training.** Staff were provided with training in completing the diabetes assessment template in MD to ensure population of all fields with the required data. The staff members attending the workshop will

be expected to train all other staff caring for diabetes patients (doctors, Aboriginal Health Workers, nurses, allied health) in required data entry.

- **Audit and feedback.** ACCHSs were provided with updated data analyses and summary feedback in relation to their rates of activities aimed at managing diabetes and set goals.
- **Problem solving.** ACCHSs were encouraged to consult with each other about practical steps their ACCHSs are taking to achieve the targets that they had set, or provide advice about successful strategies that had been used to increase adherence.

5.4 Intervention packages: Screening and Management

Based on the principles underpinning the intervention development, the intervention strategies for both Screening and Diabetes Management were implemented according to multiple baseline designs in a phased approach. The interventions were delivered as a series of 'packages' as outlined below. Intervention packages were delivered in collaboration with each site, with efforts to tailor packages to address each site's specific needs.

Screening/Management intervention package #1

- **Ensuring that the data collected were clinically relevant and trustworthy.** A number of the collaborative workshops considered the type of data to be collected and therefore the mechanisms by which any clinical improvements will be identified. However, there was some uncertainty expressed by clinic representatives about the accuracy or quality of the data that will form the basis of the evaluation. Given the importance of the routine data collection process and its use in both evaluating and acting as an incentive for quality improvement, efforts were made to ensure that each ACCHS was comfortable with the information being collected.
- **Audit and feedback.** Feedback to each ACCHS about their performance was provided at baseline and approximately every 3 months thereafter. Audit and feedback has been shown to be a potentially effective strategy for modifying clinical behaviour.²⁵ However, the extent of change which is produced by feedback varies. This intervention strategy was low cost and had the potential to allow the differential effect of feedback to be examined prior to subsequent intervention strategies being implemented.
- **Establishing targets.** It was expected that each clinic would be performing at different levels in relation to screening activities. Consequently it was hoped that there would be the possibility of negotiating with each clinic regarding changes that might be expected in the initial 3-month period following the initiation of the intervention phases. This negotiation followed the principles for behavioural change and therefore attempted to make the targets achievable.^{30 31} This allowed for successive approximations, and provided an opportunity for ACCHS to have success. This discussion also gave ACCHSs an opportunity to indicate any specific needs that might assist them in meeting targets.

Intervention package #1 Actions

- Sites extracted baseline data using PenCAT and emailed this to the Evaluation Team.
- The Evaluation Team provided a summary analysis of baseline data for each site, allowing sites to 1) consider if PenCAT data accurately reflect their records and 2) to identify areas for which screening and/or improvement of diabetes management may be sought.
- ACCHSs were encouraged to hold a group meeting between the Chief Executive Officer (CEO) and clinical staff to consider how their site was performing in relation to evidence-based guidelines, identify any specific needs which could help to improve performance, and set goals for continued improvement.
- Clinic representatives were invited to discuss their data and goals with the University of Newcastle, and highlight any specific needs which might assist the clinic in meeting its targets.

Screening/Management intervention package #2

- **Training.** Training was provided which was tailored to meet each site's specific identified needs in an effort to ensure that preventive screening was integrated into usual care for all clients. Relevant clinical staff at each site were offered training in the following areas:
 - **MD or Communicare.** This training covered how to correctly enter data into appropriate fields so that PenCAT could retrieve it, as well as training in how to use a recall and reminder system to support patient screening.
 - **Screening: Screening in line with NACCHO guidelines.** This training covered NACCHO requirements for screening for diabetes.⁹
 - **Diabetes Management: Diabetes care according to RACGP guidelines.**¹⁰ This included development of care plans, team care, indications for medication change, and the annual cycle of care requirements.
- **Implementing screening/diabetes management recall and reminder system.** A reminder system was set up within MD or Communicare to flag patient records for who required preventive screening or diabetes management. Whilst some sites were already using such systems, feedback from ACCHSs during the collaborative process suggested that the use of current systems was generally sub-optimal. It was hoped that the training would contribute towards a renewed utilisation of recall and reminder systems for maximum benefit in screening and recalling patients.

Intervention package #2 Actions

Training

- In most instances, a clinically qualified person from each site provided training on NACCHO/RACGP guidelines to the CEO, doctors, Aboriginal health workers, nurses etc. Other sites underwent training provided by outside experts.
- MD/Communicare training was remotely administered at each site by an expert software consultant. Attendees varied across ACCHSs but all relevant staff were encouraged to attend including CEOs, doctors, Aboriginal Health Workers, nurses and administrators.

Recall and reminder systems

- Each site was encouraged to either establish or update their recall and reminder system, making efforts to incorporate useful information from the training.
- All relevant clinical staff were encouraged to regularly use the full range of system features available.

Screening/Management intervention package #3

The following intervention strategies occurred approximately six weeks after the second package, and were ongoing throughout the evaluation.

- **Audit and feedback.** Clinics were provided with updated data analyses and summary feedback in relation to their set goals approximately every 3 months.
- **Problem solving.** Clinics were encouraged to consult with each other about practical steps their sites are taking to achieve the targets that they have set, or provide advice about successful strategies that have been used to increase adherence. This follows the logic of the breakthrough collaborative approach where quality improvement is attained through the exchange of insights within and between health care organisations.¹²⁻¹⁴
- **(Screening only) Health Assessments for every client.** Each adult patient was provided with a thorough health assessment. The purpose of the health assessment was to standardise the way health information was assessed and updated for each patient.

Intervention package #3 Actions

Audit and feedback

- The Evaluation Team provided updated data analyses, and provided summary feedback to each site in relation to their set goals.

Problem solving

- Telephone calls between matched sites were organised to discuss strategies and involved CEOs, senior clinicians, and senior nurses.

Health assessments (Screening only)

- Sites were encouraged to share health assessment templates, with sites adopting or making amendments to their established templates as desired.

5.5 Data Quality assessment

Data quality assessment aimed to establish the accuracy of PenCAT data as an indicator of the clinical care provided by ACCHSs. The data quality assessment involved the collection of medical data from three different sources (patient self-report, manual examination of Medical Director/Communicare records, and automated PenCAT report), for a range of health check outcomes, including, for example, screening for smoking status, alcohol intake, Body Mass Index (BMI), physical activity levels, and testing of blood pressure, blood sugar, cholesterol and kidney function.

Aboriginal Health Workers, chronic care co-ordinators, nurses and administrative staff carried out tasks for the Data Quality component, with tasks typically shared among different staff members. Each ACCHS provided de-identified unit record data for **30 patients** on the following:

- **Touchscreen survey** of patient self-reported behaviours (e.g. smoking, nutrition) and recall of whether health care has been received (e.g. most recent screening tests and care plans)
- **Extract from medical record** all information relevant to the evaluation (e.g. diabetes diagnosis and related tests) from all fields within MD where such information – including notes – could potentially be recorded
- **Extract from PenCAT** all relevant information relating to the evaluation.

Before full implementation began, members of the Evaluation Team presented trial versions of the touchscreen survey to ACCHS staff who tested it with a small sample of patients. These sessions provided a chance for staff and patients to interact with the survey and offer practical feedback about the suitability and appropriateness of its content and usability. A number of modifications and enhancements were subsequently made to the survey. This included changing some of the survey questions and response options, as well as improving aspects of the survey's visual presentation.

The first site commenced full implementation in April 2013, with implementation across the remaining sites staggered throughout 2013 and early 2014 as convenient for each ACCHS. During the early stages of implementation, the Evaluation Team sought feedback from ACCHSs about their experience and used that information to help prepare the subsequent sites for implementation.

The evaluation team analysed data and discussed the analysis with each ACCHS to identify areas for improvement in data quality. Each site was provided with a detailed report which identified outcomes where there were significant discrepancies among self-report, MD and PenCAT records. Possible reasons for discrepancies were suggested and discussed with staff on a site-by-site basis. Strategies to overcome identified discrepancies, such as ensuring that clinical data were entered in the correct field and in the correct font, that PenCAT data were updated before reports were generated, and that software was checked for errors, were also discussed. Staff were asked to investigate specific items for possible reasons for the observed disagreement, and if possible, correct any errors. MD or Communicare training on how to correctly enter data into appropriate fields was also provided as part of Screening/Management intervention package #2. Although the Data Quality component was initially designed as a pre-post design, time and resource constraints at ACCHSs meant that post-intervention data were not collected and the Data Quality component was therefore implemented using cross-sectional analysis.

Data Quality assessment package

A clearly outlined set of tasks guided the implementation of the Data Quality strategies and included the following:

- **Recruiting participants.** An ACCHS staff member approached patients in the waiting room before their appointments. Eligible participants were patients attending for a clinical appointment, aged over 18 years, able to provide informed consent, who had attended the ACCHS at least once in the 2 years prior to the current visit, and had been diagnosed with a chronic disease. Patients were provided with a participant information statement, and willing participants signed a consent form.
- **Log sheet.** The staff member recorded patient details onto a log sheet, including a patient ID number, which could be used to later match participants with their survey responses and patient records. (Note: Patient details were used for matching purposes only, and were accessed only by ACCHS staff. No information that could identify patients was provided to the Evaluation Team at any stage).
- **Touchscreen survey.** After the patient had completed their clinic appointment, the staff member provided the patient with the touchscreen survey to complete, and remained available to offer support as required. The touchscreen survey asked questions related to the types of care patients had previously received at the ACCHS, including when this care was provided.
- **Extracting data from MD/Communicare.** At the end of each day or week, a staff member used the identifying information contained in the log sheet to undertake a manual search of each participant's medical records. The staff member completed the MD data sheet accordingly, indicating which of the relevant health check items had been recorded.
- **Extracting data from PenCAT.** At the end of the day or week, a staff member used the tailored PenCAT tool to extract the Data Quality report for each patient who completed the touchscreen survey.
- **Collating materials for Evaluation Team.** An ACCHS staff member then collated the MD data sheets, PenCAT individual reports, and the completed touchscreen surveys which were linked via the

anonymous patient identification numbers. These materials were provided to the Evaluation Team for analysis, which involved comparing the level of agreement between these three sources of information and the types of care each patient was reported to have received.

5.6 Reach interventions

At the workshop, six interventions were identified as having the potential to increase the reach of ACCHSs. These were then prioritised according to how effective and how practical they were considered to be. As a result of this prioritisation exercise, two strategies were agreed as being the most appropriate to evaluate as part of the CCSEP. The specific strategies were:

Strategy 1: Increase the number people who access their ACCHS through an open information day.

Strategy 1 comprised two activities, intended to be implemented one-month apart, with the specific aim of increasing the number of people who access their ACCHS. First, an open information day was to be organised based on what some ACCHSs had done previously. It was to comprise a range of activities of interest to the community, as well as a barbecue, and was to provide an opportunity for people to be informed about the services offered by the ACCHS. The importance of this strategy was not that it was new, but that its impact or effects had not yet been formally measured. This evaluation was to be the first to do so.

Strategy 2: Increase the number of patients by re-engaging those who have not attended their ACCHS more than 2 times in the last 24 months, through a specific invitation to re-visit their ACCHS for a check-up and to meet new staff.

Strategy 2 was to involve contacting those who had not been to the ACCHS in the last 12 months and invite them to come into the ACCHS for a check-up on their health and also to meet any new staff at the ACCHS and see any changes that had occurred since their last visit. This invitation was to take a number of forms depending on the preference of the ACCHS, such as by letter, in person or by phone.

Abandonment of the Reach component

Three ACCHSs originally opted to participate in the Reach component. Planning was undertaken to prepare ACCHSs for implementation of interventions. However, each ACCHS independently elected to withdraw prior to commencement, which resulted in the abandonment of the Reach component.

ACCHSs withdrew from the Reach component for site-specific reasons. One ACCHS indicated that it was functioning at near capacity and that attracting additional patients was no longer a priority. Another ACCHS indicated that it already had an outreach program aimed at increasing patient attendance, and the ACCHS preferred to focus on those efforts rather than implementing additional activities related to Reach. Given that a multi-site evaluation was no longer possible, the third ACCHS also elected not to proceed. Despite withdrawing from Reach, the three ACCHSs participated in other priority areas of the evaluation.

5.7 Organisational support for change to ACCHSs

The Evaluation Team worked closely with individual ACCHSs to:

- Address the specific needs of each ACCHS and support implementation of the interventions
- Provide regular site-specific feedback to ACCHSs about the analyses and summary feedback in relation to performance and set goals
- Encourage ACCHSs to consult with each other about practical steps their ACCHSs are taking to achieve set targets, or provide advice about successful strategies that had been used to increase adherence.

Systems were implemented within ACCHSs to help ensure that staff were supported to integrate the interventions into usual care for all clients. These included:

- Staff training including data entry into clinical software systems (e.g. MD, Communicare)
- Development of a tailored software system (PenCAT) to facilitate data collection of outcome measures across all evaluation components. ACCHSs were able to extract relevant data from existing clinical software systems that were stored at each service and subsequently emailed to the Evaluation Team as needed.
- Communication systems established to allow problem solving between matched sites
- Setting up, or updating, a reminder system in MD to support opportunistic screening
- Developing and maintaining a Diabetes Register and recall/reminder system
- For the Data Quality component, material support in the form of an implementation package which included: a laptop computer containing the touchscreen survey; a user manual to assist staff with all aspects of implementation including recruiting patients, administering the survey, data extraction, and sending data; a log sheet to record patient participation and completion of tasks; an MD data extraction sheet to complete for each participant in relation to which items were recorded in their records; a summary checklist of tasks; patient information statements; and patient consent forms.
- Evaluation team members working closely with staff from each ACCHS to provide updated data analyses and summary feedback for each evaluation component.

Tailored Pen Clinical Audit Tool (PenCAT) software

PenCAT is a widely used population reporting enhancement to the GP Clinical Desktop Systems used in Australian general practice. PenCAT extracts aggregated whole-of-practice patient information from patient electronic medical records, allowing staff to identify groups of patients who fall into selected target groups. In addition to supporting service needs for internal monitoring, some ACCHS use this approach for external reporting, for example, to NSW Ministry of Health. PenCAT was already in use at each participating ACCHS. During the consultation phase, it was agreed that PenCAT would be used to extract all data for the evaluation; data extracted would be de-identified practice-level information related to the study outcomes.

The PenCAT software was developed to facilitate data collection at ACCHSs for outcomes across all evaluation components. Tailored PenCAT allowed extraction of specific data items sought by the CCSEP evaluation that would not otherwise have been accessible via PenCAT. The tool also provided a relatively

quick and easy method for ACCHS staff to collect data. Only participating ACCHSs were able to access the tailored reports as part of the CCSEP evaluation, requiring activation as part of the software licence. Once activated, this PenCAT enhancement remained a permanent tool for ACCHSs to use. The Centre for Aboriginal Health, as the funder of the tailored PenCAT software, retains access rights to this feature and can determine which other medical services may access it now and in the future.

The Evaluation Team devised sets of indicators based on the items ACCHSs chose to measure for each evaluation component, and liaised with PenCAT personnel to oversee software development. PenCAT provided tailored software for the Data Quality component in July 2012. Trial versions of tailored PenCAT reports were released in stages by the software developers between April and July 2013. The Evaluation Team carried out User Acceptance Testing to ensure the tailored reports accurately met the needs of the evaluation and reflected the items agreed to by the ACCHSs. Trial versions of the tailored reports were then provided to ACCHSs for comment and feedback.

Following several stages of troubleshooting of identified problems, live versions of the tailored PenCAT were made available to all participating ACCHSs in August 2013. ACCHSs commenced regular PenCAT ‘collects’ throughout the remainder of the study. Each collect provides an ‘extract’ which is a snapshot of an ACCHS patient database at a set point in time. This process allowed relevant data to be stored at each service and subsequently emailed to the Evaluation Team as needed. A summary of the advantages and disadvantages of the tailored PenCAT tool is given in Table 5.4 below.

TABLE 5.4 ADVANTAGES AND DISADVANTAGES OF TAILORED PENCAT

Advantages	Disadvantages
<ul style="list-style-type: none"> • Quick and easy method to collect data, reducing the burden on ACCHS staff • Allowed extraction of specific data items that would not otherwise be accessible via the general PenCAT • Easily activated at any number of ACCHSs for no additional cost • Remains a permanent feature for ACCHSs to utilise • Ongoing access to technical support from the software developers to assist with any issues. 	<ul style="list-style-type: none"> • Significant costs associated with software development • Comprehensive planning and development process to ensure that the software accurately adhered to the agreed evaluation framework • Lack of flexibility in the measured items once software finalised. Any additions or changes not possible without further work and costs • Data accuracy issues associated with the use of MD versus Communicare and how staff enter data into medical records.

Key learnings

- Robust methodological research design is feasible as part of health services research in Aboriginal health
- System variation across ACCHSs can be managed through flexible interventions and implementation plans
- Clinical software systems offer mechanisms to improve clinical delivery if appropriately implemented and relevant training made available.

Chapter 6

Evaluation methods

6. Evaluation methods

6.1 Ethics approval

The Evaluation Team commenced the process of seeking ethics approval from both the Aboriginal Health & Medical Research Council (AH&MRC) Ethics Committee and the University of Newcastle (UoN) Human Research Ethics Committee in early 2012. Separate ethics submissions were prepared for each of the four evaluation components and feedback sought from participating Aboriginal Community Controlled Health Services (ACCHSs). The Evaluation Team also invited Chief Executive Officers (CEOs) and management staff to be listed as investigators on each submission, with most service representatives accepting this invitation.

Amendments to the ethics applications were included as a result of the consultative process with participating ACCHSs. Delays were experienced with the AH&MRC Ethics Committee application as discussions continued to achieve agreement on partners listed for the purposes of the application. Final ethics approval from the UoN Human Research Ethics Committee was granted for all four evaluation priority areas by May 2012 (approval numbers H-2012-0100, H-2012-0101, H-2012-0023, H-2012-0102). Ethics approval for all four evaluation priority areas, including all submitted variations, was granted by the AH&MRC Ethics Committee in February 2013 (approval numbers 844/12, 863/12, 864/12, 865/12).

6.2 Identifying evaluation designs

For the Screening and Diabetes Management priority areas, a multiple baseline design,²⁹ involving the sequential implementation of the intervention across the participating ACCHS sites, was undertaken. With a multiple baseline design, participating ACCHSs received the interventions in a phased approach at different times. Due to time constraints, sites commenced implementation in pairs, with starting dates of each pair staggered in 3-month intervals (see Figure 6.1).

		2013					2014											
		Mar-Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		Continuous Data Collection (Monthly)																
ACCHSs 1 & 2	BASELINE	INTERVENTIONS																
ACCHSs 3 & 4	BASELINE					INTERVENTIONS												
ACCHS 5	BASELINE						INTERVENTIONS											

FIGURE 6.1 MULTIPLE BASELINE IMPLEMENTATION OF INTERVENTIONS (SCREENING AS EXAMPLE)

Advantages of a multiple baseline design

In addressing the need to evaluate interventions in Aboriginal communities, traditional research such as randomised controlled trials are either prohibitively expensive or unacceptable because of the need for a control group in which some participants will be denied equal opportunity for achieving treatment changes. The multiple baseline design was selected for this evaluation as it overcomes many of the disadvantages

inherent in randomised controlled trials,^{27 28} and ensures that all groups have equal opportunity for achieving treatment changes,³⁰ which was crucial for ACCHSs participating in the Chronic Care Service Enhancements Program (CCSEP). The multiple baseline approach acknowledges that there are significant differences in the populations, staff numbers and expertise within each ACCHS. As a consequence, the design allows each individual clinical unit to be treated as a single case. This approach increases the likelihood that any detected improvement in outcomes is due to the intervention, rather than some other factor.

Given the difficulties in getting change to occur in clinical practice,^{11 26} the intervention components were introduced in close succession, thereby consolidating the interventions in an effort to get a clinically significant treatment effect. Given the time limitations of the evaluation it was not feasible to examine the contribution that each intervention component made towards achieving any found treatment effect. Instead, it was hoped that a synergistic effect would occur with all components producing desired clinical changes, as shown in Figure 6.2.

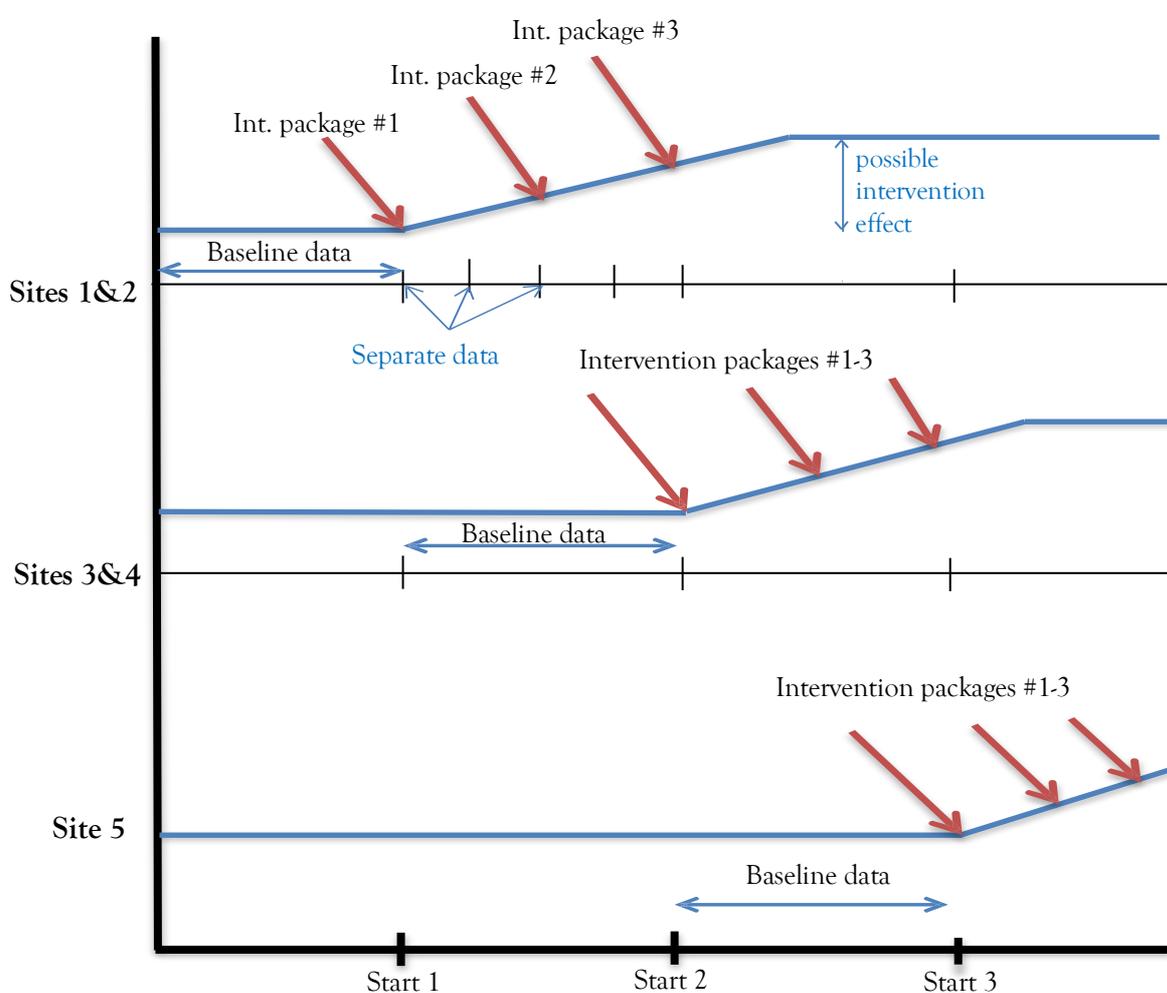


FIGURE 6.2 MULTIPLE BASELINE DESIGN (SCREENING AS EXAMPLE)

6.3 Identifying outcome measures

For the purposes of the evaluation, a number of data indicators were identified that would be regularly collected to determine the effectiveness of the different intervention strategies. The indicators for each component are summarised below.

Screening¹	<p>Number of MBS Adult health Assessments (item 715) charged</p> <p>Number of patients with/without recorded diagnoses of diabetes</p> <p>Number of eligible patients who had received various screening items in relation to best-practice guidelines for detection of diabetes.⁹</p>
Management²	<p>Number of Aboriginal patients with diabetes</p> <p>The types of care Aboriginal patients with diabetes received in relation to best-practice guidelines¹⁰</p> <p>Test outcomes of Aboriginal patients with diabetes in relation to recommended goals for optimum diabetes management.¹⁰</p>
Data Quality	<p>Agreement between different data sources for:</p> <ul style="list-style-type: none"> • Diabetes care plan (date last recorded) • Health Assessment (date last recorded) • Blood pressure, blood glucose, total cholesterol, HDL, LDL, triglycerides, microalbuminuria, HbA1c (whether tested in last 12 months) • Body Mass Index (BMI), waist circumference, smoking status, physical activity, alcohol intake (whether assessed in last 12 months) • Smoking status • Alcohol intake status • Diabetes Management Plan items

¹ Items categorised according to patient activity status, sex and age group. Collected weekly, analysed monthly

² Items categorised according to diabetes type, patient activity status, sex and age group. Collected weekly, analysed monthly

6.4 Statistical Analysis

Statistical analysis for both the Screening and Diabetes Management priority areas was undertaken by the Clinical Research, IT and Statistical Support team (CReDDITSS), Hunter Medical Research Institute.

ACCHS patient population and outcome measures

Relevant patient records were identified and extracted from patient information management systems using Pen Clinical Audit Tool (PenCAT) (see 5.7, Organisational support for change to ACCHSs). The analysis

assessed the impact of the interventions on outcomes which reflected NACCHO/RACGP best-practice recommendations for Aboriginal people.^{9 10} Data focused on 'active' Aboriginal patients at least 15 years of age. An 'active patient' was defined as having visited the ACCHS at least 3 times in the last 2 years. Measured items were classified as being 'up-to-date' if recorded in the corresponding timeframe as recommended by NACCHO/RACGP. Items for which NACCHO/RACGP recommended annual assessments were reported for active patients who had at least 1 visit in the last 12 months. Outcomes were recorded monthly throughout the CCSEP Evaluation at each ACCHS:

Screening priority area

Outcome 1: Aboriginal Health Assessment (Medicare Item 715). The proportion of active Aboriginal patients at least 15 years of age with an up-to-date Adult Aboriginal Health Assessment (Medicare Item 715) (i.e. recorded within the last 12 months).

- In patients aged 15-54 years
- In patients aged 55+ years.

Outcome 2: Screening for diabetes. The proportion of active Aboriginal patients at least 15 years of age with up-to-date diabetes screening tests (i.e. recorded within the last 12 months) using:

- Random blood glucose
- Fasting blood glucose.

Diabetes Management priority area

Outcome 3: Management of diabetes. The proportion of active Aboriginal diabetes patients with up-to-date recordings of:

- GP Management Plan (Medicare item 721)
- Completion of the minimum requirements of an annual cycle of care (Medicare items 2517, 2521 or 2525).

Outcome 4: Control of diabetes: The proportion of active Aboriginal diabetes patients with HbA1c results in the goal range of <7%.

ACCHS commencement schedule

For the purpose of analyses, the seven participating ACCHSs were de-identified and categorised as follows:

ACCHS #1: Screening Site 1 and Management Site 1

ACCHS #2: Screening Site 2 and Management Site 2

ACCHS #3: Screening Site 3 and Management Site 3

ACCHS #4: Screening Site 4 and Management Site 4

ACCHS #5: Screening Site 5

ACCHS #6: Management Site 5

ACCCHS #7: Management Site 6

Data for outcomes 1 and 2 (Screening) were provided by sites 1-5. For the Screening outcomes, sites were randomised in pairs (see Table 6.1 below). Sites within each pair commenced the interventions at the same time. Screening Site 5 commenced the interventions without a paired site.

TABLE 6.1 SITES PAIRS AND DATES OF COMMENCEMENT – SCREENING PRIORITY AREA)

Pair	Sites	Intervention commenced
Pair 1	Screening Sites 1 and 2	4 September 2013
Pair 2	Screening Sites 3 and 4	2 December 2013
Pair 3	Screening Site 5	3 March 2014

Data for outcomes 3 and 4 (Diabetes Management) were provided by sites 1-4 and 6-7. For the Diabetes Management outcomes, sites were randomised in pairs (see Table 6.2 below). Sites within each pair commenced the interventions at the same time.

TABLE 6.2 SITES PAIRS AND DATES OF COMMENCEMENT – DIABETES MANAGEMENT PRIORITY AREA

Pair	Sites	Intervention commenced
Pair 1	Management Sites 1 and 2	4 September 2013
Pair 2	Management Sites 3 and 4	2 December 2013
Pair 3	Management Sites 5 and 6	25 February 2014

General Statistical Methodology

Baseline characteristics of patients within the ACCCHSs were represented as proportions (see Table 7.1 in Chapter 7).

Regression modelling

The impact of the intervention on outcomes 1, 2, 3 and 4 (Aboriginal Health Assessment, Screening for diabetes, Management of diabetes, Control of diabetes) over time was assessed using segmented logistic regression. This model estimates parameters representing: i) the proportion at baseline; ii) the linear trend (rate of change) in the proportion before the intervention; iii) the immediate change in the proportion at the time of intervention, and iv) the change in the linear trend in the proportion following intervention. For each outcome, within a site (or site pair) the model was parameterized as:

$$\log\left(\frac{p_t}{1-p_t}\right) = \beta_0 + \beta_1 \text{time}_t + \beta_2 \text{intervention} + \beta_3 \text{time after intervention}$$

where p_t is the proportion for the relevant outcome at month t after baseline; time is a continuous variable representing time in months from baseline; intervention is an indicator variable taking the value 0 before the intervention and 1 afterwards; and time after intervention is a continuous variable representing the number of months after intervention.

To assess the potential impact of the intervention, the key parameters of interest are:

β_1 , representing the linear trend/slope (positive or negative) in the log-odds of having the outcome pre-intervention

β_3 , which shows the change in the linear trend (slope) after intervention, and

$\beta_1 + \beta_3$, representing the linear trend (positive or negative) in the log-odds of having the outcome post-intervention (a linear combination of the pre-intervention slope and the change in this slope).

Beta coefficients were exponentiated to derive the within-site odds ratios and are presented together with 95% confidence intervals and Wald p-values for tests of statistical significance (and declared significant at the 5% level).

We note that several models showed evidence of significant overdispersion, based on the ratio of the Pearson Chi-Square statistic to the residual degrees of freedom. To avoid false claims of significance from such models, resulting from under-estimated standard errors, the standard errors of parameter estimates were multiplied (rescaled) by the square root of (Pearson Chi-Square/df), where df is the degrees of freedom associated with the Chi-Square statistic. When this adjustment was performed, it is noted in the table title for the relevant model by the suffix 'adjusted for overdispersion'.

Accounting for site effects

Analyses treated data for different sites in the following ways:

Primary analyses were performed across all sites simultaneously, including a fixed effect for site in the model. Dummy variable coding was used to estimate the baseline proportion in each site, relative to the reference (Site 1). For this model the intervention effect is a weighted average of the effects within each ACCHS.

Primary analyses were performed within each site pair, using outcome frequencies summed across both sites in the pair. Note that for the Screening outcomes, Screening site 5 had no matched site.

For outcomes 1-3 (Aboriginal Health Assessment, Screening for diabetes, Management of diabetes), secondary analyses were also performed within each site individually, to reveal any site-specific trends.

Assessing association between screening rates and demographic characteristics

For outcomes 1-3 (Aboriginal Health Assessment, Screening for diabetes, Management of diabetes), associations between age and sex with screening/management probabilities at final follow-up were assessed by calculating odds ratios and 95% confidence intervals for 2x2 contingency tables. Significance levels were assessed using Fisher's exact test. P-values < 0.05 were considered statistically significant. These tests were performed within each screening/management site individually, and also across all sites combined.

To assess potential association between diabetes prevalence and diabetes screening using fasting or random glucose measures, a simple linear regression was performed. Data from the five screening sites each contributed a single data point. The outcome (dependent variable) in the regression was recorded diabetes prevalence at final follow-up. The predictor (independent variable) was the proportion of participants being screened for diabetes at final follow-up.

All statistical analyses were programmed using SAS v9.4 (SAS Institute, Cary, North Carolina, USA) and Stata (Release 13. College Station, TX: StataCorp LP).

Data Quality priority area

The tailored software for the Data Quality priority area enabled individual patient reports to be generated from the Pen Clinical Audit Tool (PenCAT). These reports indicated whether specific health check items had been recorded and, if so, the date they were recorded. The list included a host of general screening items related to

chronic disease, as well as items specifically related to the treatment of diabetes. The following items were recorded for data quality:

- Diabetes care plan (date last recorded)
- Health Assessment (date last occurred)
- Tests: blood pressure, blood glucose, total cholesterol, HDL, LDL, triglycerides, microalbuminuria, HbA1c (whether occurred in last 12 months)
- Other screening: BMI, weight and height, waist circumference, smoking status, physical activity, alcohol intake (whether assessed in last 12 months and status for smoking* [never/ex/smoker] and alcohol intake* [non/drinker]); *Status for these items was only recorded for patient self-report and Medical Director (MD); PenCAT does not record status but only whether they have been assessed (yes/no)
- Diabetes Management items: test items listed above, plus: eye exam, foot exam (whether occurred in last 12 months).

Data Quality analysis

MD – PenCAT comparisons: Analysis involved identifying potential under-reporting of clinical activity when relying on PenCAT for outcome measures. For all items listed above, MD/Communicare dates were used as the ‘gold standard’ against which PenCAT recorded dates were compared. Due to unexpected discrepancies in dates (perhaps due to PenCAT reports being generated without a PenCAT ‘collect’ being done), any PenCAT dates that were within 12 months of the date recorded in MD/Communicare were considered to be in agreement. The interval of 12 months was chosen as this is the NACCHO/RACGP recommended screening interval for the majority of the preventive care items assessed.⁹ Any PenCAT dates that were missing, not recorded, or older as compared to the date recorded in Medical Director/Communicare were coded as a disagreement. Where dates were missing or not recorded in both PenCAT and MD/Communicare, these were coded as being in agreement.

Patient self-report – MD/Communicare comparisons: Although patients were also asked to self-report on most of the data quality indicators listed above (time since these had been assessed), ultimately these self-report data were considered to be too unreliable to yield meaningful comparisons for identifying underreporting by PenCAT. For example, during the survey testing process, site feedback indicated that patients were most likely not sure of what specific blood tests they had undergone (e.g. blood glucose vs cholesterol), and the patient survey question was modified accordingly to ask only about time since ‘last blood test’. Furthermore, asking patients to recall when they received a test or assessment has been demonstrated to be subject to significant inaccuracies and ‘telescoping’ (recalling an event as happening more recently than in reality).^{32 33} Therefore, comparisons using self-reported patient data were restricted to those outcomes for which self-report can be considered to be reasonably accurate, namely smoking status and alcohol intake. Self-report has been demonstrated to be a reliable and valid assessment of alcohol intake³⁴ and for smoking status in both Aboriginal^{35 36} and non-Aboriginal people³³. Therefore, smoking and alcohol intake status as recorded in MD/Communicare was compared against that self-reported by the patient. Nb: As status for smoking and alcohol intake was not extracted by PenCAT, the MD - PenCAT comparison could not be made.

6.5 ACCHS staff and patient acceptability

Throughout the evaluation, ACCHSs provided ongoing feedback to the Evaluation Team related to the practical experience of implementing the interventions. Additionally, towards the conclusion of the

intervention period from October to December 2014, ACCHS staff and patients were invited to provide feedback on the strategies implemented as part of the Diabetes Management and Screening priority areas.

Interviews with staff and patients (Diabetes Management priority area)

ACCHS staff and patients at each site were invited to participate in separate discussions (i.e. staff discussions or patient discussions) about the implementation and acceptability of the interventions for the Diabetes Management priority area. Interviews were conducted face-to-face, or via teleconference or Skype. Discussions were held with individuals or in group settings, depending on the preference of ACCHS staff and patients. In each instance, a member of the Evaluation Team led discussions via a semi-structured interview guide (see Appendix 4.1, Semi-structured acceptability interview guide). All discussions were recorded on audio tape and underwent thematic content analysis by review of each transcript and noting of emergent themes.

Surveys for staff and patients (Screening priority area)

For the Screening priority area, ACCHS staff and patients were invited to complete acceptability surveys (see Appendix 4.2, Patient and staff acceptability surveys) to provide feedback on the implementation of strategies. Paper-and-pen surveys were mailed out to ACCHSs, and patients completed surveys that were mailed back to the Evaluation Team.

Chapter 7

Evaluation outcomes

7. Evaluation outcomes

Understanding regression modelling outcomes

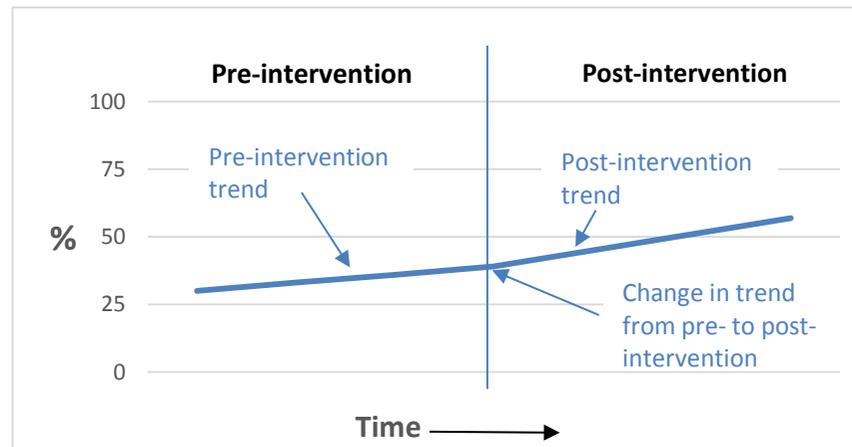
This section offers a brief explanation of regression modelling outcomes to assist in the interpretation of the following analyses. Figure 7.1 below illustrates the regression variables from pre- to post-intervention which have been used to assess the impact of interventions in this evaluation.

Calculated odds ratios reflect the size and direction of each trend. In each instance, odds ratios with a p-value <0.05 are considered statistically significant.

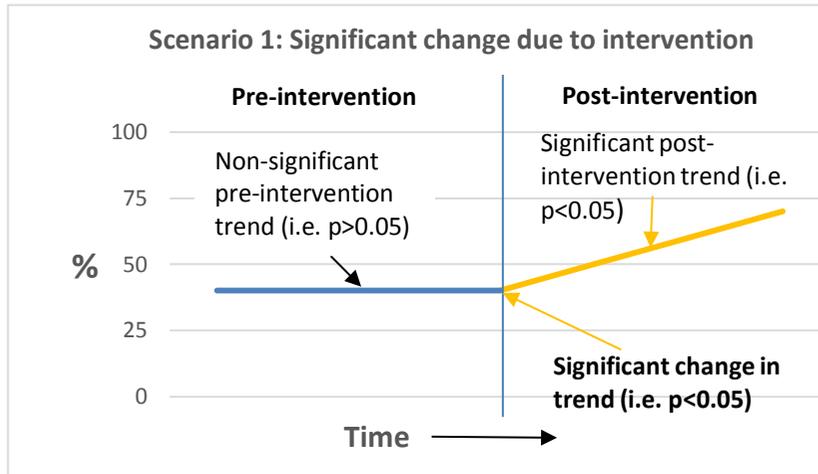
In determining the impact of the interventions, the main variable of interest is 'Change in trend from pre- to post-intervention'. The odds ratio for this variable in Figure 7.1 relates to the *difference* in slope between the 'pre-intervention trend' and 'post-intervention trend'.

7b to 7e within Figure 7.1 illustrate possible outcome scenarios in relation to each regression analysis. Note that these diagrams are intended as a simplified guide for interpreting statistical significance, and therefore not all scenarios have been described.

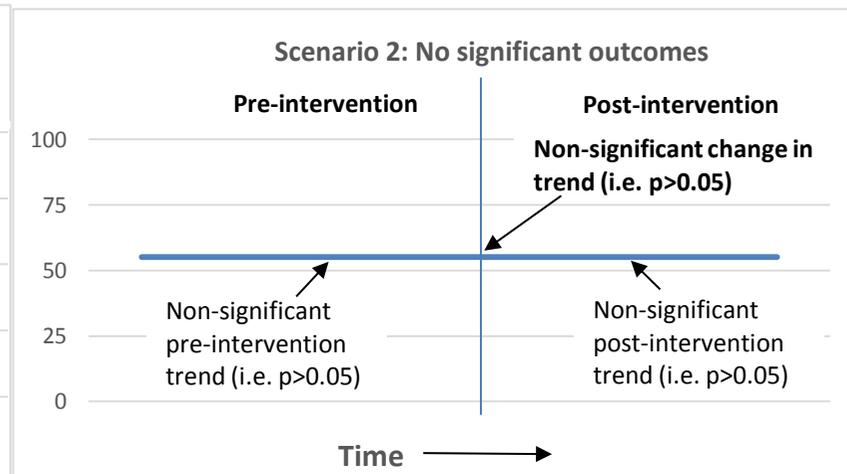
FIGURE 7.1 VARIOUS OUTCOMES FROM REGRESSION ANALYSIS



7a. Visual depiction of regression modelling analysis

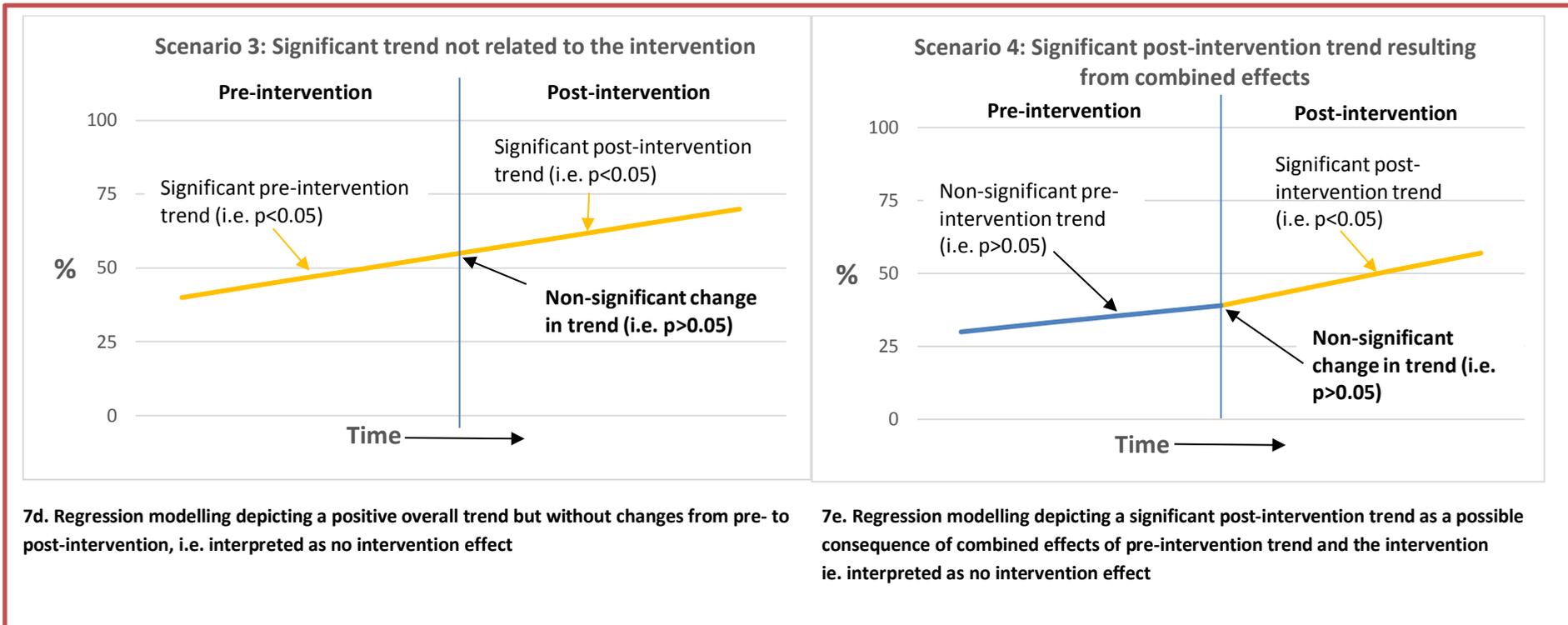


7b. Regression modelling depicting a positive intervention effect from pre- to post-intervention



7c. Regression modelling showing no significant trends or changes from pre- to post-intervention

FIGURE 7.1 (cont'd) VARIOUS OUTCOMES FROM REGRESSION ANALYSIS



7.2 Screening outcomes

Baseline site characteristics

The number and characteristics of eligible patients (i.e. active Aboriginal patients at least 15 years of age) recorded at baseline for each Screening site are shown in Table 7.1 below.

TABLE 7.1 BASELINE CHARACTERISTICS OF ACTIVE[^] ABORIGINAL PATIENT POPULATION AT LEAST 15 YEARS OF AGE AT EACH SCREENING SITE

	Screening Site				
	1	2	3	4	5
Month of baseline record	Mar 2013	Mar 2013	May 2013	May 2013	Aug 2013
Total active [^] patients at baseline	1155	1461	1705	1083	1824
Active & visited in last 12 months	1018	1415	1480	881	1584
<i>Characteristics (active & visited last 12 months)</i>					
Male (%)	41%	45%	42%	41%	40%
Female (%)	59%	55%	58%	59%	60%
15-54 yrs (%)	83%	87%	83%	89%	81%
55+ yrs (%)	17%	13%	17%	11%	19%

[^]Active patient is defined as having attended the service at least 3 times in the last 2 years

Screening outcome measure #1: Adult Aboriginal Health Assessment (Medicare Item 715)

Baseline uptake rates of Aboriginal Health Assessments

The rates of eligible patients with an up-to-date Health Assessment at each Screening site are shown in Table 7.2 below. There was substantial between-site variation in rates of baseline screening using the Aboriginal Health Assessment. The proportion of patients with an up-to-date Aboriginal Health Assessment ranged from 8.3% to 45.2% among patients aged 15-54 years, and from 12.7% to 72.5% among patients aged 55+ years.

TABLE 7.2 BASELINE RATES OF UP-TO-DATE (I.E. COMPLETED WITHIN LAST 12 MONTHS) ABORIGINAL HEALTH ASSESSMENTS (MEDICARE ITEM 715) FOR ACTIVE[^] ABORIGINAL PATIENTS AT LEAST 15 YEARS OF AGE AND WITH AT LEAST 1 VISIT IN LAST 12 MONTHS FOR EACH SCREENING SITE

Screening Site	Month of baseline record	% patients up-to-date: 15-54 yrs	% patients up-to-date: 55+ yrs
1	Mar 2013	27.5	35.9
2	Mar 2013	45.2	72.5
3	May 2013	10.9	26.5
4	May 2013	35.6	31.0
5	Aug 2013	8.3	12.7

[^]Active patient is defined as having attended the service at least 3 times in the last 2 years

Post-intervention uptake rates of Adult Aboriginal Health Assessment (Medicare Item 715)

Patients 15-54 years

All sites combined: Among patients aged 15-54 years, aggregated across all sites the trend in screening using Aboriginal Health Assessments (Medical Benefits Scheme (MBS) Item 715) remained relatively constant from pre- to post-intervention, with the interventions having no detectable impact (see Table 7.3).

TABLE 7.3. ABORIGINAL HEALTH ASSESSMENT (15-54 YEARS) LOGISTIC REGRESSION RESULTS - AGGREGATED ACROSS ALL 5 SCREENING SITES (ADJUSTED FOR OVERDISPERSION)

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	p-value*
Trend in screening pre-intervention	1.0131	0.9901	1.0365	0.2661
Change in trend from pre- to post-intervention	0.9985	0.9741	1.0235	0.9059
Trend in screening post-intervention	1.0116	1.0019	1.0213	0.0190

* <0.05 considered statistically significant

Individual sites: Of the five screening sites, only one site demonstrated a statistically significant increase in the screening trend from pre- to post-intervention for patients aged 15-54 years (Site 1: OR=1.09 per month, p<0.001). Another site experienced a statistically significant decrease in the screening trend from pre- to post-intervention (Site 4: OR=0.97 per month, p=0.02). The remaining three sites showed no significant changes in trend from pre- to post-intervention, although two of these sites yielded post-intervention screening trends that were slightly increasing at statistically significant levels (Site 3: OR=1.01 per month, p=0.03; Site 5: OR=1.04 per month, p=0.0003).

Patients 55+ years

All sites combined: As shown in Table 7.4, among patients aged 55+ years, from pre- to post-intervention there was a very small positive change in the trend of screening using Aboriginal Health Assessments, although this change was not statistically significant (OR=1.01, p=0.55). This yielded post-intervention screening rates that were slightly increasing at statistically significant levels (OR=1.015 per month, p=0.02).

TABLE 7.4. ABORIGINAL HEALTH ASSESSMENT (55+ YEARS) LOGISTIC REGRESSION RESULTS - AGGREGATED ACROSS ALL 5 SCREENING SITES (ADJUSTED FOR OVERDISPERSION)

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	p-value*
Trend in screening pre-intervention	1.0053	0.9761	1.0353	0.7276
Change in trend from pre- to post-intervention	1.0097	0.9779	1.0425	0.5537
Trend in screening post-intervention	1.0150	1.0022	1.0280	0.0219

* <0.05 considered statistically significant

Individual sites: For patients aged 55+ years, only one site demonstrated a statistically significant positive change in trend from pre- to post-intervention (Site 1: OR=1.09, p=0.0067), yielding post-intervention screening rates that were significantly increasing (OR=1.05, p<0.0001). Figure 7.2 shows the increasing rates of up-to-date Aboriginal Health Assessments at Screening site 1 during this period. One other screening site also yielded a post-intervention screening trend that was significantly increasing for patients aged 55+ years (Site 3: OR=1.03, p=0.018). No statistically significant trends or changes in trends were detected at the remaining three sites for patients in this age group.

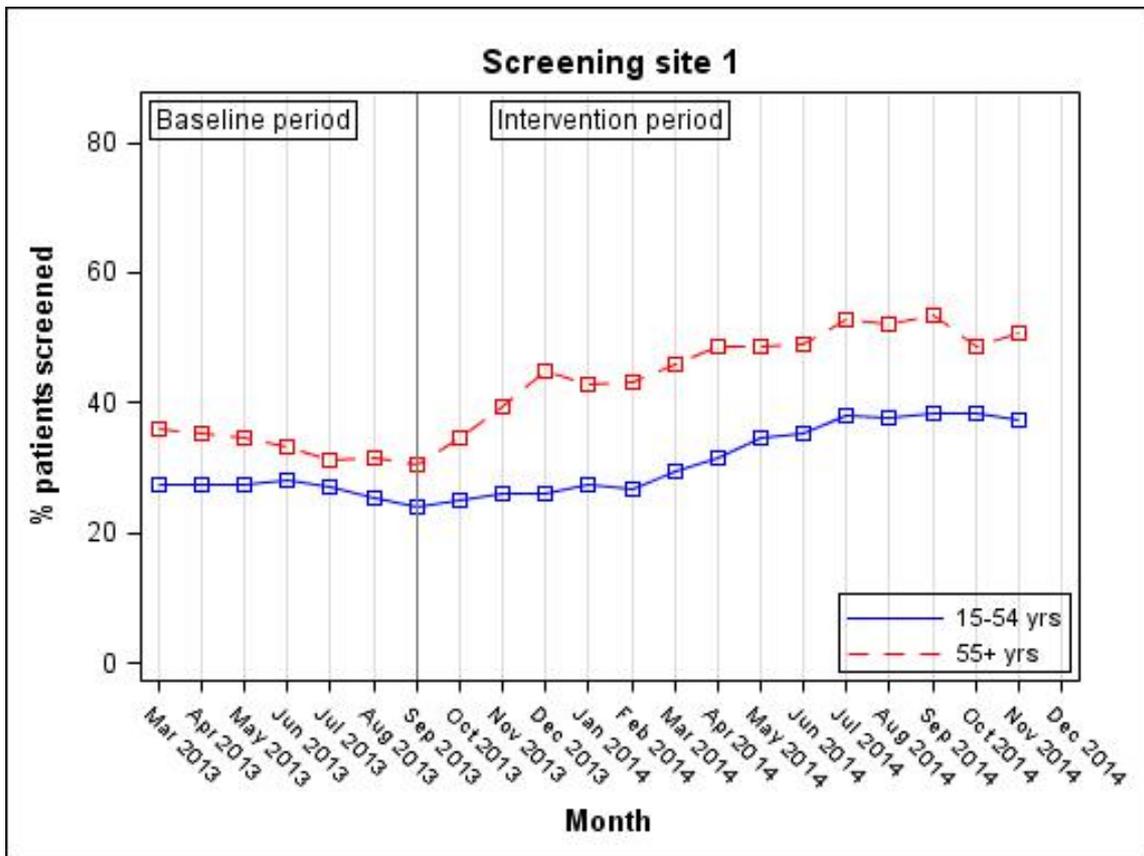


FIGURE 7.2 RATES OF ABORIGINAL HEALTH ASSESSMENTS COMPLETED IN LAST 12 MONTHS FOR ACTIVE ABORIGINAL PATIENTS AGED 15-54 YRS AND 55+ YRS WITH AT LEAST 1 VISIT IN LAST 12 MONTHS AT SCREENING SITE 1 (NB ACTIVE PATIENT DEFINED AS HAVING AT LEAST 3 ATTENDANCES TO SITE IN LAST 2 YEARS)

For Aboriginal Health Assessments, aggregated across all five sites:

- There was no change in the trend of screening from pre- to post-intervention
- Post-intervention, the trend of screening was significantly increasing for patients aged 15-54 years and 55+ years

For Aboriginal Health Assessments, at individual sites:

- No change in trend from pre- to post-intervention was found at four of five sites (for patients 15-54 years) and three of five sites (for patients 55+ years)
 - One site demonstrated a positive change in screening from pre- to post-intervention (for patients 15-54 years and patients 55+ years)
 - One site demonstrated a decrease in screening from pre-to post-intervention (for patients 15-54 years)

Gender and age associations with uptake rates of Adult Aboriginal Health Assessments

Overall across sites post-intervention, significant differences were found between the likelihood of males and females (see Table 7.5) receiving Health Checks, and also between younger and older patients (see Table 7.6).

- For all sites combined, men had a 15% greater odds of having an up-to-date Health Assessment than women, with this difference found to be statistically significant (p=0.01). There was a tendency for men to be screened slightly more frequently than women at four of the five individual sites, although the association was only significant at one site.
- For all sites combined, younger patients aged 15-54 years had 38% lower odds of having an up-to-date Health Assessment than patients 55+ years, and this difference was also statistically significant (p<0.0001). This association was also significant at four of the five individual Screening sites.

TABLE 7.5 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF BEING SCREENED USING ABORIGINAL HEALTH ASSESSMENTS FOR MEN, VERSUS WOMEN

Screening site	Odds ratio (95% CI)	p-value*
1	1.16	0.24
2	1.37	0.005
3	0.85	0.24
4	1.21	0.16
5	1.16	0.31
All combined	1.15 (1.03, 1.28)	0.01

* <0.05 considered statistically significant

TABLE 7.6 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF BEING SCREENED USING ABORIGINAL HEALTH ASSESSMENTS FOR PARTICIPANTS AGED 15-54 YEARS, VERSUS 55+ YEARS

Screening site	Odds ratio (95% CI)	p-value*
1	0.58	0.001
2	0.48	<0.0001
3	0.34	<0.0001
4	1.10	0.70
5	0.66	0.015
All combined	0.62 (0.54, 0.71)	<0.0001

* <0.05 considered statistically significant

Aggregated across all 5 sites, post-intervention:

- Men had a 15% greater odds of having an up-to-date Aboriginal Health Assessment than women
- Younger patients (15-54 years) had 38% lower odds of having an up-to-date Aboriginal Health Assessment than older patients (55+ years)

Screening outcome measure #2: Screening for diabetes using blood glucose

Baseline rates of diabetes screening

The percentage of eligible patients at baseline with up-to-date screening for diabetes using blood glucose at each Screening site is shown in Table 7.7 below. There was substantial between-site variation in rates of screening for diabetes at baseline, ranging from 2.6% to 31.7% for fasting blood glucose, and 37.3% to 75.7% for random blood glucose.

TABLE 7.7 BASELINE RATES OF UP-TO-DATE (I.E. RECORDED IN THE LAST 12 MONTHS) GLUCOSE SCREENING FOR ACTIVE[^] ABORIGINAL PATIENTS AT LEAST 15 YEARS OF AGE AND WITH AT LEAST 1 VISIT IN LAST 12 MONTHS AT EACH SCREENING SITE

Screening site	Month of baseline record	% patients with up-to-date fasting blood glucose screening	% patients with up-to-date random blood glucose screening
1	Mar 2013	23.0	75.7
2	Mar 2013	31.7	55.4
3	May 2013	8.1	47.2
4	May 2013	2.6	37.3
5	Aug 2013	7.1	62.5

[^] Active patient is defined as having at least 3 attendances to site in last 2 years

Post-intervention rates of diabetes screening

Random blood glucose

All sites combined: As shown in Table 7.8, prior to the interventions, aggregated across sites there was a tendency for diabetes screening using random blood glucose to decrease, albeit non-significantly (OR=0.98, p=0.06). From pre- to post-intervention there was a statistically significant positive change in the trend of screening across all sites combined (OR=1.03, p=0.0025). This resulted in a post-intervention trend which was slightly increasing at a statistically significant level (OR=1.01, p=0.0018).

TABLE 7.8 RANDOM GLUCOSE REGRESSION RESULTS, AGGREGATED ACROSS ALL 5 SCREENING SITES (ADJUSTED FOR OVERDISPERSION)

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	p-value*
Trend in screening pre-intervention	0.9824	0.9642	1.0008	0.0614
Change in trend from pre- to post-intervention	1.0321	1.0112	1.0535	0.0025
Trend in screening post-intervention	1.0139	1.0052	1.0228	0.0018

* <0.05 considered statistically significant

Individual sites: Three of the five Screening sites demonstrated statistically significant increases in the trend of screening using random blood glucose from pre- to post-intervention (Site 1: OR=1.04, p<0.001; Site 3: OR=1.03, p=0.0016; Site 5: OR=1.11, p<0.0001). As an example, Figure 7.3 shows the increasing rates of random blood glucose at Screening site 3 following the interventions. Another site demonstrated a small, but non-significant increase in trend (Site 2: OR=1.01, p=0.23), resulting in a post-intervention trend that was very slightly increasing over time with statistical significance (OR=1.01, p=0.004). The remaining site experienced a statistically significant decrease in the trend from pre- to post-intervention (Site 4: OR=0.96, p=0.003), with rates of random glucose measurement then significantly decreasing post-intervention (OR=0.97, p<0.0001).

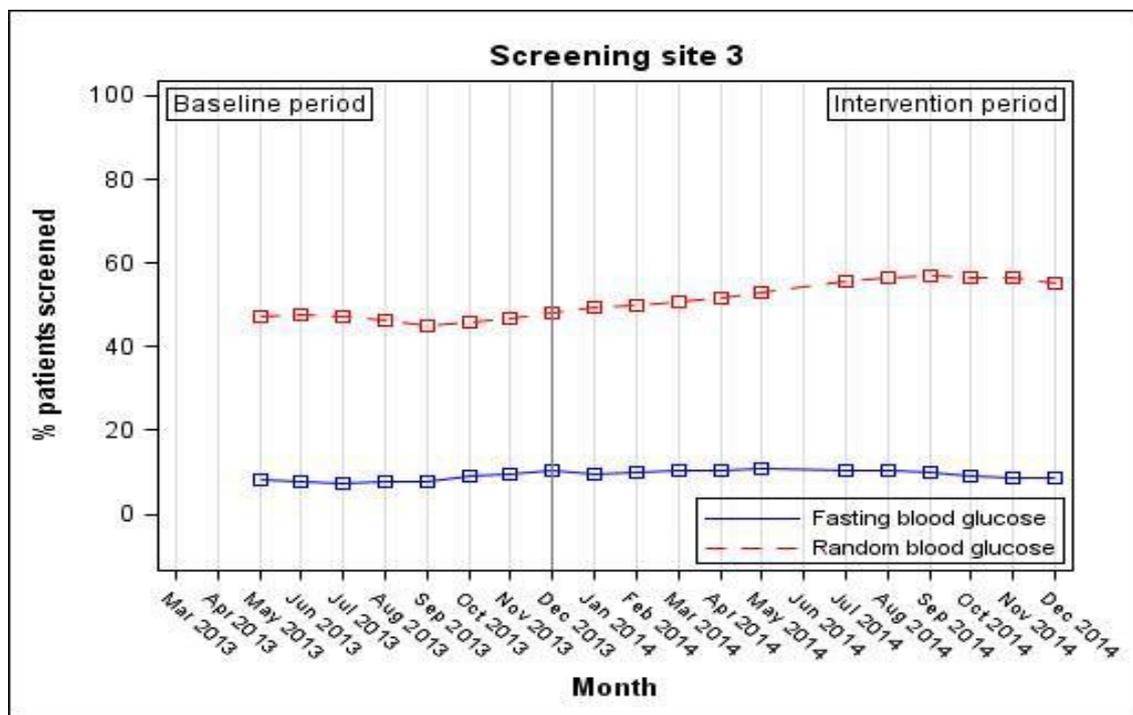


FIGURE 7.3 RATES OF FASTING BLOOD GLUCOSE AND RANDOM BLOOD GLUCOSE COMPLETED IN LAST 12 MONTHS FOR ACTIVE ABORIGINAL PATIENTS AGED 15 YEARS AND OVER AT SCREENING SITE 3 (NB ACTIVE PATIENT DEFINED AS HAVING AT LEAST 3 ATTENDANCES TO SITE IN LAST 2 YEARS)

For random blood glucose:

- Aggregated across all five sites, there was a significant increase in the trend of patients screened for diabetes from pre- to post-intervention
- Individually, three of five sites demonstrated a positive change, one site demonstrated no change, and one site demonstrated a decrease in the screening trend from pre- to post-intervention

Fasting blood glucose

All sites combined: Aggregated across all Screening sites (see Table 7.9 below), diabetes screening using fasting blood glucose remained relatively constant from pre- to post-intervention (OR=1.0), with no statistically significant trends or changes in trends detected.

TABLE 7.9 FASTING GLUCOSE REGRESSION RESULTS - AGGREGATED ACROSS ALL 5 SCREENING SITES (ADJUSTED FOR OVERDISPERSION)

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	P-value*
Trend in screening pre-intervention	1.0028	0.9792	1.0269	0.8204
Change in trend from pre- to post-intervention	0.9999	0.9749	1.0256	0.9955
Trend in screening post-intervention	1.0027	0.9936	1.0119	0.5634

* <0.05 considered statistically significant

Individual sites: From pre- to post-intervention, two sites showed statistically significant increases in the trend of diabetes screening using fasting blood glucose (Site 1: OR=1.04, p=0.0056; Site 5: OR=1.15, p<0.0001). As an example, Figure 7.4 shows increasing rates of fasting blood glucose (and random blood glucose) at Screening site 5. Two sites experienced significant decreases in trend from pre- to post-intervention (Site 3: OR=0.95, p=0.0004; Site 4: OR=0.89, p=0.0008). The remaining site demonstrated no significant changes or trends.

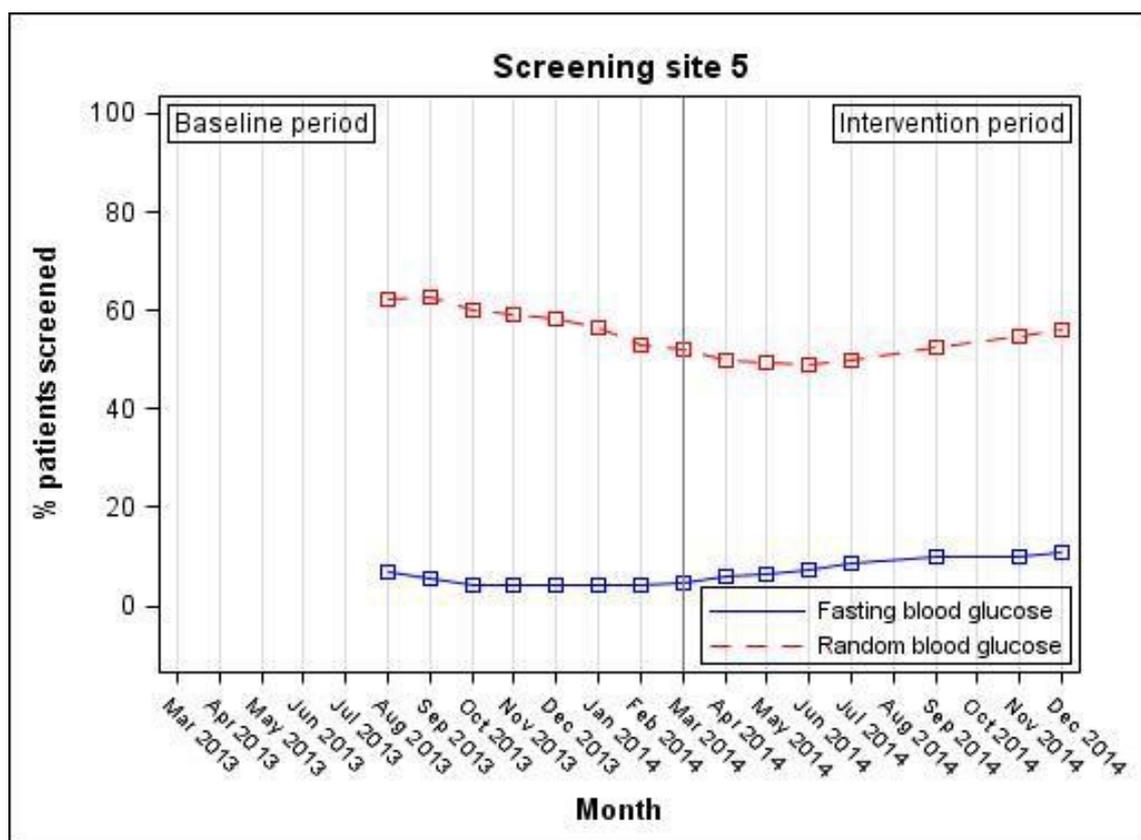


FIGURE 7.4 RATIO OF PATIENTS SCREENED IN LAST 12 MONTHS FOR FASTING AND RANDOM BLOOD GLUCOSE AT SCREENING SITE 5 (NB: THIS IS AVERAGE OF ALL PATIENTS SCREENED IN LAST 2 YEARS)

For fasting blood glucose:

- Across all five sites combined, there was no change in the trend of screening for diabetes from pre- to post-intervention
- Individually, two of five sites demonstrated a positive change, one site demonstrated no change, and two sites demonstrated a decrease in the screening trend from pre- to post-intervention

Gender and age associations with diabetes screening

Aggregated across sites post-intervention, patients were just as likely to be screened for diabetes (for both random blood glucose and fasting blood glucose) if they were men or women (see Table 7.10).

TABLE 7.10 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF BEING SCREENED FOR DIABETES (USING RANDOM BLOOD GLUCOSE OR FASTING BLOOD GLUCOSE) FOR ACTIVE[^] ABORIGINAL MALE PATIENTS, VERSUS FEMALE PATIENTS

Screening site	Random Blood Glucose		Fasting Blood Glucose	
	Odds ratio (95% CI)	p-value*	Odds ratio (95% CI)	p-value*
1	0.90	0.54	0.84	0.25
2	1.17	0.15	1.01	0.95
3	0.89	0.28	1.09	0.65
4	1.10	0.50	0.43	0.09
5	1.17	0.12	1.47	0.014
All combined	1.04 (0.94, 1.14)	0.48	1.02 (0.89, 1.17)	0.76

* <0.05 considered statistically significant

[^]Active patient is defined as having at least 3 attendances to site in last 2 years

Post-intervention there was a strong association between age and screening for diabetes, with younger patients significantly less likely to be screened than older patients (see Tables 7.11 and 7.12). For both random blood glucose and fasting blood glucose, across all sites combined, patients aged 15-44 years were screened at about one third of the rate of patients aged 45-64 years, and only about a quarter the rate of patients aged 65+ years. In each instance, these discrepancies were statistically significant (p<0.0001).

At most individual sites, for random blood glucose and fasting blood glucose, patients aged 15-44 years were significantly less likely to be screened than patients aged 45-64 years or 65 years and older.

TABLE 7.11 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF BEING SCREENED FOR DIABETES (USING RANDOM BLOOD GLUCOSE OR FASTING BLOOD GLUCOSE) FOR ACTIVE[^] ABORIGINAL PATIENTS AGED 15-44 YEARS, VERSUS 45-64 YEARS

Screening site	Random Blood Glucose		Fasting Blood Glucose	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value*
1	0.58	0.002	0.33	<0.0001
2	0.49	<0.0001	0.25	<0.0001
3	0.15	<0.0001	0.17	<0.0001
4	0.51	<0.0001	1.80	0.35
5**				
All combined	0.37 (0.32, 0.42)	<0.0001	0.30 (0.26, 0.36)	<0.0001

* <0.05 considered statistically significant

** missing data from Site 5

[^]Active patient is defined as having at least 3 attendances to site in last 2 years

TABLE 7.12 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF BEING SCREENED FOR DIABETES (USING RANDOM BLOOD GLUCOSE OR FASTING BLOOD GLUCOSE) FOR ACTIVE ABORIGINAL PATIENTS AGED 15-44 YEARS, VERSUS 65+ YEARS

Screening site	Random Blood Glucose		Fasting Blood Glucose	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
1	0.45	0.04	0.22	<0.0001
2	0.32	0.0001	0.11	<0.0001
3	0.07	<0.0001	0.20	<0.0001
4	0.85	0.61	1.20	1
5**				
All combined	0.27 (0.20, 0.36)	<0.0001	0.24 (0.18, 0.32)	<0.0001

* <0.05 considered statistically significant

** missing data from Site 5

^ Active patient is defined as having at least 3 attendances to site in last 2 years

At post-intervention:

- Men and women were equally as likely to be screened for diabetes
- Younger patients (aged 15-44 years) were significantly less likely to be screened for diabetes than older patients (aged 45-64 years and 65+ years)

7.3 Diabetes Management outcomes

Baseline management outcomes

The number and characteristics of eligible patients (i.e. active Aboriginal patients at least 15 years of age) recorded at baseline for each Diabetes Management site are shown in Table 7.13 below.

TABLE 7.13 BASELINE CHARACTERISTICS OF ACTIVE^ ABORIGINAL PATIENTS AT LEAST 15 YEARS OF AGE WITH DIABETES AT EACH MANAGEMENT SITE

	Management Site					
	1	2	3	4	5	6
Month of baseline record	Mar 2013	Mar 2013	May 2013	May 2013	Aug 2013	Aug 2013
Total active patients	1155	1461	1705	1083	1748	549
Active patients with diabetes	184 (16%)	139 (10%)	270 (16%)	96 (9%)	252 (14%)	83 (15%)
Active with diabetes and visited in last 12 months	180	139	268	89	240	79

	Management Site					
	1	2	3	4	5	6
Characteristics (active with diabetes and visited in last 12 months)						
Male	74 (41%)	51 (37%)	114 (43%)	40(45%)	101 (42%)	39 (49%)
Female	106 (59%)	88 (63%)	154 (58%)	49(55%)	139 (58%)	40 (51%)

^ Active patient is defined as having at least 3 attendances to site in last 2 years

Table 7.14 below shows the baseline rates of diabetes management at each Management site.

TABLE 7.14 BASELINE RATES OF COMPLETED MINIMUM CYCLE OF CARE (RECORDED IN LAST 12 MONTHS) AND GP MANAGEMENT PLANS (RECORDED IN LAST 12 MONTHS) FOR ACTIVE^ ABORIGINAL PATIENTS AT LEAST 15 YEARS OF AGE WITH DIABETES AND WITH AT LEAST 1 VISIT IN LAST 12 MONTHS

Management site	Month of baseline record	% diabetes patients receiving minimum cycle of care	% diabetes patients with GP management plan
1	Mar 2013	2.8	49.4
2	Mar 2013	37.4	82.0
3	May 2013	4.5	34.0
4	May 2013	2.2	58.4
5	Sep 2013	0.8	31.3
6	Aug 2013	27.8	70.9

^ Active patient is defined as having at least 3 attendances to site in last 2 years

Post-intervention management outcomes

Minimum annual cycle of care

All sites combined: Aggregated across all Management sites (see Table 7.15 below), the proportion of diabetes patients receiving the minimum annual cycle of care remained relatively constant from pre- to post-intervention, with no statistically significant changes detected ($p > 0.05$).

TABLE 7.15 MINIMUM CYCLE OF CARE REGRESSION RESULTS - AGGREGATED ACROSS ALL 6 MANAGEMENT SITES (ADJUSTED FOR OVERDISPERSION)

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	P-value*
Trend in min. cycle of care pre-intervention	0.9651	0.9030	1.0314	0.2948
Change in trend from pre- to post-intervention	1.0592	0.9872	1.1364	0.1095
Trend in min. cycle of care post-intervention	1.0222	0.9986	1.0464	0.0657

* < 0.05 considered statistically significant

Individual sites: Of the six Management sites, two sites exhibited significant increases in the trend of patients with a completed minimum cycle of care from pre- to post-intervention (Management Site 2: OR=1.10, $p=0.01$; Management Site 6: OR=1.25, $p=0.001$). As an example, Figure 7.5 shows the increased rates of completed minimum cycles of care from pre- to post-intervention at Management site 4. One site was experiencing a significant increase in the trend of patients receiving a minimum cycle of care prior to the

interventions (Management site 1: OR=1.26, p<0.0001); however, there was a significant decrease in this trend from pre- to post-intervention (OR=0.80, p<0.0001) which resulted in the proportion of patients with a minimum cycle of care remaining relatively constant throughout the intervention period. At the remaining three Management sites, no statistically significant changes in trend between pre- and post-intervention were detected, although the post-intervention trend at two of these sites was increasing significantly (Management site 4: OR=1.11, p=0.0002; Management Site 5: OR=1.08, p=0.0489)

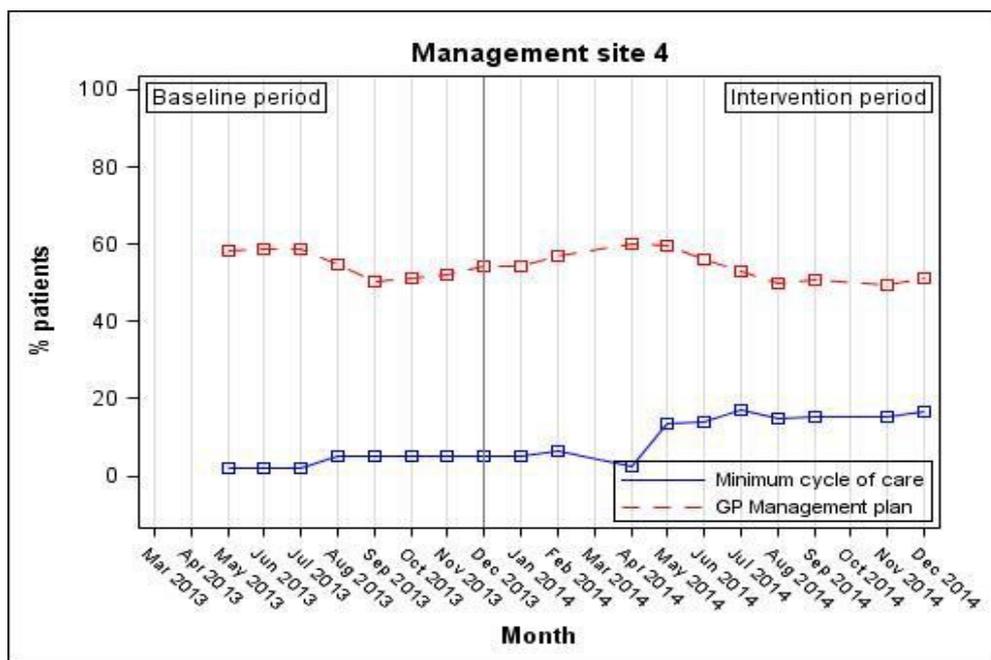


FIGURE 7.5 RATES OF UP-TO-DATE MINIMUM CYCLE OF CARE AND GP MANAGEMENT PLANS FOR ACTIVE ABORIGINAL PATIENTS AGED 15-54YRS AND 55+ YEARS AND WITH A VISIT IN LAST 12 MONTHS AT MANAGEMENT SITE 4 (NB ACTIVE PATIENT DEFINED AS HAVING AT LEAST 3 ATTENDANCES TO SITE IN LAST 2 YEARS)

For diabetes management using the minimum cycle of care:

- Across all six sites combined, there was no change in the trend of completed minimum cycles of care from pre- to post-intervention
- Individually, one site demonstrated an increase in the trend of completed minimum cycles of care, three sites demonstrated no change, and two sites demonstrated a decrease in the trend from pre- to post-intervention
- Post-intervention, three sites were demonstrating an increase in the trend of completed minimum cycles of care

GP Management Plan

All sites combined: Aggregated across all Management sites (see Table 7.16), the proportion of diabetes patients with an up-to-date General Practitioner (GP) Management Plan remained relatively constant from pre- to post-intervention.

TABLE 7.16 CURRENT GP MANAGEMENT PLAN REGRESSION RESULTS - AGGREGATED ACROSS ALL 6 MANAGEMENT SITES

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	P-value*
Trend in GP Management Plans pre-intervention	1.0207	0.9965	1.0455	0.0937
Change in trend from pre- to post-intervention	0.9833	0.9575	1.0097	0.2119
Trend in GP Management Plans post-intervention	1.0036	0.9927	1.0147	0.5164

* <0.05 considered statistically significant

Individual sites: From pre- to post-intervention, none of the six Management sites showed a statistically significant positive change in trend of GP Management Plans. One site experienced a statistically significant decrease in trend of diabetic patients with a GP Management Plan from pre- to post-intervention (Management Site 6: OR=0.83, p=0.0058). However, this site maintained the second highest proportion of patients with a GP Management Plan of all six sites (see Figure 7.6 below). The proportion of patients with a GP Management Plan at the remaining five sites was relatively steady from pre- to post-intervention with no statistically significant changes detected.

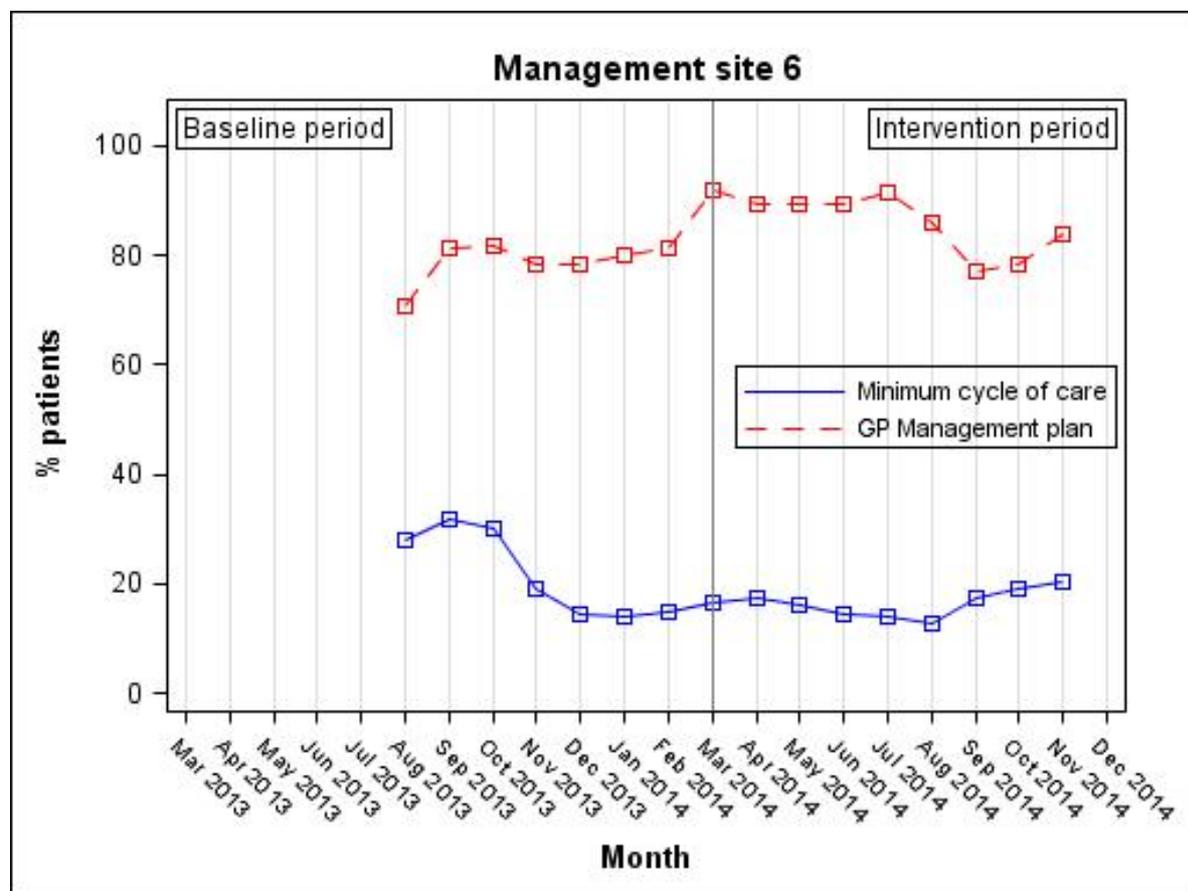


FIGURE 7.6 RATES OF FASTING BLOOD GLUCOSE AND RANDOM BLOOD GLUCOSE COMPLETED IN LAST 12 MONTHS FOR ACTIVE ABORIGINAL PATIENTS AGED 15-54YRS AND 55+ YRS AND WITH A VISIT IN LAST 12 MONTHS AT MANAGEMENT SITE 6 (NB ACTIVE PATIENT DEFINED AS HAVING AT LEAST 3 ATTENDANCES TO SITE IN LAST 2 YEARS)

For diabetes management using a GP Management Plan:

- Across all six sites combined, there was no change in the trend of up-to-date GP Management Plans from pre- to post-intervention
- Individually, five sites demonstrated no change in the trend of up-to-date GP Management Plans. One site demonstrated a decrease in the trend from pre- to post-intervention

Age and gender associations with diabetes management

Post-intervention there was no association between patient gender and having a completed minimum cycle of care. However, aggregated across sites, men had 25% lower odds than women of having a current GP Management Plan, with this difference statistically significant (see Table 7.17).

TABLE 7.17 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF RECEIVING MINIMUM CYCLE OF CARE OR A CURRENT GP MANAGEMENT PLAN FOR MALE DIABETES PATIENTS, VERSUS WOMEN

Management site	Minimum cycle of care		GP Management Plan	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value*
1	0.86	0.84	0.91	0.77
2	0.61	0.17	0.85	0.80
3	NA**	NA**	0.55	0.02
4	1.76	0.31	1.30	0.56
5	0.94	1	0.53	0.015
6	1.15	1	0.63	0.74
All combined	0.93 (0.63, 1.37)	0.78	0.75 (0.58, 0.97)	0.022

* <0.05 considered statistically significant

** Odds ratio not estimable due to a zero cell count in the denominator, i.e. zero patients received the minimum cycle of care at Management site 3

Age was strongly associated with the likelihood of diabetic patients having a completed minimum cycle of care and a GP Management Plan. Across the individual sites, and across all sites combined, diabetes patients were less likely to have completed a minimum cycle of care if they were aged 15-44 years, compared to participants aged 45-64 years or 65+ years (see Table 7.18). Across all combined sites, the effect was significant (OR=0.35, p=0.0003; OR=0.29, p=0.0002).

TABLE 7.18 POST-INTERVENTION ODDS RATIOS SHOWING THE RELATIVE ODDS OF RECEIVING THE MINIMUM CYCLE OF CARE FOR DIABETES PATIENTS AGED 15-44 YEARS, VERSUS 45-64 YEARS

Management site	15-44 yrs v 45-64 yrs		15-44 yrs v 65+ yrs	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value*
1	0.28	0.05	0.29	0.095
2	0.66	0.48	0.21	0.0085
3	NA**	NA**	NA**	NA**
4	0.44	0.50	0.17	0.048
5	0.31	0.15	0.62	0.67

Management site	15-44 yrs v 45-64 yrs		15-44 yrs v 65+ yrs	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value*
6	0	0.02	0	0.51
All combined	0.35 (0.18, 0.66)	0.0003	0.29 (0.14, 0.59)	0.0002

* <0.05 considered statistically significant

** Odds ratio not estimable due to a zero cell count in the denominator

Across the individual sites, there was a tendency for diabetes patients to be less likely to have a current GP Management Plan if they were aged 15-44 years, compared to participants aged 45-64 years or 65+ years, however this was not statistically significant at most sites (see Table 7.19). Across all sites combined, this effect was significant (OR=0.64, p=0.0037; OR=0.45, p<0.0001). Overall across sites, diabetic patients aged 15-44 years were 36% less likely than diabetic patients aged 45-64 years to have a GP Management Plan. Patients aged 15-44 years were less than half as likely to have a GP Management Plan compared to patients aged 65+ years.

TABLE 7.19 ODDS RATIOS SHOWING THE RELATIVE ODDS OF HAVING A CURRENT GP MANAGEMENT PLAN FOR DIABETES PATIENTS AGED 15-44 YEARS, VERSUS 45-64 YEARS & PATIENTS AGED 15-44 VERSUS 65+ YEARS

Management Site	15-44 yrs v 45-64 yrs		15-44 yrs v 65+ yrs	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value*
1	0.61	0.17	0.49	0.13
2	0.66	0.54	0	0.022
3	0.33	0.0009	0.32	0.0081
4	0.88	0.82	0.43	0.23
5	1.20	0.64	0.90	0.85
6	0.48	0.43	0.11	0.059
All combined	0.64 (0.47, 0.87)	0.0037	0.45 (0.31, 0.67)	<0.0001

* <0.05 considered statistically significant

For patients with diabetes, combined across all six sites at post-intervention:

- Men and women were equally as likely to have a completed minimum cycle of care
- Men were significantly less likely than women to have a GP Management Plan
- Younger patients were significantly less likely than older patients to have a completed minimum cycle of care or GP Management Plan

Diabetes Control (HbA1c <7%)

HbA1c was used to indicate how well people with diabetes have their blood glucose under control, with levels less than 7% considered optimum for diabetes management. The proportion of eligible patients at each site with HbA1c levels under 7% at baseline is shown in Table 7.20 below.

TABLE 7.20 BASELINE RATES OF ACTIVE[^] ABORIGINAL PATIENTS AT LEAST 15 YEARS OF AGE WITH DIABETES AND WITH HbA1c RECORDED IN LAST SIX MONTHS WHERE HbA1c RESULTS WERE IN RECOMMENDED GOAL RANGE OF <7%

Management site	Month of baseline record	% diabetes patients with HbA1c in goal range of <7%
1	Mar 2013	37%
2	Mar 2013	45%
3	May 2013	31%
4	May 2013	34%
5	Sep 2013	40%
6	Aug 2013	47%

[^] Active patient is defined as having at least 3 attendances to site in last 2 years

All sites combined: Aggregated across all six Management sites (see Table 7.21), the proportion of diabetes patients with HbA1c in the goal range of less than 7% remained relatively constant from pre- to post-intervention.

TABLE 7.21 HbA1c REGRESSION RESULTS - AGGREGATED ACROSS ALL 6 MANAGEMENT SITES (ADJUSTED FOR OVERDISPERSION)

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	P-value
Trend of HbA1c in goal range pre-intervention	0.9971	0.9646	1.0307	0.8652
Change in trend from pre- to post-intervention	1.0206	0.9846	1.0580	0.2656
Trend of HbA1c in goal range post-intervention	1.0177	1.0040	1.0317	0.0114

Individual sites: From pre- to post-intervention, one of the six Management sites (see Figure 7.7 below) showed a statistically significant increase in the trend of patients with HbA1c in the goal range (Management site 1: OR=1.17, p=0.0012). Another site experienced a statistically significant decrease in trend of diabetic patients with HbA1c in the goal range (Management site 5: OR=0.88, p=0.012). None of the remaining sites showed any significant changes.

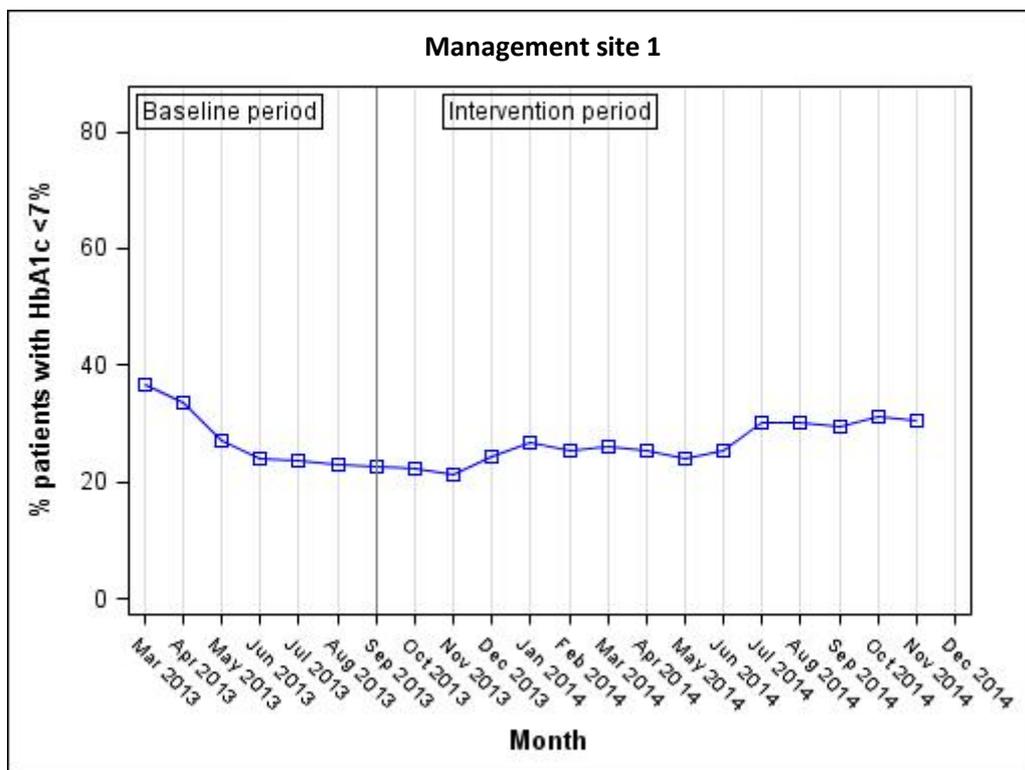


FIGURE 7.7 PROPORTION OF DIABETIC PATIENTS WITH HbA1c IN GOAL RANGE OF <7% FOR ACTIVE ABORIGINAL PATIENTS AGED AT LEAST 15 YEARS WITH HbA1c RECORDED IN LAST 6 MONTHS AT MANAGEMENT SITE 1 (NB ACTIVE PATIENT DEFINED AS HAVING AT LEAST 3 ATTENDANCES TO SITE IN LAST 2 YEARS)

For diabetes control, combined across all six Management sites:

- There was no change in the trend of patients with HbA1c levels in the goal range from pre- to post-intervention

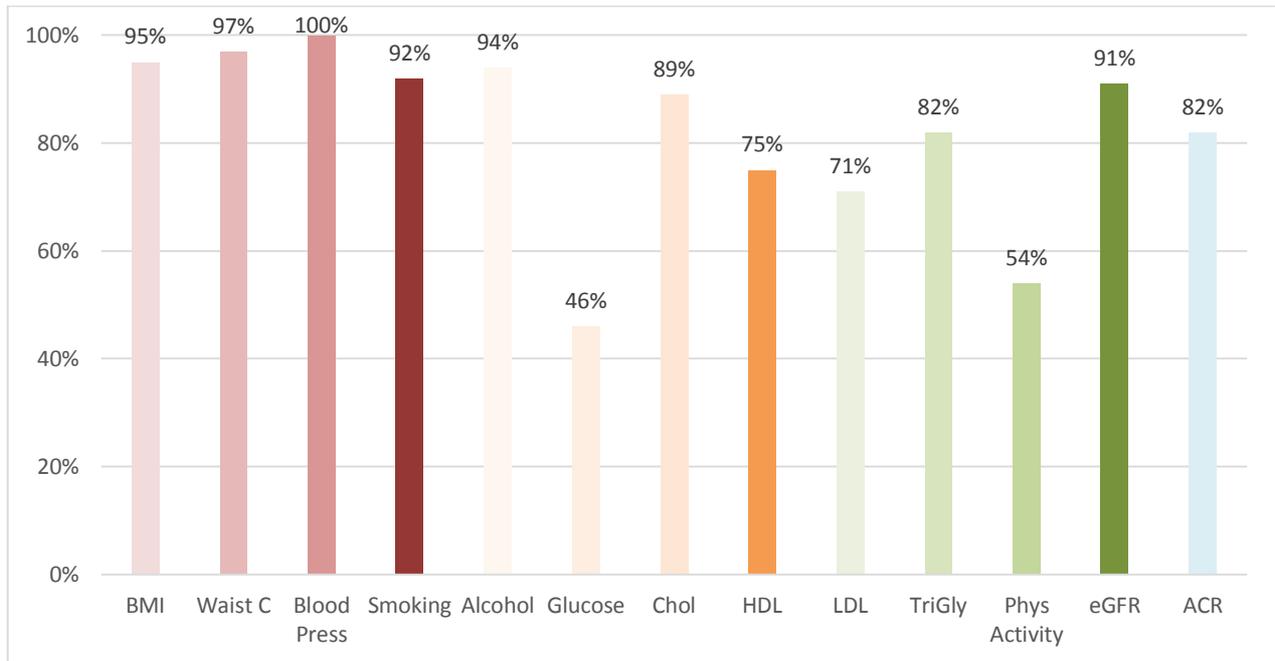
7.4 Data Quality outcomes

Agreement between clinical software systems Medical Director and PenCAT

All sites combined: There were a total of 110 patient records using each data source (Pen Clinical Audit Tool (PenCAT), Medical Director (MD)/Communicare and self-report survey) across all four sites for Data Quality. Despite variation across Aboriginal Community Controlled Health Services (ACCHSs), overall there was reasonable agreement between MD/Communicare and PenCAT data in terms of the screening interval or time since clinical items had been assessed. As shown in Figure 7.8, six of the items had agreement rates of 90%-100% (BMI, waist circumference, blood pressure, smoking, alcohol, eGFR) according to the set criteria (see Data Quality Analysis section above), and a further three items had agreement rates of 80%-90% (cholesterol, triglycerides, ACR).

Variation across individual sites: The study identified some site-specific inaccuracies where agreement between MD and PenCAT data was particularly low at certain sites only (e.g. physical activity, HDL cholesterol). This

significantly skewed the aggregated rates of agreement on these items. Other items showed relatively consistent low levels of accuracy at most sites such as glucose (5%-83%) and LDL cholesterol (65%-90%). Conversely, across all sites certain items consistently showed high levels of accuracy (e.g. BMI, waist circumference, blood pressure).



**FIGURE 7.8 AGREEMENT BETWEEN MD AND PENCAT DATA FOR CLINICAL ITEMS (ASSESSED IN LAST 12 MONTHS)
AVERAGED ACROSS ALL 4 SITES**

Agreement between patient self-report and Medical Director for smoking and alcohol intake

For patient smoking and alcohol status, agreement between patient self-report and MD/Communicare was 75% and 69% respectively, aggregated across all sites (see Figure 7.9).

These results indicate that more than one in four patients have inaccurate records in terms of their smoking and drinking behaviour, meaning that clinicians will not be aware of the risk status of these patients.

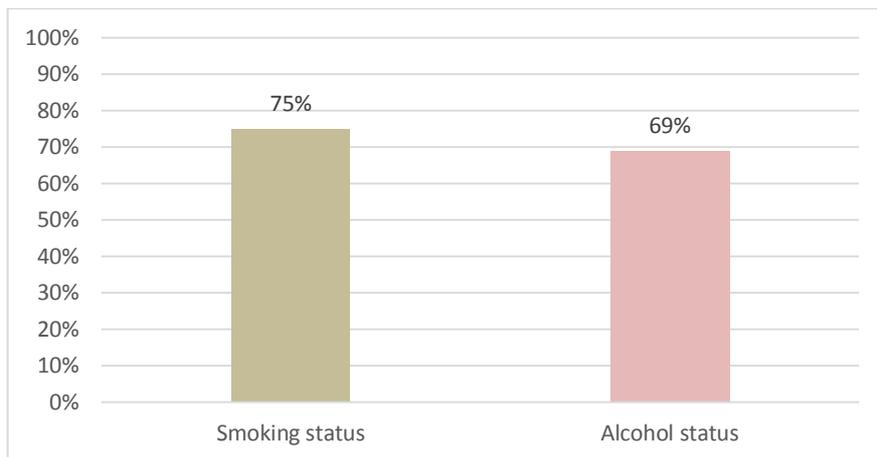


FIGURE 7.9 AGREEMENT BETWEEN SELF-REPORT AND MEDICAL DIRECTOR RECORDS FOR SMOKING STATUS AND ALCOHOL INTAKE ACROSS ALL DATA QUALITY SITES COMBINED

Implications of data quality outcomes

Most data across sites appear reasonably accurate, although there is room for improvement. Most ACCHSs have one or two specific items for which accuracy needs to be addressed. Potential sources of error affecting data accuracy may include:

- **Incorrect data entry.** It is possible that patient information is not being recorded in the correct data entry field in the MD record, and therefore not being picked up by PenCAT. Feedback provided to ACCHSs suggests specific items for which staff should make efforts to enter data into the correct area of MD.
- **Incompatibility issues between PenCAT and MD.** Software errors can occur when PenCAT extracts data from the MD data. The PenCAT software does not pick up patient data that are entered in an incompatible font.
- **Under-reporting of lifestyle risk factors.** Many 'at-risk' patients cannot be identified because smoking and alcohol data are often inaccurate or outdated.

It is noted that data accuracy may also be limited due to limitations in the methodology of the Data Quality component. For example, human error in conducting the MD audit, the limited sample size at each site (n=30 patients) and the items selected for testing may limit the accuracy and generalisability of findings.

Key learnings

- Significant variation exists across ACCHSs in rates of preventive health screening and management of diabetes
- Individual sites showed varying levels of improvement from pre-to post-intervention for outcomes related to preventive health screening and management of diabetes

Combining all five sites for Screening:

- Rates of Aboriginal health checks did not significantly change from pre- to post-intervention
- The interventions were associated with significant improvements in diabetes screening using random blood glucose, but no change for fasting blood glucose

Combining all six sites for Diabetes Management:

- There was no change in completion rates of the annual cycle of care from pre- to post-intervention
- There was no change in the use of GP Management Plans from pre- to post-intervention
- No clear changes in patient health outcomes in terms of achieving recommended goals for optimum diabetes management were observed from pre- to post- intervention

For Data Quality across all four sites:

- PenCAT records appear to be reasonably accurate for most data items. However, some items need improvement where the level of agreement between PenCAT and MD or Communicare is low
- Data inaccuracies may be addressed by i) improving data entry into MD, which will directly result in improved accuracy in PenCAT; ii) ongoing data audits; iii) staff training; iv) implementation of system-level approaches to data entry; and v) routine data cleaning
- Detection and recording of lifestyle behaviours can be improved by increasing the level of GP detection and ensuring the collected information is accurate and up-to-date
- Limitations of the Data Quality component may limit the accuracy and generalisability of findings

Chapter 8

Acceptability of interventions

8. Acceptability of interventions

The findings related to acceptability of the Chronic Care Service Enhancements Program (CCSEP) interventions to Aboriginal Community Controlled Health Services (ACCHS) staff and patients are summarised below for both the Screening and Diabetes Management priority areas. Due to the relatively small sample of respondents, however, the generalisability of these findings beyond the participating ACCHSs is likely to be limited.

8.1 Staff interviews about enhanced care strategies to manage diabetes

Staff interview participants

Of the six ACCHSs invited to participate in interviews about Diabetes Management, four ACCHSs participated. A total of 13 staff members participated in discussions including clinic managers, chronic care coordinators and nurses, Aboriginal health workers, and administrative staff. One of the interviews was conducted face-to-face with a single staff member. Three other interviews were conducted in group settings via teleconference or Skype.

Diabetes check reminders

The use of recall systems varied between different ACCHSs. For those using a recall system, both automated and manual systems were used. ACCHS staff perceived recall systems to be effective, with estimated attendance rates of 60-80% for those making an appointment.

Some ACCHSs did not use recall systems. These services perceived recall systems as not useful for their patient population. Alternatively, recall systems (e.g. Medical Director (MD) recall software) may have been discontinued because they were perceived as not working well for their staff. Most respondents found the reminder system in MD easy to use. There were no reports that using the reminder system took too much time. Most staff reported that using the reminder system became routine after a while and that they perceived that using the reminder system led to more patients being screened than would have otherwise. Almost all respondents thought that using the reminder system had been worthwhile and that they hope their service continues to use the reminder system. Six of the eight staff who completed the staff acceptability survey indicated that they would recommend to other medical services that they implement a screening reminder system.

In some instances alternative reminder systems for diabetes checks were adopted such as:

- At some ACCHSs, patients were encouraged to book their next appointment immediately after their GP appointment, although it was noted that some clients may have been missed by this approach
- Patients were sent a reminder letter or an SMS message
- Monthly checks of a diabetes database register were conducted, with postal invitations to attend the clinic issued together, followed up with a phone call the day before the appointment

- One ACCHS hosted a ‘roving’ clinic in the main regional township and at other locations servicing outlying communities. Diabetic patients were opportunistically approached to book in for the next ‘roving’ clinic
- A Memorandum of Understanding (MOU) between one ACCHS and the Local Health District (LHD) was implemented which allowed staff to flag particular patients to the LHD diabetes educator who would subsequently conduct a home visit and refer the patient to necessary services.

Clinical software systems

Clinical software systems for recall and management of diabetic patients varied between different ACCHSs. Systems include Medical Doctor, Doctors Control Panel (DCP) and an in-house Diabetic Registry (based on Excel spread sheets). Staff recommended a number of areas of improvement to the clinical software systems including:

- **Health Level-7 capability.** The full capacity of Pen Clinical Audit Tool (PenCAT) was not used when database systems were not Health Level-7 data (HL7) compliant; important blood markers such as albumin/creatinine ratio and HbA1c are not automatically shared between other health databases such as pathology. Consequently, a significant amount of staff time was spent manually inputting these data into their databases. Without funding for this data entry position, staff needed to reprioritise other work to ensure data was entered for general access. Enabling HL-7 capability has the potential to streamline identification of patients requiring recall for diabetes-related check-ups.
- **Tailor software to suit Aboriginal patients.** It was reported that the DCP diabetes software is not Aboriginal specific. Changes to the software to reflect items which are specific to Aboriginal people would be useful to the ACCHS staff and patients.
- **Improved interface.** Diabetes software is embedded within the medical system software and is not found easily. It was suggested that the diabetes software could be more ‘stand-out’ to ensure that diabetes screening is not missed. It was suggested that MD software could also include pop-ups for smoking and alcohol screening to enable staff to easily identify if these issues have been addressed.

Clinical care relating to chronic disease management was referred to as the ‘cycle of care’ or the ‘patient journey’. Each concept describes a model that is holistic in nature intended to encompass all levels of health professionals in all aspects of disease management within an individual patient’s life.

Clinical care delivery

Examples of clinical care delivery strategies across ACCHSs included:

- ‘Multidisciplinary clinic’ days which run on a monthly or bi-monthly basis, either at the ACCHS or as a series of ‘roving’ clinics held in various local communities. The common feature of the ‘multidisciplinary clinics’ is that the patient has access to several health care professionals (nurses; endocrinologists; podiatrists; dieticians; exercise physiologists; diabetes educators and pharmacists) in the one visit.
- Telehealth consultations to access an endocrinologist as part of the on-site multidisciplinary clinic approach. An Aboriginal Health Worker, nurse or diabetes educator was present as a patient advocate

to immediately clarify any issues that may arise during the consultation. Patients may use this service 1-12 times per year depending on their level of need. Patient advocates were important for the success of this model and were acceptable to patients.

- Individual appointment systems where the patient sees the nurse prior to their doctor’s appointments. At this consultation a physical assessment is made and issues that are raised with the nurse are communicated to the doctor.
- ‘Patient journey sheets’ where current health checks (flagged in green) are clearly distinguished from outstanding health checks (flagged in red) using a colour coded system.

Barriers and enablers to effective clinical care

A number of perceived barriers to and enablers for effective clinical care were identified by staff across ACCHSs.

TABLE 8.1. PERCEIVED BARRIERS TO EFFECTIVE CLINICAL CARE IDENTIFIED BY ACCHS STAFF INTERVIEWS

Patient perception of illness	Patient lack of understanding Inability to prioritise diabetes management
Interaction between patients and doctors	Poor engagement with Aboriginal patients
Financial barriers	Lack of bulk-billing
Staff communication	Poor verbal and electronic communication between staff from different disciplines

TABLE 8.2. PERCEIVED ENABLERS OF EFFECTIVE CLINICAL CARE IDENTIFIED BY ACCHS STAFF INTERVIEWS

Staff communication	Strong interprofessional communication with verbal and electronic communication adjuncts to enhance information sharing
Onsite facilities (e.g. pathology)	Minimise structural barriers to patient care
Formalised linkages with LHDs	Allows regular case management and open communication between respective services
Multidisciplinary assessment with range of health care professionals	Allows patients to progress through a ‘one-stop shop’ and access all required health care professionals in a single appointment
Clinical software	Pop-up reminders and visual cues for patient reminders are useful adjuncts for patient management systems

Ability to assist with transport	Recall system allows staff to check with patients if they need transport to and from their appointment, which is organised at the time if required.
Physician endorsement	Better patient compliance of management plan and follow-up appointments

Suggested areas for improvement

Ongoing funding was recommended by staff to continue the perceived improvements in chronic disease management and flow-on effects on patient behaviour (such as lifestyle changes and proactive self-care). Monthly and year-to-date feedback regarding diabetes (and other aspects of chronic disease) was also perceived as useful, specifically identifying trends in health care delivery and outcomes.

8.2 Patient interviews about enhanced care strategies to manage diabetes

Patient interview participants

Patients with diabetes from all ACCHSs participating in the Diabetes Management evaluation were also invited to share their experience during the evaluation. Eleven patients from two ACCHSs participated.

Level of care

The patients interviewed were being treated under different models of care depending on the ACCHS which they attended. One ACCHS treated patients with diabetes at individually scheduled appointments. The other ACCHS focused on managing diabetes at regular ‘multidisciplinary clinics’ which involved co-ordinating relevant health professionals and patients to attend the clinic on specific days. The multidisciplinary clinic model aimed to address a host of diabetes-related issues with many patients on a single occasion.

Almost all patients reported high levels of satisfaction with the level of care that they receive through their ACCHS. One patient who attended regularly scheduled appointments, however, noted that there were ‘not enough doctors’. This patient had attended the clinic for many years and expressed frustration with high doctor turnover. The patient believed that the high doctor turnover had a detrimental effect on his management of diabetes at various times.

Care was reported to be very thorough by those that attended the ‘multidisciplinary clinic’. These patients also reported that they were grateful they could contact the diabetes educator at the LHD or staff at the ACCHS for advice at almost any time. The multidisciplinary clinic was perceived to be a valuable service that comprehensively treats the patient’s diabetes as well as other issues.

Diabetes check reminders

Patients receiving a phone call or SMS prior to attending their appointment indicated that this service was an acceptable and important part of their clinical care. Many stated that they ‘would not remember otherwise’ and were appreciative of the service.

Patients receiving care under the multidisciplinary clinic model described finding out about the clinic in a variety of ways. Some received a letter one week before the clinic, alerting them to the time, date and location of the clinic. Others found out by ‘word-of-mouth’ or were individually telephoned by the diabetes educator from the LHD. It was also reported that some were opportunistically informed of the clinic when they were at their previous ACCHS appointment.

Education

Many patients described their diabetes education as ‘a journey’, something that took some time to understand. Acute education periods included understanding the initial diagnosis, transition from tablets to insulin injections and changes in medications relating to other health conditions. Educational support in these acute phases was reported to come from diabetes educators, nurses and pharmacists.

Patients describe that it took them a while to realise the impact that diabetes can have on other parts of the body such as the kidneys and heart. One patient described the fear and embarrassment she felt about not understanding her disease and not wanting to ask for help to understand it. She described that the welcoming attitude of the staff helped her through this so she no longer feels afraid or embarrassed to ask questions about her disease and disease management.

Most patients reported that they understood why they took their medications. Some patients found that keeping up with understanding their medication was difficult as medication regimes changed frequently. One patient described the burden of having to support her partner as he began to require insulin injections. She felt overwhelmed and sought the assistance of the diabetes educator.

Self-management

Patient interviews highlighted several themes regarding diabetes self-management:

- **Lifestyle changes.** Most patients reported they had made lifestyle changes as part of their management plan. Occasional non-adherence to lifestyle changes occurred due to eating or drinking the wrong things from time to time.
- **Medication management.** Some patients reported that they had become overwhelmed by their disease or other medical complaints and had stopped following their management plan. Eventually, deterioration in their health encouraged them to seek help and they resumed their medication regime, ‘with occasional slip-ups’.
- **Confidence and understanding.** Most patients described their confidence with managing diabetes as building over time. Management of their disease has improved as their understanding of the disease and their confidence increase. ‘Initially I didn’t understand the seriousness of the disease. This took years’.

Overall patients were grateful for the diabetes services provided by the ACCHSs and the LHD. They perceived that their health would suffer if these services were not available. It was reported that the ACCHSs had facilitated their education and management of their chronic disease in a personal and individualised way.

8.3 Staff surveys related to screening interventions

Staff survey respondents

Eight staff members (three doctors, three nurses, one Aboriginal Health Worker and one 'other') from one site completed the staff acceptability survey related to the Screening component. Staff surveys from another ACCHS were filled out but misplaced and unable to be returned to the evaluation team.

Perceptions and practices relating to screening

All respondents agreed that routine preventive screening will improve the health of their clients, and all but one believed that part of their role is to assist with the arrangements necessary to screen patients for chronic illnesses. Three staff members use the reminder system on a daily basis, two on a weekly basis and the remainder reported monthly use or none at all.

Staff training

The majority of respondents looked forward to the training about the chronic disease screening guidelines and MD/Pen Clinical Audit Tool (PenCAT). The same proportion indicated that they would have liked the training to include more information about chronic diseases and MD/PenCAT. Staff seemed satisfied with the quantity of written material provided and most found the training worthwhile.

The perceived usefulness of the MD software training varied between sites. Not unexpectedly, those sites that used different software (e.g. DCP) or operational systems for diabetes management did not find the training useful or found the training too general in nature.

However, some sites found the training very useful, providing them with insight into how staff can use MD software more efficiently and how the use of MD can be expanded to create a picture of the patient's history as well as viewing their current care. One site subsequently engaged the trainer for ongoing training sessions.

Suggested areas for improvement: Ongoing training was recommended by staff to reinforce learning and features of the software that are not used regularly and learn about additional features that may be useful for their practice.

8.4 Patient surveys related to screening interventions

Patient survey respondents

Eleven patients from one ACCHS returned patient acceptability surveys. All respondents were >45 years, with the majority of patients >65 years of age. Six of the respondents were male and five respondents were female. Patient surveys from another ACCHS were filled out but misplaced and not returned to the evaluation team.

Informational needs

All patients were happy to answer the questions the doctor or nurse asked about their health and lifestyle and all but one were satisfied with the way the doctor or nurse explained why they needed certain tests done. The majority of respondents would have liked more information about how to keep healthy, and three patients felt that they did not want more information.

Screening tests

Almost all patients were happy to have any tests performed on the day that they attended, which the doctor or nurse thought they needed. The majority indicated that if the doctor or nurse had suggested they make another appointment to come back for additional tests, all participants indicated that they would return for the recommended testing, most of which were to occur in the weeks following their appointment.

Overall patient satisfaction

More than half the patients reported that they had adequate time with their doctor and/or nurse. All respondents were extremely or reasonably satisfied with the care they received at the clinic and they would probably or definitely recommend this medical service to their family and friends.

Key learnings

- Staff and patients generally found the interventions to be acceptable for the Diabetes Management and Screening
- Interventions implemented at ACCHSs should be flexible and reflect both staff and patient population needs at the local level
- Organisational change strategies such as staff training and diabetes check reminders are best implemented incrementally to build on existing systems for greater uptake and acceptability
- A range of barriers and enablers to enhanced care strategies for managing diabetes at ACCHSs were identified
- Multidisciplinary health assessment by a range of health professionals can be achieved through a range of clinical care models for enhancement of the patient experience
- Delivery of clinical care should be culturally appropriate (e.g. patient advocates) and ideally adopt a holistic approach to ensure that patient needs beyond health (e.g. transport) are met
- Patient education at all stages of the patient journey is imperative to reduce the fear, anxiety and stigma of disease for better self-management

Chapter 9

Recommendations and future directions

9. Recommendations and future directions

9.1 Discussion

Evaluation findings in context

The measured rates of clinical activities in this evaluation are consistent with current data on state-wide and national rates of screening and health care provided to Aboriginal and Torres Strait Islander people. The modest uptake of Aboriginal Health Checks measured in the evaluation align with low rates nationally.¹⁸ Likewise, the evaluation outcomes relating to the management of diabetes, including patient health outcomes, were similar to (although slightly above) those observed more broadly.³⁷

The literature offers mixed findings in relation to how Aboriginal Community Controlled Health Services (ACCHSs) perform relative to mainstream health services³⁸ including the provision of preventive care.³⁹ In the current study, ACCHSs generally performed at comparable levels to mainstream services, although there was substantial variation across sites. It is interesting to note that clinical detection of alcohol and smoking behaviour in this evaluation was approximately twice the rate found in Australian general practice.⁴⁰ However, the sample size for these outcomes in the evaluation was small.

The Chronic Care Services Enhancement Program (CCSEP) evaluation represented a significant undertaking to assess the impact of strategies aimed at improving clinical performance related to the prevention and management of chronic disease. Whilst the observed improvements were modest, the change observed was achieved over a relatively short period of time. A similar study using comparable outcome measures at Aboriginal Medical Services in Queensland⁴¹ demonstrated greater improvements in some areas with the intervention conducted over a longer time period (2 years), although other areas showed no improvement. In comparison, the intervention period for the CCSEP evaluation ranged from only 9 to 15 months (depending on when sites commenced as per the multiple baseline design). Given the established difficulties in eliciting practice change,^{11 26 42} the CCSEP was designed to offer continuous quality improvement into the future. Yet it is possible that the timeframe for the evaluation was not sufficient to identify and overcome potential barriers to change within some ACCHSs.

Importantly, certain systems and resources embedded as part of the CCSEP, including tailored PenCAT and electronic reminders, remain available to participating ACCHSs indefinitely. These permanent support features are likely to contribute to the sustainability of the CCSEP strategies into the future.

Given these considerations, if the CCSEP strategies were to be implemented more broadly, over a greater period of time, the potential exists to impact clinical practice for large numbers of Aboriginal and Torres Strait Islander people.

Evaluation challenges and limitations

The evaluation findings should be considered with regard to various challenges and limitations which emerged during the study:

- Delays in obtaining ethics approval forced the evaluation to be postponed well beyond initially agreed timelines. These delays affected the collaborative momentum of the study and reduced the time period over which the evaluation was conducted. The delay also meant that some key individuals from ACCHSs and the Ministry of Health departed from their roles prior to implementation, resulting in challenges when the evaluation commenced. As mentioned above, this reduced the

period of evaluation, potentially minimizing the opportunity to elicit measurable improvements in clinical performance. Additionally, these delays led to a situation where ACCHSs were utilising enhancement funds for a significant period prior to the commencement of the evaluation. As a consequence, some of the agreed interventions were implemented prior to evaluation, which limited the extent to which the CCSEP could be rigorously evaluated. This may also have contributed to attenuation of intervention effects.

- High rates of staff turnover at ACCHSs remained a key challenge throughout the evaluation. In some instances this impacted processes and staff involved in the interventions and data collection. Consequently, it is understood that strategies at some ACCHSs were not implemented as effectively as planned.
- ACCHS staff involved in the evaluation typically comprised chronic care co-ordinators, workers and nurses; clinic managers; Aboriginal Health Workers; and administrative staff. Relatively fewer general practitioners (GPs) participated in the CCSEP collaboration, with ACCHS staff typically liaising with GPs independently. Several staff, however, described challenges in eliciting GP support for change in clinical practices and data entry in line with the CCSEP strategies. Lack of GP support at some ACCHSs is therefore likely to have limited the extent to which these strategies proved effective.
- The CCSEP evaluation was just one of many competing priorities at ACCHSs. Furthermore, the delays in starting the evaluation meant that resources and priorities at some ACCHSs changed prior to commencement. The extent to which efforts were invested at ACCHSs to address the CCSEP priority areas may have varied accordingly. Indeed, it is important to highlight that the CCSEP was often one of numerous approaches towards quality improvement implemented within participating ACCHSs throughout the evaluation period. Whilst the multiple baseline design used in the CCSEP evaluation served to protect against the influence of any external factors, such influence cannot be entirely ruled out. It is therefore possible that other initiatives, programs or support may have contributed towards some of the outcomes found in this evaluation.
- Outcome measures for the evaluation relied on information being recorded into clinical desktop systems. Feedback from some ACCHS staff suggested that certain clinical items had been under-reported at their sites prior to training being implemented as part of the interventions. It is therefore possible that some clinical activities may have been undertaken but not adequately recorded, and therefore are underrepresented in outcome data. Whilst the evaluation measured increases in some clinical practices, these findings potentially reflect improvement in both performance and recording. Some caution should be taken in interpreting the effectiveness of the interventions for increasing rates of screening and/or clinical care.

Potential success factors

Variable levels of performance were demonstrated across ACCHSs in relation to the measured outcomes. Whilst many factors likely contributed to this, some general observations towards understanding this variation are offered.

The extent to which ACCHSs embraced the CCSEP process, especially during the implementation phases, was largely dependent on the willingness and availability of key staff to drive the process. This aligns with evidence in the literature which suggests that efforts to implement interventions aimed at organisational change in general practice are influenced by staff's readiness to change.⁴³ As mentioned above, it is likely that the level of staff support for practice change, especially by GPs, influenced the extent to which sites adopted the CCSEP strategies. Likewise, ACCHSs with relatively consistent staffing arrangements typically had more

capacity to engage in activities as planned. This was crucial for effective implementation of the interventions, with insights from training and feedback more likely to be integrated into clinical processes. Furthermore, the number of ACCHS staff involved in these activities varied across sites. ACCHSs that adopted a team approach (as influenced by key staff) had a greater tendency to demonstrate positive change.

Additionally, ACCHSs with well-managed data systems (i.e. via system managers or IT personnel) had greater utilisation of data and electronic reminder systems for the provision of services.

Further to these broad observations, however, it is noteworthy that different ACCHSs performed relatively better on different outcome measures. This suggests that clinical performance for any given area is likely to reflect the specific priorities and resources of sites.

9.2 Future directions for service delivery and provision of care

Numerous insights have been attained from this evaluation that will support ongoing improvements in service delivery and provision of care, and assist future research efforts in Aboriginal health. These are presented as follows.

- 1. Further efforts are needed to increase annual health checks using Medical Benefits Schedule (MBS) item 715.** There is a critical need to explore mechanisms to increase the provision of MBS 715 Aboriginal health assessments to i) support the improved health of Aboriginal people, and ii) provide additional revenue to ACCHSs from Medicare rebates. In particular, younger adult Aboriginal patients and women were less likely to have a health assessment in line with evidence based guidelines. Therefore, systematic approaches to support implementation of the Aboriginal health assessments are needed. Such approaches will increase the likelihood that all patient subgroups receive comparable care.
- 2. Efforts are needed to increase detection by GPs, health workers and other ACCHS staff of risk behaviours in patients, particularly smoking and alcohol misuse.** It is widely acknowledged that health professionals have a role to play in minimising harm from tobacco and alcohol, in both ACCHSs and mainstream health services. Given the established discrepancies between patient self-reported smoking and alcohol consumption and what is recorded in the patient's medical record, efforts are needed to increase the level of detection so that patients with 'at-risk' lifestyle behaviours are identified and appropriate preventive care offered.
- 3. Clinical improvements could be targeted towards younger adult Aboriginal patients** given that these age groups are considerably less likely to receive screening and/or management care in line with evidence-based guidelines.
- 4. Continuous quality improvement approaches could include mechanisms to further capitalise on available revenue opportunities.** ACCHSs could be encouraged to utilise and monitor organisational systems (including clinical software systems) and support within health services to maximise the MBS revenue opportunities that come with increasing rates of screening and chronic disease management. There is a need to better understand the ways in which improved use of MBS items in ACCHSs influences service quality and health outcomes for Aboriginal patients.

5. **System-based mechanisms to improve clinical quality offers benefits.** Due to likely changes in ACCHS staff over time, enhancement efforts should be targeted towards systems change rather than focusing on individual-based approaches.
6. **Staff education and training is likely to be more effective if able to be offered on an ongoing rather than a one-off basis.** ACCHS staff would benefit from the opportunity of ongoing education and training in the use of clinical software systems, with courses repeated every six to twelve months to refresh established staff and to ensure that all new staff are trained. Improvement efforts could allow for successive approximations to support success. ACCHSs could be encouraged to identify any specific needs or resources that may assist them in meeting their screening targets, potentially in consultation with the Ministry of Health. This will provide an opportunity for each ACCHS and the Ministry to identify and agree to steps required for success, and make plans for achieving these.
7. **Collaboration between health professionals and patients could be supported to optimize service delivery and provision of care.** Clinicians and patients have a shared responsibility for addressing patient health issues which relies upon a range of support mechanisms. Potential mechanisms to engage with younger Aboriginal people in particular (e.g. through social media) could be explored.
8. **Interventions that can be readily integrated into usual care offer key opportunities for clinical improvements.** Interventions that have been designed to enhance usual care while minimising disruption are likely to be more feasible and acceptable to ACCHSs and patients. Efforts could also be undertaken to identify and address barriers to change among ACCHS staff prior to interventions being implemented.

9.3 Future activities that could improve data quality

9. **Clinical software systems that are Health Level-7 (HL-7) compliant can improve data accuracy.** Such systems allow sharing of data across systems, reduce manual data entry (reducing the opportunity for human error) and streamline identification of patients requiring follow up.
10. **System-level approaches within ACCHSs for addressing data quality are more effective if well resourced.** Priority could be given to data management roles either through multi-skilling of workforce for data entry tasks, funding schemes for dedicated staff and/or regular in-house training on enhanced features of existing software systems.
11. **Regular audits of medical records could be undertaken to monitor adherence and effectiveness of system-based approaches to maintaining data quality.** Continuous quality improvement systems could be implemented using data extraction software to internally monitor trends and provide information for audit and review. Most ACCHSs in NSW use the Canning tool to support reporting against national Key Performance Indicators for Aboriginal primary health care. For optimal effectiveness, audits should draw on existing service systems and procedures where possible and be performed at unscheduled intervals to help ensure adherence is consistently maintained.
12. **Data cleaning could be undertaken to rectify any identified systematic errors.** Once any sources of data inaccuracy have been identified, staff should, wherever possible, amend all records which have been entered incorrectly. A trained member of staff could be tasked with updating and correcting any

identified sources of error within medical records to ensure that these data may be appropriately extracted.

13. **ACCHSs could ensure records are updated every time a patient is screened for smoking and alcohol intake, even if the patient's status has not changed from previously.** This will improve the accuracy of reported screening rates, and increase the likelihood that patients will be screened at intervals consistent with evidence-based guidelines.

9.4 Establishing an effective research collaboration

14. **Substantial time and resources should be dedicated to reaching agreement in the early stages of collaboration prior to commencing evaluation.** Given the complexities faced in the early stages of establishing the evaluation, substantial collaborative effort should be applied to research development, allowing at least twelve months for planning the study and obtaining ethics approval, prior to study commencement.
15. **A formal means for establishing agreement could be considered as part of the collaborative process.** A formal means of establishing group consensus would assist with determining the level of group support for ideas before investing resources into their realisation, and facilitate the process of determining which initiatives should be pursued.
16. **A willingness by stakeholders to be flexible and open to negotiation is crucial for addressing potential issues and challenges.** Given the likelihood of unforeseen issues emerging during multi-site research conducted over an extended period, it is important that stakeholders are given opportunities for negotiation in relation to set goals and timelines.

9.5 Developing the evidence in Aboriginal Health

17. **The multiple baseline design is a feasible approach for evaluating multi-site interventions with Aboriginal communities.** Due to inherent variation across ACCHSs and Aboriginal communities, a one-size-fits-all intervention approach is unlikely to be feasible or effective. The multiple baseline design allows for variation across ACCHSs and overcomes many of the disadvantages inherent in randomised controlled trials by ensuring that all groups have equal opportunity for achieving treatment changes.
18. **The collaborative model used in this evaluation could be applied to other Aboriginal health endeavours.** Robust methodological research is feasible with Aboriginal health organisations if evaluations are established through collaboration which harnesses the collective expertise, skills and experience of Aboriginal stakeholders and established researchers.

9.6 Possible areas of future research

19. **Screening activities could be linked with evaluations of treatments and patient outcomes.** Whilst screening is an important first step in establishing a patient's health status, screening alone does not ensure better patient outcomes. It is also crucial to determine the standard of care provided to patients who require treatment, and to investigate the extent to which these treatments improve patient outcomes. Future evaluations could seek to integrate screening activities with ACCHSs' subsequent provision of care and measures of patient health.
20. **Future research could aim to identify the types of individuals who are less likely to receive recommended screening and/or management care.** A more thorough examination of patient characteristics could be undertaken to identify any potential biases in which types of patients are less likely to receive recommended screening and/or management care. Characteristics such as existing co-morbidities, lifestyle behaviours and family history may be of interest.
21. **Quality feedback loops could be enhanced.** Given that feedback on quality is a low-cost intervention strategy, future research could allow more time to examine the differential effect of feedback prior to subsequent intervention strategies being implemented. For example, feedback could be provided more regularly (potentially monthly), by a central agency or a managed Continuous Quality Improvement network of ACCHSs, and be tailored to highlight relevant information to different stakeholders.

Chapter 10

References

10. References

1. Vos T, Barker B, Stanley L, Lopez AD. The Burden of Disease and Injury in Aboriginal and Torres Strait Islander Peoples 2003. Brisbane: School of Population Health, the University of Queensland, 2007.
2. Australian Institute of Health and Welfare. Mortality and life expectancy of Indigenous Australians: 2008 to 2012. Cat. no. IHW 140. Canberra: , 2014.
3. Australian Bureau of Statistics. Estimates and projections, Aboriginal and Torres Strait Islander Australians, 2001–2026. Canberra, 2014.
4. Department of Health and Families. Revision of the Preventable Chronic Disease Strategy. Casuarina: Department of Health and Families, Northern Territory, 2009.
5. (AH&MRC) AHMRCNSW. AH&MRC Guidelines for Research into Aboriginal Health- Key principles, 2009 (Revised 2013).
6. National Health Medical Research Council. Values and ethics: Guidelines for ethical conduct in Aboriginal and Torres Strait Islander health research: The Council, 2003.
7. Australian Government. National Aboriginal and Torres Strait Islander Health Plan 2013-2023, 2013.
8. NSW Ministry of Health. NSW Aboriginal Health Plan 2013-2023, 2012.
9. NACCHO/RACGP. National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people. 2nd Edition. *South Melbourne: The RACGP*, 2012.
10. The Royal Australian College of General Practitioners and Diabetes Australia. General practice management of type 2 diabetes – 2014–15. Melbourne, 2014.
11. Grol R, Grimshaw J. From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003;362(9391):1225-30.
12. Plsek PE. Collaborating across organizational boundaries to improve the quality of care. *American journal of infection control* 1997;25(2):85-95.
13. Kilo CM. A framework for collaborative improvement: lessons from the Institute for Healthcare Improvement's Breakthrough Series. *Quality Management in Healthcare* 1998;6(4):1-14.
14. Mittman BS. Creating the evidence base for quality improvement collaboratives. *Annals of internal medicine* 2004;140(11):897-901.
15. NSW Health. NSW Health Aboriginal Information Guidelines. Aboriginal Health Information Strategy - August 1998, 1999.

16. National Aboriginal Community Controlled Health Organisation (NACCHO). National data protocols for the routine collection of standardised data on Aboriginal and Torres Strait Islander Health, 1997 (Revised 2004).
17. SEARCH Investigators. The Study of environment on Aboriginal resilience and child health (SEARCH): study protocol. *BMC public health* 2010;10(1):287.
18. Australian Institute of Health and Welfare. Indigenous health check (MBS 715) data tool. Canberra, 2015.
19. Jennings W, Spurling GK, Askew DA. Yarning about health checks: barriers and enablers in an urban Aboriginal medical service. *Australian journal of primary health* 2014;20(2):151-57.
20. Wang Z, Hoy WE. Association between diabetes and coronary heart disease in Aboriginal people: are women disadvantaged? *Medical journal of Australia* 2004;180(10):508.
21. Hoy WE, Mathews JD, McCredie DA, Pugsley DJ, Hayhurst BG, Rees M, et al. The multidimensional nature of renal disease: rates and associations of albuminuria in an Australian Aboriginal community. *Kidney international* 1998;54(4):1296-304.
22. McDermott RA, Li M, Campbell SK. Incidence of Type 2 Diabetes in Two Indigenous Australian Populations: a 6-year Follow Up Study. *Medical Journal of Australia* 2010;192(10):562.
23. National Health Medical Research Council. Keeping research on track: A guide for Aboriginal and Torres Strait Islander peoples about health research ethics: Australian Government, 2005.
24. National Health Medical Research Council. National statement on ethical conduct in research involving humans, 2007.
25. Ivers N, Jamtvedt G, Flottorp S, Young JM, Odgaard-Jensen J, French SD, et al. Audit and feedback: effects on professional practice and healthcare outcomes. *Cochrane Database Syst Rev* 2012;6.
26. Grol R. Successes and failures in the implementation of evidence-based guidelines for clinical practice. *Medical care* 2001;39(8):II-46-II-54.
27. Kirkwood BR, Cousens SN, Victora CG, De Zoysa I. Issues in the design and interpretation of studies to evaluate the impact of community-based interventions. *Tropical Medicine and International Health* 1997;2(11):1022-29.
28. Biglan A, Ary D, Wagenaar AC. The value of interrupted time-series experiments for community intervention research. *Prevention Science* 2000;1(1):31-49.
29. Hawkins NG, Sanson-Fisher RW, Shakeshaft A, D'Este C, Green LW. The multiple baseline design for evaluating population-based research. *American journal of preventive medicine* 2007;33(2):162-68.
30. MacGregor K, Handley M, Wong S, Sharifi C, Gjeltema K, Schillinger D, et al. Behavior-change action plans in primary care: a feasibility study of clinicians. *The Journal of the American Board of Family Medicine* 2006;19(3):215-23.
31. Bodenheimer T, Handley MA. Goal-setting for behavior change in primary care: an exploration and status report. *Patient education and counseling* 2009;76(2):174.
32. Newell SA, Girgis A, Sanson-Fisher RW, Savolainen NJ. The accuracy of self-reported health behaviors and risk factors relating to cancer and cardiovascular disease in the general population: a critical review. *American journal of preventive medicine* 1999;17(3):211-29.
33. Newell S, Girgis A, Sanson-Fisher R, Ireland M. Accuracy of patients' recall of Pap and cholesterol screening. *American Journal of Public Health* 2000;90(9):1431.
34. Sommers MS, Dyehouse JM, Howe SR, Lemmink J, Volz T, Manharth M. Validity of Self-Reported Alcohol Consumption in Nondependent Drinkers With Unintentional Injuries. *Alcoholism: Clinical and experimental research* 2000;24(9):1406-13.
35. McDonald SP, Maguire GP, Hoy WE. Validation of self-reported cigarette smoking in a remote Australian Aboriginal community. *Australian and New Zealand journal of public health* 2003;27(1):57-60.
36. MacLaren DJ, Conigrave KM, Robertson JA, Ivers RG, Eades S, Clough AR. Using breath carbon monoxide to validate self-reported tobacco smoking in remote Australian Indigenous communities. *Population Health Metrics* 2010;8(1):1.
37. Australian Institute of Health and Welfare. National key performance indicators for Aboriginal and Torres Strait Islander primary health care: results from December 2014. National key performance indicators for Aboriginal and Torres Strait Islander primary health care 2014. Canberra, 2015.
38. Mackey P, Boxall A-M, Partel K. The relative effectiveness of Aboriginal Community Controlled Health Services compared with mainstream health service, 2014.
39. Bailie RS, Si D, Connors CM, Kwedza R, O'Donoghue L, Kennedy C, et al. Variation in quality of preventive care for well adults in Indigenous community health centres in Australia. *BMC health services research* 2011;11(1):1.

40. Bryant J, Yoong SL, Sanson-Fisher R, Mazza D, Carey M, Walsh J, et al. Is identification of smoking, risky alcohol consumption and overweight and obesity by General Practitioners improving? A comparison over time. *Family practice* 2015;32(6):664-71.
41. Panaretto K, Gardner K, Button S, Carson A, Schibasaki R, Wason G, et al. Prevention and management of chronic disease in Aboriginal and Islander Community Controlled Health Services in Queensland: a quality improvement study assessing change in selected clinical performance indicators over time in a cohort of services. *BMJ open* 2013;3(4).
42. Grol R, Wensing M. What drives change? Barriers to and incentives for achieving evidence-based practice. *Medical Journal of Australia* 2004;180(6 Suppl):S57.
43. Christl B, Harris M, Jayasinghe U, Proudfoot J, Taggart J, Tan J. Readiness for organisational change among general practice staff. *Quality and Safety in Health Care* 2010:e12.

Appendix 1.1: Data Governance Protocol

Access, Use and Publication of Data arising from the Chronic Care Services Enhancement Project Evaluation



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

AIM OF THIS DOCUMENT

The following draft data governance protocol is to inform discussion with Aboriginal Community Controlled Health Services (ACCHS) participating in the Chronic Care Services Enhancement Project (CCSEP).

The following sections have been drawn from national guidelines, and research studies ACCHSs suggested as good examples of data governance, including:

1. Guidelines from the National Health and Medical Research Council^{1,3}
2. Aboriginal Health and Medical Research Council (AH&MRC) Guidelines for Research into Aboriginal Health⁴
3. Guidelines for Ethical Research in Australian Indigenous Studies by the Australian Institute of Aboriginal and Torres Strait Islander Studies⁵
4. National Data Protocols for the Routine Collection of Standardised Data on Aboriginal and Torres Strait Islander Health⁶
5. NSW Aboriginal Health Information Guidelines⁷
6. The SEARCH Study Data Access, Use and Publication Policy⁸
7. The Research Excellence in Aboriginal Community-Controlled Health Operations & Communication Protocol.⁹

The data governance protocol needs to cover all the issues relevant to this specific program, and provide the necessary security to services regarding the use of data. This document should therefore be seen as a draft that can be changed or added to suit the needs of all organisations involved in the program, and agreed to before the start of the evaluation.

1. PURPOSE

- i. The purpose of this protocol is to describe the agreed terms for data collection, access, ownership, use, security, retention and publication of data arising from the evaluation of the CCSEP.

This protocol aims to be consistent with the National Health and Medical Research Council (NHMRC) National Statement of Ethical Conduct in Human Research,¹ Values and Ethics: Guidelines and Ethical Conduct in Aboriginal and Torres Strait Islander Health Research,² and Keeping Research on Track: A guide for Aboriginal and Torres Strait Islander peoples about health research ethics;³ the Aboriginal Health and Medical Research Council (AH&MRC) Guidelines for Research into Aboriginal Health;⁴ Guidelines for Ethical Research in Australian Indigenous Studies by the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS);⁵ the National Aboriginal Community Controlled Health Organisation (NACCHO) National Data Protocol;⁶ and the NSW Aboriginal Health Information Guidelines.⁷

2. BACKGROUND

- i. The NSW CCSEP supports services to deliver and evaluate best-practice approaches to reduce the burden of chronic disease among Aboriginal people living in NSW. The objective of the CCSEP are to:
 - a) Improve access to and uptake of chronic care services by Aboriginal people with chronic disease in primary health care and Local Health District settings
 - b) Enhance the capacity of services to deliver best-practice care for Aboriginal people with chronic disease
 - c) Enhance planning and co-ordination of patient care within and between primary and secondary health services
 - d) Improve the health outcomes of Aboriginal people with chronic disease.
- ii. A comprehensive, rigorous evaluation and intervention research program is embedded within the CCSEP. The University of Newcastle (hereafter called the evaluation team) has been engaged to co-ordinate the evaluation of the CCSEP (hereafter called 'the evaluation') in partnership with the Centre for Aboriginal Health (CAH) the ACCHSs.
- iii. The evaluation aims to:
 - a) Evaluate the impact of the CCSEP on chronic care service delivery and health outcomes for Aboriginal people, using an appropriate framework
 - b) Evaluate and assess specific evidence-based strategies in chronic care service delivery for Aboriginal people using reliable research methodology to strengthen the evidence base.

3. PRINCIPLES OF THE EVALUATION

The following principles will guide the evaluation:

- i. The CCSEP evaluation has been designed to provide information that will improve the health of Aboriginal people.
- ii. The outcomes of the evaluation are to be used to support improved health and better planning and delivery of health services.
- iii. The evaluation will be embedded within strategies implemented under the program determined by ACCHS. ACCHS will be encouraged to work together and share data for the purpose of collaborative quality improvement.
- iv. The key stakeholders will discuss, negotiate, and agree to a final version of this data governance protocol before data collection will occur.
- v. The management of health and health-related information about Aboriginal peoples must be ethical, meaningful and useful to Aboriginal peoples, based on an agreed view negotiated between the relevant parties and consistent with current guidelines.¹⁻⁷

- vi. ACCHSs are supported in developing the capacity of staff in evaluation and using data to inform health service delivery
- vii. All activities undertaken as part of the evaluation will be in full consultation and collaboration with the CAH, ACCHSs and the evaluation team through workshops and formal communications with ACCHSs via the CEOs and/boards. This includes decision making around data collection, the implementation of strategies, analysis, sharing of information and reporting of Aboriginal health-related information.
- viii. Decisions about the indicators used and models of care implemented will be decided in partnership with each participating ACCHS.
- ix. The evaluation approach will be methodologically and ethically sound and, where possible, will be consistent across sites and use standardised indicators.
- x. All of the activities undertaken as part of the evaluation will be conducted in a way that supports Aboriginal self-determination, and are constructive and respectful of the autonomy of ACCHSs and the communities they serve.
- xi. Methods for data collection will be established at each site using existing data collection systems wherever possible to ensure ACCHS are not placed under unnecessary burden as a result of their participation in the evaluation. The utilisation, rather than the collection, of information will be maximised.
- xii. The CAH is responsible to NSW Health and to Aboriginal communities for all aspects of the evaluation, including dissemination and publication
- xiii. All ACCHSs will have the opportunity to contribute to the development of reports and publications that arise from the evaluation.
- xiv. The privacy and confidentiality of Aboriginal peoples and ACCHSs will be protected in accordance with the NSW Health Information Privacy Code of Practice, as endorsed by the Privacy Committee of NSW, and any other legislation or guidelines pertaining to the NSW health sector.

4. DEVELOPMENT OF THE EVALUATION FRAMEWORK AND KEY INDICATORS

- i. The evaluation framework and indicators to be used in the evaluation will be developed in full consultation and collaboration with each ACCHS, the CAH and the evaluation team. Subject to the agreement of ACCHS, this will include a set of key standard indicators which services agree to collect, and additional service specific indicators if required.
- ii. Individual memoranda of understanding will be agreed between each ACCHS and the evaluation team regarding the evaluation which will be signed by the CEO and/or board of each ACCHS.
- iii. All ACCHS participating in the evaluation will have the opportunity to approve the evaluation plan, methods of data collection, the implementation of strategies, analysis, sharing of information and reporting of Aboriginal health-related information.

5. ETHICS REVIEW

- i. Ethical approval has been granted through the human research ethics committees (HRECs) of both the AH&MRC and the University of Newcastle.
- ii. All research undertakings must adhere to the protocols as outlined in the ethics submissions and conditions of approval given by both HRECs.
- iii. Any research activities outside the scope of those approved by ethics must obtain ethical approval, where this is required under the *National Statement on Ethical Conduct in Human Research*.¹

6. COLLECTION OF DATA

- i. Subject to the agreement of ACCHS, and where possible, the evaluation approach will be consistent across sites and use standardised indicators.
- ii. ACCHSs will collect agreed upon data, and provide data to the evaluation organisation, which will collate, analyse and report on the data to ACCHS.
- iii. The evaluation team will assist ACCHSs in data collection to provide support to sites and to develop ACCHSs' capacity in data collection and analysis.
- iv. Only information necessary for and directly related to the agreed outcomes of the evaluation will be collected.
- v. Aggregated data agreed to by ACCHSs will be reported to the CAH.
- vi. All ACCHSs must approve the output from analyses before reports or papers are submitted to CAH or put into the public domain. All reports, papers and conference slides will be approved by the CEOs and/or boards of the ACCHSs before they are published or presented.

7. ACCESS, USE, AND SHARING OF DATA ARISING FROM THE EVALUATION

- i. All access, use and sharing of data will be agreed upon in full consultation and collaboration with each ACCHS.
- ii. Only de-identified data will be provided to the evaluation team. Data will never be provided in a way that an individual can be identified.
- iii. Data will not be used for any purpose or analysis other than the agreed activities of the evaluation without the written approval of all ACCHS.
- iv. All data will be reported in such a way that individual ACCHS are not identifiable.
- v. NSW Health will only have access to data for the purpose of meeting funding requirements under the National Partnership Agreement for Closing the Gap in Indigenous Health Outcomes evaluation, and for informing health service planning and delivery.
- vi. Disaggregated, site specific data will only be provided to the ACCHS, and will not be shared with the CAH or other agencies unless agreed to by ACCHSs.

8. DATA OWNERSHIP AND CUSTODIANSHIP OF INFORMATION

- i. All data will remain the property of the ACCHS(s) from where the data originated.
- ii. Each ACCHS will retain the right to determine how any data they provide may be used and reported for research purposes.
- iii. Custodianship of information will be shared between participating ACCHSs and the evaluation team. All responsibilities conferred by custodianship as outlined in the Data Governance Protocol will be adhered to.
- iv. A custodian committee consisting of representatives from ACCHSs and the evaluation team will monitor and oversee adherence to the responsibilities as outlined. The committee will hold regular meetings to ensure all responsibilities are being met.
- v. Written material generated during the life of the project will remain the shared property of participating ACCHSs, CAH and UoN.
- vi. The evaluation team will not disclose any information or data collected to another party without prior approval of the ACCHSs and the CAH.

9. CONSENT

- i. As data collected for the evaluation will be routinely collected, consent from individual clients is not required.
- ii. Consent will be required from the Chief Executive Officers of all participating ACCHSs before data are collated at the service level, or forwarded to the Evaluation team.

10. STORAGE, CONFIDENTIALITY AND SECURITY OF DATA

- i. Data collected as part of the evaluation will be stored securely on a server at the University of Newcastle. Access will be restricted to named members of the evaluation team. Access by additional parties for the purpose of the evaluation (for example, research assistants, statisticians) will be approved by the ACCHSs and CAH.
- ii. Any paper files will be stored in a locked storage cabinet in a secure room not available for general access.
- iii. All data will be maintained securely by the evaluation organisation for a minimum of 5 years following conclusion of the project in line with ethical requirements.
- iv. All individuals who are provided access to data arising from the evaluation agree to:
 - a) keep confidential Information confidential
 - b) not disclose confidential information to any person without prior written consent of the ACCHSs
 - c) take all steps and do all things that are necessary or prudent or desirable in order to safeguard the confidentiality of confidential information

- d) make no attempt to identify individuals by combining data collected as part of the evaluation with any other data
- e) keep secure at all times any data in the individual's possession or control or to which the individual has access
- f) store copies of data in a secure environment protected from access by unauthorised personnel.

11. PUBLICATIONS ARISING AS A RESULT OF THE EVALUATION

- i. Publication of the findings of the evaluation in peer reviewed journals and/or the presentation of these findings at related conferences by the ACCHSs, members of the evaluation team and CAH is encouraged.
- ii. Publications will aim to further knowledge of the work carried out by ACCHSs and disseminate new knowledge to improve the delivery of best practice to Aboriginal and Torres Strait Islander people.
- iii. All ACCHSs participating in the evaluation will have the opportunity to contribute to the development of papers resulting from the evaluation.
- iv. Copies of research papers and presentation slides must be provided for approval to other parties (CAH, the CEOs and/or boards of participating ACCHSs and the evaluation team) prior to submission and/or presentation for review.
- v. The CAH, the ACCHSs and the evaluation team can, at their discretion, refuse to permit publication or presentation if it is considered that the publication uses inappropriate methodology or makes unsound inferences or conclusions. No partner in the evaluation will unreasonably withhold publication approval.
- vi. All papers and presentations will acknowledge that the work was undertaken as part of the CCSEP and will acknowledge the input of the participating ACCHS, the CAH and the evaluation team. The following acknowledgement should be used:

“This evaluation was completed as part of the Chronic Care Service Enhancements Program funded by the Centre for Aboriginal Health, NSW Health. This project was conceptualised, developed and implemented in partnership with participating Aboriginal Community Controlled Health Services, and the Centre for Aboriginal Health, with evaluation by the University of Newcastle. We wish to thank all those involved for their contribution to the project.”

12. AUTHORSHIP

- i. Any publications and/or presentations that arise from the evaluation will recognise the diverse expertise required to conceptualise, develop and implement the programs and the evaluation.
- ii. All ACCHSs, CAH and members of the evaluation team should be given the opportunity to be a member of the authorship team for any papers arising from the evaluation.
- iii. All partners in the evaluation will be asked to apply common rules of authorship in determining whether they are named as co-authors on publications, and the order in which they are presented.

- iv. BMJ guidelines regarding authorship will be followed. Authorship will be based on 1) substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; 2) drafting the article or revising it critically for important intellectual content; and 3) final approval of the version to be published. Authors should meet conditions 1, 2, and 3. A full copy of the guidelines is available at <http://resources.bmj.com/bmj/authors/article-submission/authorship-contributorship>.
- v. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content. The contribution of individuals who do not meet guidelines for authorship will be recognised via acknowledgement.
- vi. In some circumstances it may be appropriate to include a group name in the list of authors. This may occur if there are a large number of people involved but a limit on the number of authors permitted by a journal. In this case, those most involved in writing the paper would be named as authors, representing the group. The people involved in the group would then be named individually at the end of the paper, e.g. Smith J, Jones B, Green C, Brown J on behalf of the Chronic Care Enhancement Collaborative. A group name would need to be agreed by all participating ACCHSs, the CAH and the evaluation team.

13. COMPLAINTS MECHANISM

Any concerns regarding the evaluation can be made to the lead researcher of the evaluation team, or the relevant Human Research Ethics Committee. The Centre for Aboriginal Health will also provide a mechanism to receive and pursue these complaints.

14. SANCTIONS FOR BREACHES OF POLICY

A sanctions process has not been developed but appropriate action would be identified and implemented collaboratively between the ACCHSs, CAH and UoN, should a breach of this policy by any party occur.

15. REFERENCES

Aboriginal Health & Medical Research Council of New South Wales (AH&MRC). AH&MRC Guidelines for Research into Aboriginal Health- Key principles. 2009 (Revised 2013). Available from: http://www.ahmrc.org.au/index.php?option=com_docman&task=cat_view&gid=22&Itemid=45

Australian Institute of Aboriginal and Torres Strait Islander Studies. Guidelines for Ethical Research in Australian Indigenous Studies. 2012. Available from: <http://www.aiatsis.gov.au/research/docs/GERAIS.pdf>

National Aboriginal Community Controlled Health Organisation. National data protocols for the routine collection of standardised data on Aboriginal and Torres Strait Islander Health. 1997 (Revised 2004). Available from: <http://www.naccho.org.au/download/naccho-historical/NACCHO%20Protocols.pdf>

National Health and Medical Research Council. Keeping Research on Track: A guide for Aboriginal and Torres Strait Islander peoples about health research ethics. 2005. Available from: <http://www.nhmrc.gov.au/guidelines/publications/e65>

National Health and Medical Research Council. National Statement on Ethical Conduct in Research Involving Humans. 2007. Available from:
<http://www.nhmrc.gov.au/guidelines/publications/e35>

National Health and Medical Research Council. Values and Ethics: Guidelines for Ethical Conduct in Aboriginal and Torres Island Health Research. 2003. Available from:
<http://www.nhmrc.gov.au/guidelines/publications/e52>

NSW Health Aboriginal Information Guidelines. Aboriginal Health Information Strategy - August 1998.

REACCH: Research Excellence in Aboriginal Community-Controlled Health Operations & Communication Protocol. Version 0.1. November 2010.

The Study of Environment on Aboriginal Resilience and Child Health (SEARCH). Attachment 1- Data Access, Use and Publication Policy

Appendix 2.1 Members of the Evaluation Team

Evaluation team member	Organisation and Priority area (if applicable)
L/Prof Rob Sanson-Fisher	Lead Investigator, University of Newcastle
A/Prof Billie Bonevski	Health behaviour scientist, University of Newcastle (Priority chair: Screening)
Dr Jamie Bryant	Health behaviour scientist, University of Newcastle (Priority co-chair: Management)
Dr Mariko Carey	Health behaviour scientist, University of Newcastle
Ms Robyn Considine	Health behaviour scientist, University of Newcastle
Prof Catherine D'Este	Biostatistician, University of Newcastle
Prof Chris Doran	Health economist, University of Newcastle
A/Prof John Hall	Medical practitioner, University of Newcastle
Prof Richard Heller	Epidemiologist, Open University
Prof Anthony Shakeshaft	Health behaviour scientist, University of New South Wales (Priority chair: Reach)
Dr Megan Passey	Medical practitioner, University of Sydney (Priority co-chair: Management)
A/Prof Christine Paul	Health behaviour scientist, University of Newcastle (Priority chair: Data Quality)
Dr Amy Waller	Health behaviour scientist, University of Newcastle
Mr Justin Walsh	Senior Research Assistant, University of Newcastle
Ms Natasha Noble	PhD student, University of Newcastle

Appendix 2.2.Roles and responsibilities of participating stakeholders

Stakeholder group	Roles and responsibilities
Evaluation Team	<p>The Evaluation Team was responsible for:</p> <p>Facilitating and strengthening collaborative working partnerships between sites and with key stakeholders, including:</p> <ul style="list-style-type: none"> • Working collaboratively with the CAH, ACCHSs and other key stakeholders in order to undertake the evaluation and improve the evaluation capacity in these organisations, including participating in regular meetings and communications with these organisations • Encouraging ACCHSs to work together and share data for the purpose of collaborative quality improvement, and facilitating these collaborative processes • Delivering culturally appropriate professional development workshops for key stakeholders to further develop evaluation capacity in these organisations. <p>Refining the scope of the evidence-based strategies being delivered under the enhancements program at participating ACCHSs by:</p> <ul style="list-style-type: none"> ▪ Working collaboratively with the ACCHSs to define the scope of programs being implemented under the enhancements program ▪ Working collaboratively with the ACCHSs to develop an implementation plan for the evaluation, and identifying aspects where support may be required. <p>Developing an evaluation framework, including:</p> <ul style="list-style-type: none"> • Developing evaluation strategies that outlined the evaluation methodology and an implementation plan for all participating ACCHSs • Identifying reliable and valid indicators that to be used for the evaluation across ACCHSs • Identifying data sources and data collection strategies to be used • Developing an agreed data management plan that identifies and appropriately addresses legislative matters and privacy issues, and is consistent with the NSW Ministry of Health Information Guidelines and local ACCHSs' data governance arrangements and protocols. <p>Supporting implementation at all participating ACCHSs by:</p> <ul style="list-style-type: none"> • Co-ordinating and supporting ACCHSs in implementing selected interventions and the collection of data • Analysing data gathered from ACCHSs.

Stakeholder group	Roles and responsibilities
	<p>Reporting on evaluation findings:</p> <ul style="list-style-type: none"> • Reporting to CAH on the implementation of the evaluation (milestones achieved, activities completed, reflections on process, and working relationship with ACCHSs) • Providing regular feedback to ACCHSs to inform continuous quality improvement processes • Providing reports of combined evaluation results across ACCHSs. Reports were de-identified and only included summary data.
<p>NSW Ministry of Health, Centre for Aboriginal Health and Centre for Epidemiology and Evidence</p>	<p>The CAH was responsible to NSW Ministry of Health and to Aboriginal communities for overall management and supervision of the program, including:</p> <p>Developing and administering the program by:</p> <ul style="list-style-type: none"> • Establishing program and funding guidelines • Working collaboratively with ACCHSs to review, revise and finalise project proposals • Allocating funds • Establishing and undertaking program reporting and monitoring arrangements throughout the life of the program • Establishing and overseeing governance arrangements • Consultation and communication with stakeholders. <p>Facilitating consultation and communication between ACCHSs, the Evaluation Team and other key stakeholders by:</p> <ul style="list-style-type: none"> • Developing and disseminating Newsletters and other relevant information • Organising and assisting in facilitating workshops. <p>Both CAH and CEE oversaw the evaluation by:</p> <p>Evaluation:</p> <ul style="list-style-type: none"> • Working collaboratively with the ACCHSs, the Evaluation Team and other key stakeholders to develop and oversee the evaluation, including dissemination and publication • Supporting ACCHSs to participate in the evaluation through funding, capacity building etc.

Stakeholder group	Roles and responsibilities
<p>Aboriginal Community Controlled Health Services</p>	<p>Each ACCHS was responsible for:</p> <p>Participating in the program and evaluation:</p> <ul style="list-style-type: none"> • Submitting project proposals in accordance with the program and funding guidelines • Establishing and implementing projects that met the objectives of the program and attempted to reduce the burden of chronic disease. This included developing an action plan for this project in line with the Service Development and Reporting Framework (SDRF) process, employment and training of new staff, as well as administering the program funding in line with the program and funding guidelines • Monitoring of the program and reporting back to the CAH in accordance with the reporting requirements – six monthly progress update reports to the Centre for Aboriginal Health, consistent with the SDRF process. <p>Governance:</p> <ul style="list-style-type: none"> • Participating in and driving the decision making processes related to the program and evaluation. <p>Consultation and communication:</p> <ul style="list-style-type: none"> • Participating in implementation and evaluation workshops/teleconferences held by the Centre for Aboriginal Health and Evaluation Team • Providing advice to CAH and the Evaluation Team on progress through regular teleconferences/workshops. <p>Evaluation:</p> <ul style="list-style-type: none"> • Participating in the evaluation, including collecting and sharing data with the Evaluation Team, based on agreed protocols for data governance and management • Working collaboratively with other ACCHSs, the Evaluation Team and other key stakeholders to develop and implement the evaluation.

Appendix 2.3: Overview of group membership, role and meeting frequency

Group	Membership	Role	Meeting Frequency
CCSEP Collaboration	<p>The collective group of project stakeholders including:</p> <p>CEOs and staff from each of the participating ACCHSs Representatives from the Evaluation Team (which includes researchers from the University of Newcastle, the University of NSW, Northern Rivers</p> <p>Department of Rural Health</p> <p>NSW Ministry of Health staff from the Centre for Aboriginal Health, the Centre for Epidemiology and Evidence and the Centre for Population Health</p>	<p>The CCSEP Collaboration was critical for supporting the quality improvement approach of the program and was responsible for:</p> <ul style="list-style-type: none"> • Discussing best-practice across ACCHSs and sharing ideas • Developing the project plans and evaluation framework, data governance protocols, ethics applications, and communication strategies • Developing strategies to be implemented and evaluated under the program • Developing the evaluation methods and measures. 	As needed

Group	Membership	Role	Meeting Frequency
Project Steering Committee	<p>CEOs or appointed representatives of participating ACCHSs</p> <p>Representatives from NSW Ministry of Health/Centre for Aboriginal Health</p> <p>Representatives from the Evaluation Team</p>	<p>To ensure Aboriginal community governance over the program and evaluation by:</p> <ul style="list-style-type: none"> ▪ Following advice from ACCHSs about which chronic disease issues would be addressed under the program ▪ Allowing ACCHSs to decide on which components of the evaluation to participate in ▪ Approving strategies developed by the CCSEP Collaboration group to be implemented and evaluated in each ACCHS ▪ Providing strategic advice to the CCSEP Collaboration regarding implementation of the evaluation ▪ Making decisions regarding the implementation of the program and evaluation based on discussions and decisions of the CCSEP Collaboration group at workshops and other communications. 	Initially 3 monthly, then as needed
Program Evaluation Working Group	<p>Representatives from: The Evaluation Team</p> <p>NSW Ministry of Health/Centre for Aboriginal Health The Centre for Epidemiology and Evidence</p>	<ul style="list-style-type: none"> ▪ To manage the ongoing tasks involved for developing, co-ordinating and implementing the program and the evaluation ▪ To support ACCHSs in implementing the identified strategies for each component. 	As needed

Group	Membership	Role	Meeting Frequency
Program Delivery Working Group	All the management and clinical staff at participating ACCHSs who were involved in implementing the program and participating in the evaluation.	<ul style="list-style-type: none"> ▪ To implement the strategies being evaluated as established by the CCSEP Collaborative ▪ To liaise with the Evaluation Team on all matters concerning implementation of strategies including timing, tailoring of strategies, various support needs ▪ To extract site-specific data and forward to the Evaluation Team for analysis. 	As needed
Data Custodian Committee	Representatives from ACCHSs and the Evaluation Team	To monitor and oversee adherence to all responsibilities as outlined in the Data Governance Protocol as established by the CCSEP Collaboration.	As needed

Appendix 2.4 Memorandum of Understanding

Memorandum of Understanding (MOU)

between

The University of Newcastle

and

[the Aboriginal Medical Service]

for the

Chronic Care Service Enhancements Program Evaluation

1. BACKGROUND

The Centre for Aboriginal Health (CAH), NSW Health, has commissioned the University of Newcastle (UoN) to undertake a comprehensive and rigorous evaluation of the Chronic Care Service Enhancements Program (CCSEP). The purpose of the evaluation is to measure the effectiveness and acceptability of interventions being delivered to improve health systems in the delivery of chronic disease care, as well as measure improved health outcomes. Through an extensive consultation process, the UoN and CAH have been working with the participating Aboriginal Community Controlled Health Services (ACCHSs) to develop the evaluation. This has involved an extended period of consultation with ACCHSs to discuss, develop and agree upon specific aims and strategies for the program.

2. PURPOSE OF THIS MOU

- 2.1 To ensure that the CCSEP evaluation is run as an effective collaboration where input from the participating ACCHSs and CAH is valued, sought, and acted upon by the University of Newcastle.
- 2.2 To outline the roles which the collaborating organisations agree to play, and to acknowledge all parties' responsibilities in taking part in the CCSEP evaluation.

3. DEFINITIONS

'ACCHS(s)' means Aboriginal Community Controlled Health Services participating in the evaluation

'AH&MRC' means Aboriginal Health and Medical Research Council

'CAH' means Centre for Aboriginal Health

'CCSEP' means Chronic Care Service Enhancements Program

'CEO' means Chief Executive Officer

'Health Service' means Aboriginal Community Controlled Health Service

'HREC' means Human Research Ethics Committee

'MOU' is this Memorandum of Understanding

'Party' or 'Parties' means the Aboriginal Community Controlled Health Service and/or the University of Newcastle and/or the Centre for Aboriginal Health

'SDRF' means Service Development Reporting Framework

'Term' means the term of this Memorandum of Understanding

'UoN' means the University of Newcastle evaluation team

4. TERM

The Term of this Memorandum of Understanding is from the date of execution until terminated in accordance with its stipulations.

5. EVALUATION TEAM

5.1. For the purposes of this MOU, UoN will refer to the Evaluation Team as listed below.

The Evaluation Team will comprise:

- **University of Newcastle:** L/Prof Rob Sanson-Fisher, Prof Catherine D'Este, Prof Chris Doran, A/Prof Christine Paul, A/Prof John Hall, A/Prof Billie Bonevski, Dr Mariko Carey, Dr Jamie Bryant, Ms Robyn Considine
- **Open University:** Prof Richard Heller
- **University of New South Wales:** A/Prof Anthony Shakeshaft
- **University of Sydney:** Dr Megan Passey

6. INVESTIGATORS

6.1 Investigators listed on ethics submissions consist of members from ACCHSs, University of Newcastle, University of New South Wales, and University of Sydney. All Investigators are as follows:

L/Prof Rob Sanson-Fisher (University of Newcastle)
Prof Catherine D'Este (University of Newcastle)
Prof Chris Doran (University of Newcastle)
A/Prof Christine Paul (Newcastle of Newcastle)
A/Prof John Hall (University of Newcastle)
A/Prof Billie Bonevski (University of Newcastle)
Dr Jamie Bryant (University of Newcastle)
Ms Robyn Considine (University of Newcastle)
Prof Richard Heller (Open University)
Prof Anthony Shakeshaft (University of New South Wales)
Dr Megan Passey (University of Sydney)
Mr Jamie Newman (Orange Aboriginal Medical Service)
Mr Steve Blunden (Casino Aboriginal Medical Service)
Mr Tim Horan (Coonamble Aboriginal Health Service)
Dr John Daniels (Aboriginal Medical Service Redfern)
Ms Kylie Wyndham (Casino Aboriginal Medical Service)
Ms Helen Aldridge (Awabakal Aboriginal Medical Service)
Ms Deon Adamson (Orange Aboriginal Medical Service)
Ms Sue Wilson (Durri Aboriginal Corporation Medical Service)
Ms Carey Gollidge (Coonamble Aboriginal Health Service)
Dr Penny Abbott (Aboriginal Medical Service Western Sydney)

7. ESTABLISHMENT OF CCSEP EVALUATION PROJECT

- 7.1 **Party Involvement.** Awabakal, Casino, Coonamble, Durri, Galambila, Orange, Redfern, and Western Sydney ACCHSs are working in partnership with the CAH and UoN to design, implement and evaluate the strategies, as outlined below, by December 2014.
- 7.2 **Evaluation Objectives.** The aim of this process is to develop reliable evidence of the effectiveness of chronic care services in an ACCHS setting to inform health policy and planning. As the result of a collaborative process, ACCHSs identified four key areas to focus on for the evaluation:
- i. **Improving the reach of ACCHSs** by increasing the number of Aboriginal people who 1) access service for the first time; and 2) re-engage with the ACCHS after visiting less than 3 times in the last 24 months;
 - ii. **Improving preventive health screening** by increasing the number of patients who have Adult Health Checks (Medicare item 715) and screening for three target chronic diseases: diabetes, cardiovascular disease, and kidney disease, in line with evidence-based guidelines;
 - iii. **Improving management of diabetes** by improving the number of diabetic patients who are managed according to best-practice guidelines; and
 - iv. **Improving data quality** by improving the recording of health information in patient information management systems in order to increase the accuracy of service level data for quality improvement processes.

8. COMMUNICATION

- 8.1 The parties agree to establish and facilitate communications between the University of Newcastle, participating ACCHSs and CAH to ensure the terms of this MOU are effectively enacted.
- 8.2 The UoN agrees to take all reasonable steps to ensure that a member of the evaluation team will remain available by email and telephone to provide research support to health services as needed.
- 8.3 The UoN agrees to provide written reports to the CAH and participating ACCHSs to inform about evaluation outcomes.

9. ETHICAL REVIEW

- 9.1 Ethical approval has been granted through the human research ethics committees (HRECs) of both the AH&MRC and UoN .
- 9.2 All research undertakings must adhere to the protocols as outlined in the ethics submissions and conditions of approval given by both HRECs.
- 9.3 Any research activities outside the scope of those approved by ethics must obtain ethical approval, where this is required under the *National Statement on Ethical Conduct in Human Research*.

10. ROLES AND RESPONSIBILITIES

The evaluation is governed by the ACCHSs involved, is facilitated by the evaluation team, and project managed by CAH.

10.1 University of Newcastle

UoN will be responsible for:

- i. Facilitating and strengthening collaborative working partnerships between sites and with key stakeholders, including:
 - a) Working collaboratively with the CAH, ACCHSs and other key stakeholders in order to undertake the evaluation and improve the evaluation capacity in these organisations, including participating in regular meetings and communications with these organisations.
 - b) Encouraging sites to work together and share data for the purpose of collaborative quality improvement, and facilitating these collaborative processes.
 - c) Delivering culturally appropriate professional development workshops to key stakeholders to further develop evaluation capacity in these organisations.
- ii. Refining the scope of the evidence-based strategies being delivered under the enhancements program at each enhancement site by:
 - a) Working collaboratively with the enhancement sites to define the scope of programs being implemented under the enhancements program.
 - b) Working collaboratively with enhancement sites to develop an implementation plan for the evaluation, and identifying aspects where support may be required.
- iii. Developing an evaluation framework, including:
 - a) Developing evaluation strategies that outline the evaluation methodology and an implementation plan for all sites. Evaluation strategies and implementation plans will ensure culturally appropriate evaluation.
 - b) Identifying reliable and valid indicators that will be used for the evaluation across sites.
 - c) Identifying data sources and data collection strategies to be used.
 - d) Developing an agreed data management plan that identifies and appropriately addresses legislative matters and privacy issues, and is consistent with the NSW Health Information Guidelines and local ACCHS's data governance arrangements and protocols.
- iv. Implementing the evaluation in all enhancement sites:
 - a) Support sites in implementing selected interventions according to best evidence.
 - b) Co-ordinate and support sites in the collection of baseline data.

- c) Co-ordinate and support sites in collecting data on the implementation of the programs.
- d) Analyse data gathered from enhancement sites.
- v. Reporting on evaluation findings:
 - a) Report to CAH on the implementation of the evaluation (milestones achieved, activities completed, reflections on process, and working relationship with enhancement sites).
 - b) Provide regular feedback to ACCCH to inform continuous quality improvement processes.
 - c) Provide regular reports of combined evaluation results across sites. These reports will include summary data only and will not identify individuals or sites.

10.2 Aboriginal Community Controlled Health Services

Each service is responsible for:

- i. Participating in the Program and evaluation
 - a) Establish and implement projects that meet the objectives of the program and reduce the burden of chronic disease. This includes developing an action plan developed for this project in line with the SDRF process, employment and training of new staff, as well as administering the program funding in line with the program and funding guidelines.
 - b) Undertake monitoring of the program and reporting back to the CAH in accordance with the reporting requirements – six monthly progress update reports to the Centre for Aboriginal Health, consistent with the SDRF process.
- ii. Governance
 - Participate in and drive the CCSEP Collaboration.
- iii. Consultation and Communication
 - Participate in twice yearly implementation and evaluation workshops held by the Centre for Aboriginal Health for all chronic care service enhancement sites.
 - Provide advice back to CAH and UoN on progress through regular teleconferences/workshops.
- iv. Evaluation
 - Participate in the evaluation of the chronic care service enhancements program, including collecting and sharing data with the Centre for Aboriginal Health, based on agreed proposals for data governance and management.
 - Working collaboratively with the ACCCHs, UoN and other key stakeholders to develop and implement all aspects of the evaluation.

11. PRINCIPLES OF CCSEP EVALUATION PROJECT

The evaluation of the CCSEP has been designed to provide information that will improve the health of Aboriginal people. A number of fundamental principles underlie the evaluation which were discussed and agreed to by all ACCHSs at previous workshops:

- i. The outcomes of the evaluation will be used to support improved health, and better planning and delivery of health services. ACCHSs identified the benefit of working together and sharing data for the purpose of collaborative quality improvement.
- ii. **Collaborative and consultative process:** All activities undertaken as part of the evaluation will be in full consultation and collaboration with the CAH, ACCHSs and the evaluation team through workshops and formal communications with ACCHSs via the CEOs. This includes decision making about data collection, the implementation of strategies and models of care, the indicators used, analysis, sharing of information, and reporting of Aboriginal health-related information.
- iii. **Respect for management of data and information:** The management of health and health-related information about Aboriginal peoples must be ethical, meaningful and useful to Aboriginal peoples, based on an agreed view negotiated between the relevant parties, and consistent with the guidelines in the National Aboriginal Health Strategy (1989), and the NAIHO Report on Aboriginal Research Ethics (1987). All ACCHSs will endeavour to discuss, negotiate, and agree to a final version of a Data Governance Protocol (see Appendix A) before data collection will occur.
- iv. **Building capacity within ACCHS:** ACCHSs will be supported in developing the capacity of staff in evaluating and using data to inform health service delivery. Methods for data collection will utilise existing data collection systems wherever possible, including tailored PenCAT software, to ensure ACCHSs are not placed under unnecessary burden as a result of their participation in the evaluation. All ACCHSs will have the opportunity to contribute to the development of reports and publications that arise from the evaluation.
- v. **Methodologically rigorous to provide the best evidence:** The evaluation approach will be methodologically and ethically sound, and where possible, will be consistent across sites and use standardised indicators to provide the strongest level of evidence about the effectiveness of strategies implemented.
- vi. **Culturally and ethically sound:** All of the activities undertaken as part of the evaluation will be conducted in a way that supports Aboriginal community governance and self-determination, and is constructive and respectful of the autonomy of ACCHSs and the communities they serve. The privacy and confidentiality of Aboriginal peoples and ACCHSs will be protected in accordance with the NSW Health Information Privacy Code of Practice, as endorsed by the Privacy Committee of NSW, and any other legislation or guidelines pertaining to the NSW health sector.

12. DATA GOVERNANCE

CAH and UoN have developed a Data Governance Protocol that sets out all key issues and considerations regarding the collection, storage and use of data for the evaluation to ensure there is clear community governance, ownership and protection of ACCCHSs' data, and agreement on information sharing and publication. The data governance protocol follows the NSW Aboriginal Health Information Guidelines (1999) and was guided by data governance protocols that ACCCHSs and the AH&MRC identified as exemplary for community control and protection of data. The full document is available in Appendix 1.1, Data Governance Protocol. Key elements of the Data Governance Protocol include:

12.1 Data collection

- i. ACCCHSs will collect agreed upon data, and provide weekly data to the evaluation team who will collate, analyse and report on the data back to ACCCHSs.
- ii. Data collection will be facilitated by a tailored PenCAT tool which will extract agreed upon data from ACCCHSs each week. Extracted data will be stored on ACCCHS servers ahead of being forwarded to the evaluation team by ACCCHSs.
- iii. The evaluation team will provide support to sites in relation to data collection and help develop ACCCHSs' capacity in data collection and analysis.
- iv. Only information necessary for and directly related to the agreed outcomes of the evaluation will be collected.
- v. Aggregated data agreed to by ACCCHSs will be reported to the CAH.
- vi. All ACCCHSs must approve the output from analyses before reports or papers are submitted to CAH or put into the public domain. All reports, papers and conference slides will be approved by the CEOs of the ACCCHSs before they are published or presented.

12.2 Access, use, and sharing of data arising from the evaluation

- i. All access, use and sharing of data will be agreed upon in full consultation and collaboration with each ACCCHS.
- ii. Only de-identified data will be provided to the evaluation team. Data will never be provided in a way that an individual can be identified.
- iii. Data will not be used for any purpose or analysis other than the agreed activities of the evaluation without the written approval of all ACCCHSs.
- iv. All data will be reported in such a way that individual ACCCHSs are not identifiable.
- v. NSW Health will only have access to data for the purpose of meeting funding requirements under the National Partnership Agreement for Closing the Gap in Indigenous Health Outcomes evaluation, and for informing health service planning and delivery.

12.3 Data ownership and custodianship of information

- i. All data will remain the property of the ACCCHS(s) from where the data originated.

- ii. Each ACCHS will retain the right to determine how any data they provide may be used and reported for research purposes.
- iii. Custodianship of information will be shared between participating ACCHSs and the evaluation team. All responsibilities conferred by custodianship as outlined in the Data Governance Protocol will be adhered to.
- iv. A custodian committee consisting of representatives from ACCHSs and the evaluation team will monitor and oversee adherence to the responsibilities as outlined. The committee will hold regular meetings to ensure all responsibilities are being met.
- v. Written material generated during the life of the project will remain the shared property of participating ACCHSs, CAH and UoN.
 - a) The evaluation team will not disclose any evaluation-related information or data collected during the evaluation.

12.4 Consent

- i. As data collected for the evaluation will be routinely collected, consent from individual clients is not required.
- ii. Consent will be required from the Chief Executive Officers of all participating ACCHSs before data are collated at the service level, or forwarded to the evaluation team.

12.5 Storage, confidentiality and security of data

- i. Data collected as part of the evaluation will be stored securely on a server at UoN. Access will be restricted to named members of the evaluation team. Access by additional parties for the purpose of the evaluation (e.g. research assistants, statisticians) will be approved by the ACCHSs and CAH.
- ii. Any paper files will be sorted in locked storage not available to general access.
- iii. All data will be maintained securely by the evaluation organisation for a minimum of 5 years following conclusion of the project in line with ethical requirements.
- iv. All individuals who are provided access to data arising from the evaluation agree to:
 - a) Keep confidential information confidential.
 - b) Not disclose confidential information to any person without prior written consent of ACCHSs.
 - c) Take all steps and do all things that are necessary or prudent or desirable in order to safeguard the confidentiality of confidential information.
 - d) Make no attempt to identify individuals by combining data collected as part of the evaluation with any other data.
 - e) Keep secure at all times any data in the individual's possession or control or to which the Individual has access.

- f) Store copies of data in a secure environment protected from access by unauthorised personnel.

13. RESOLUTION OF DISPUTES

- 13.1 If a dispute arises out of or relates to this MOU or the administration of the CCSEP Evaluation Project, the parties expressly agree to endeavour in good faith to settle the dispute by consultation between the CEO of the participating ACCHS involved in the dispute and the lead Chief Investigator from the UoN.
- 13.2 If disputes cannot be resolved in accordance with the above, termination of the MOU can be affected.

14. VARIATIONS

Variations to this MOU shall be evidenced in writing and signed by all parties.

15. FORCE AND EFFECT

This MOU is intended to express the parties' obligations and firm intentions with regard to those matters with which it deals, but is not intended to create a legally binding contract.

16. TERMINATION AND REDUCTION FOR CONVENIENCE

- 16.1 The parties may, at any time by notice in writing, terminate the MOU or reduce the scope of work within the CCSEP Evaluation Project. The CAH will be notified of any such termination.
- 16.2 Upon receipt of such notice the parties agree to stop work as specified in the notice, take all available steps to minimise loss resulting from that termination and to protect study data, and continue work on any part of the project not affected by the notice.

17. TERMINATION FOR DEFAULT

Parties may terminate this MOU if either party fails to meet obligations. Notice of such termination will be given in writing.

18. SIGNATURES

Institution	Name and Signature of Representative	Date
Evaluation Team, University of Newcastle	<i>The Evaluation Team agrees to the terms of this MOU and the Data Governance Protocol.</i>	
[Name of Health Service] [Address]	<i>I agree to the terms of this MOU and the Data Governance Protocol. I give consent for relevant staff to collect agreed upon data and forward it to the Evaluation Team.</i>	

Appendix 3.1 Summary of the consultation process

Consultation	Process	Outcome
<p>Project Proposal Development (December 2010-April 2011)</p>	<p>ACCCHSs were invited to submit a project proposal for the CCSEP using a template provided by the CAH. Informal support and feedback on proposal development was provided to ACCCHSs. On program and funding approval, Funding and Performance Agreements between the CAH and each ACCCHS were amended to include the CCSEP. Service Delivery and Reporting Frameworks for each ACCCHS were also amended to include key deliverables for the CCSEP.</p>	<p>Collaboration: ACCCHSs agreed that face-to-face workshops throughout the evaluation would be an appropriate way to share ideas and facilitate collaboration using a quality improvement process framework.</p>
<p>Planning Workshop (February 2011)</p>	<p>Attendees: Representatives from (5 of 7) ACCCHSs, CAH, Chronic Care for Aboriginal People (CCAP) program, AH&MRC, Evaluation team.</p> <p>An overview of the draft evaluation plan was provided.</p>	<p>Networking: Opportunity for collaborating organisations to meet and learn more about the CCSEP.</p> <p>Open discussion: ACCCHSs discussed their current work in chronic disease and the proposed evaluation.</p> <p>Sharing of ideas and experience: ACCCHSs shared ideas about best practice and discussed strategies they proposed to commence through the CCSEP.</p>
<p>Indicators teleconference (May 2011)</p>	<p>CAH circulated a list of potentially relevant chronic disease baseline indicators to all participating ACCCHS. Review and discussion to better understand what data might be useful to evaluate chronic disease prevention and management.</p>	<p>Seeking service feedback: ACCCHSs agreed that some indicators were not feasible to examine due to data quality issues. However, most indicators were already being reported via the Australian Government's Healthy for Life program and other reporting requirements.</p>
<p>CCSEP Workshop (June 2011)</p>	<p>Attendees: Representatives from (6 of 7) ACCCHSs, CAH, CCAP program, AH&MRC, Evaluation team.</p>	<p>Consensus-seeking: All ACCCHSs' program proposals were finalised, and recruitment and enhancement implementation had begun. ACCCHSs began identifying priority areas and specific strategies they were interested in collaborating on as part of the</p>

Consultation	Process	Outcome
		evaluation. Appropriate indicators and data collection strategies to evaluate intervention effectiveness were considered.
Evaluation teleconference (October 2011)	CAH and Evaluation Team reviewed ACCHS proposals for areas of overlap and commonality between proposed strategies. Draft evaluation framework developed and feedback sought from ACCHSs and AH&MRC.	Collaboration: Evaluation Team members introduced to ACCHSs; opportunities for collaboration among ACCHSs explored. Consensus seeking: Local priority areas proposed. Seeking service feedback: ACCHS feedback sought to ensure that the drafted evaluation framework accurately reflects the ACCHSs' initial submissions and ideas.
Identifying Priority Areas Workshop (October 2011)	Attendees: Representatives from (7 of 7) ACCHSs, CAH, AH&MRC, Evaluation Team.	Collaboration and consensus-seeking: build on the emerging evaluation framework to determine the evaluation focus including specific implementation strategies, process and outcome measures, and data collection methods. Open discussion and sharing of ideas: contribution by all stakeholders to the selection of strategies being evaluated. Recognition of best practice: Representatives from ACCHSs self-nominated a group leader, and working in small groups with CAH and AH&MRC representatives and members, identified/discussed most effective strategies in chronic disease prevention and management for Aboriginal people based on their experience and current practice. Iterative process to refine evaluation framework for each Identified Priority Area and Data Governance Protocol.
Evaluation Refinement (December 2011)	Evaluation Team redrafts evaluation strategy for each proposed priority area, incorporating workshop recommendations.	Seeking service feedback: updated proposals circulated to ACCHS CEOs for further feedback and suggestions.
Evaluation teleconferences	Evaluation Team arranged teleconferences with ACCHS to discuss proposals. Site visits to one	Consensus-seeking: some areas in proposal identified as requiring further discussion with ACCHSs.

Consultation	Process	Outcome
(April 2012)	ACCHS were also arranged to pilot test and refine the Data Quality component of the evaluation	Recognition of best practice: some staff training requirements identified to assist ACCHS staff with strategy implementation. Seeking service feedback: items for discussion at final workshop sought from ACCHSs
Final Workshop (June 2012)	Attendees: Representatives from (8 of 8 ACCHSs), CAH, AH&MRC, Evaluation Team Representatives from the Royal Australian College of General Practitioners, DARTA Medical and Pen Computer Systems gave training presentations	Consensus-seeking and open discussion: to finalise the evaluation strategies with ACCHSs. Collaboration and recognition of best practice: begin developing implementation plans for each agreed proposal and provide training as required to ACCHS staff for implementation and baseline data collection.

Appendix 4.1 Semi-structured acceptability interview guide

Patient Discussion Guide

Improving the management of patients with diabetes who attend Aboriginal Community Controlled Health Services

Introduction

- Today we are here to talk about your thoughts and opinions about the way your medical service helps with managing your diabetes.
- The discussion will take about 60 minutes and we welcome everyone's opinion.
- Before we start, there are a few things I would just like to run over quickly. All this information is contained in the information statement which you have a copy of, but just to reinforce a few points:
 - The discussion today will be audio-taped
 - Anything you say during this discussion will remain confidential to the research team and while some quotes from today's discussion may be used to illustrate your views, your name will not be used in any reports arising from the research.
 - It is requested that you maintain the confidentiality of anything discussed in the focus group today.
 - Information collected may be used in scientific journals and presentations.
 - If you wish to delete your comments from the audiotape please contact Dr Jamie Bryant on (02) 4042 0709 or by email on Jamie.Bryant@newcastle.edu.au within 1 month from today. Her details are on the information sheet.
 - If you no longer wish to participate at any stage you can withdraw from the focus group at any time without giving a reason.
 - No right or wrong answers – we are just interested in your thoughts and experiences
- Does anyone have any questions before we start?

Diabetes check reminders

1. How did you feel about being reminded to come in for a check related to your diabetes?
 - How were you contacted (e.g. phone, text, letter)?
 - Was this method of contact suitable for you?
 - When do you think you might have come in for a check-up if you hadn't been contacted?

Level of care

2. How did you feel about the allied health worker or specialist care you received?
 - Were you satisfied with the level of care you received?
 - Did you understand the information you were given about the medications you are required to take?
 - Did you understand the advice that the Doctor/Nurse/Aboriginal Health Worker gave you?

Self-management

3. How has your management of your diabetes been influenced as a result of your care?
 - Do you feel more or less confident about managing your diabetes?
 - Have you made any changes to the way you manage your diabetes as a result of your check?
 - How well have you stuck to your plan for managing diabetes?

Staff Discussion Guide

Improving the management of patients with diabetes who attend Aboriginal Community Controlled Health Services

Introduction

- Today we are here to talk about your thoughts and opinions about the way your medical service helps to manage patients with diabetes.
- The discussion will take about 60 minutes and we welcome everyone's opinion.
- Before we start, there are a few things I would just like to run over quickly. All this information is contained in the information statement which you have a copy of, but just to reinforce a few points:
 - The discussion today will be audio-taped
 - Anything you say during this discussion will remain confidential to the research team and while some quotes from today's discussion may be used to illustrate your views, your name will not be used in any reports arising from the research.
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 - If you no longer wish to participate at any stage you can withdraw from the focus group at any time without giving a reason.
 - No right or wrong answers – we are just interested in your thoughts and experiences
- Does anyone have any questions before we start?

Diabetes check reminders

4. How receptive were patients when asked to come in for a check for their diabetes?
 - How were patients contacted (e.g. phone, text, letter)?
 - How did most patients react to being contacted?
 - How many people responded?
 - How much time and effort was required by staff to make this work?
 - Was the reminder system worthwhile?

Staff training

5. How did you feel about the training staff received?
 - Was the training useful?
 - How much time and resources did the training require?
 - Are there any aspects of the training you think should have been done differently?

Clinical care

6. How do you feel about each part of the clinical care strategy?
 - How useful do you think each part of the clinical care strategy was?
 - How much time and resources were required to carry out each part?
 - Were staff able to maintain consistency in using the strategies?
 - Do you think the strategies were worthwhile?

Suggestions

4. Any suggestions for improving the program?

Appendix 4.2 Patient and staff acceptability surveys

Patient Acceptability Survey: Screening

These questions are about the appointment you had today. Please select one answer for each statement.

1. I was happy to answer the questions the doctor or nurse asked about my health and lifestyle.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

2. I was satisfied with the way the doctor or nurse explained why I needed certain tests done.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

3. I would have liked more information about how to keep healthy

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

4. I was happy to have any tests performed today which the doctor or nurse thought I needed.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

5. The amount of time I spent with the doctor or nurse was too long.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

6. Did your doctor or nurse suggest that you make another appointment to come back and get any other tests?

- Yes [if 'YES' proceed to next question 6]
- No [if 'NO' skip to question 7]
- Not sure [If 'NOT SURE' skip to question 7]

7. Do you intend on coming back to have the tests as was recommended to you?

- Yes, definitely
- Probably
- Not sure
- Probably not
- No, definitely not

If answer is 'no', could you please tell us why?

8. When do you think you will next attend this medical service for an appointment?

- In the next few weeks
- In the next 6 months
- In the next year
- I don't think I will attend this service
- Not sure

9. Overall, how satisfied were you with the care you received at this clinic today?

- Extremely satisfied
- Reasonably satisfied
- Not sure
- Reasonably dissatisfied
- Extremely dissatisfied

10. Would you recommend this medical service to your family and friends?

- Yes, definitely
- Probably
- Not sure
- Probably not
- No, definitely not

11. What is your gender?

- Male
- Female

12. What is your age?

- 15-24 yrs
- 25-44 yrs
- 45-64 yrs
- 65 yrs +

Thank you for taking the time to complete this survey. Your feedback is appreciated.

Staff Acceptability Survey: Screening

The first questions are about your thoughts on screening patients for chronic diseases as it relates to you being a staff member of this medical centre.

1. Which of the following best describes your role at this medical service?

- Doctor
- Nurse
- Administrator
- Aboriginal Health Worker
- Other

2. Did you previously attend the reminder system screening training?

- Yes
- No

3. How often did you use the reminder system for screening purposes?

- Daily
- Weekly
- Monthly
- Less than monthly
- Not at all

4. I believe that routine preventive screening will improve the health of our clients.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

5. I believe part of my role is to assist with the arrangements necessary to screen patients for chronic illnesses.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

The next few questions are about the training you received about current screening guidelines for chronic diseases and MD/PenCAT. Please select one answer for each statement.

6. I was looking forward to the training about the chronic disease screening guidelines and Medical Director/PenCAT.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

7. I would have liked the training to include more information about chronic diseases.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

8. I would have liked the training to have included more information about MD/PenCAT

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

9. I would have liked more written material or training manual to take away with me.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

10. Overall I found the training to be worthwhile.

Strongly agree
Agree
Not sure
Disagree
Strongly disagree

The remaining questions are about your experience using the reminder system in Medical Director to support opportunistic screening of patients.

11. I found the reminder system in Medical Director easy to use.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

12. I found using the reminder system took too much time.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

13. As time went by, using the reminder system became routine after a while.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

14. I think using the reminder system led to more patients being screened than would have otherwise.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

15. Overall I think using the reminder system has been worthwhile.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

16. I hope this medical service keeps using the reminder system.

- Strongly agree
- Agree
- Not sure
- Disagree
- Strongly disagree

17. Would you recommend to other medical services that they implement a screening reminder system?

- Yes, definitely
- Probably
- Not sure
- Probably not
- No, definitely not

If answer is 'no', could you please tell us why?

Thank you for taking the time to complete this survey. Your feedback is appreciated.