1 Deadly Step

Process evaluation of a chronic disease screening program in NSW Aboriginal communities

Prepared by

David Peiris, Lachlan Wright, Kate Corcoran, Madeline News, Fiona Turnbull

ACI — NSW Agency for Clinical Innovation

The George Institute for Global Health

Level 10, King George V Building
83-117 Missenden Rd Camperdown NSW
2050 Australia

T 61 2 8052 4500
info@georgeinstitute.org.au
www.georgeinstitute.org

Acknowledgements

Table of Contents

Tables and figures

Glossary of Terms

ACCHS	Aboriginal Community Controlled Health Services
ACI	NSW Agency for Clinical Innovation
ACR	Albumin to Creatinine Ratio
AHS	Australian Health Survey
AMS	Aboriginal Medical Service
AUSDRISK	Australian type 2 diabetes risk assessment tool
BP	Blood pressure
BMI	Body mass index
CEO	Chief Executive Officer
CHO	Chief Health Officer
CKD	Chronic kidney disease
CNC	Clinical Nurse Consultant
CVD	Cardiovascular disease
DCA	Diabetes Care Analyser - point of care testing machine
GP	General Practitioner
HBA1C	Glycated haemoglobin
HDL	High-density lipoprotein
HL7	Health Level 7 international standards for transfer of clinical and administrative data between software applications
KPI	Key performance indicator
LDL	Low-density lipoprotein
LHD	Local Health District
MBS	Medicare Benefits Schedule
NACCHO	National Aboriginal Community Controlled Health Organisation
NAIDOC	National Aboriginal and Islanders Day Observance Committee
RACGP	Royal Australian College of General Practitioners
RE-AIM	Reach, Effectiveness, Adoption, Implementation, and Maintenance framework for evaluating interventions
SWOT	Strengths, Weaknesses, Opportunities, and Threats
WHO	World Health Organisation

Executive summary

Chronic diseases including cardiovascular disease, diabetes, kidney disease, chronic respiratory disease and cancer account for over 70% of health gaps between Aboriginal people and the rest of the Australian population. Innovative strategies that promote early intervention for and management of these conditions could play an important role in reducing the high disease burden experienced by Aboriginal communities.

1 Deadly Step was developed in partnership with NSW Health and the Australian Rugby League to address the high prevalence of chronic diseases in NSW Aboriginal communities. The program aims to use a culturally safe, innovative, community-based model to increase awareness of chronic diseases and to promote prevention, early detection and evidence-based management through timely referral and follow-up. It uses a sporting platform to encourage local communities to participate and cultural ambassadors are present to promote the importance of looking after one's health. An earlier evaluation of the program found high acceptability by the participating communities, however, recommendations were made to improve the workflow associated with community screening, data management processes, and follow up care.

As a result of these recommendations, the George Institute was commissioned to build an electronic platform to improve the implementation of the program. The enhancements consisted of three components: (1) an iPad application to facilitate screening assessments and feedback to participants; (2) a secure portal for nominated care providers to view the results of the screening assessment; and (3) a reporting portal for program administrators to monitor event data. The George Institute was also commissioned to evaluate the implementation of the enhanced program. A three-stage approach was taken to the evaluation design. Stage one comprised development of a program logic model involving detailed discussion with key stakeholders to identify core evaluation objectives and to design strategies and questions to appropriately measure these objectives. Stage two involved implementation of the data collection measures and engagement with key stakeholders through the provision of site-specific interim reports following each event. Stage 3 involved key informant interviews and final analyses of all quantitative data.

Key findings — clinical data

In total 1046 people were screened between April 2015 and April 2016 at nine events across NSW. An average of 116 participants were screened per site with a larger proportion of females than males screened overall (61.2% vs 38.8% respectively). The vast majority of participants (91.5%) identified as an Aboriginal or Torres Strait Islander person and the average age was 40.3 years.

High levels of chronic disease risk factors were observed across all sites. Current smoking rates were 37%, over half of the sample had obesity and around two thirds had an elevated waist circumference. Around one in five participants were at high risk of cardiovascular disease. Around 17% of the sample reported having diabetes and another 29% of participants had elevated blood glucose levels. Around three-quarters of the sample were at high risk of chronic kidney disease. Importantly, over 17% had an elevated urinary albumin-to-creatinine ratio, suggestive of early stage chronic kidney disease. Overall, these rates are generally higher than those reported in non-remote Aboriginal and Torres Strait Islander participants in the 2013 Australian Health Survey.

In terms of care processes, only around 40% of people with, or at high risk of, cardiovascular disease reported taking guideline recommended medications. The majority of participants with diabetes (80%) reported taking an oral glucose lowering medication, around one third reported taking insulin, and 42% were attaining target blood glucose control as recommended by national guidelines.

According to data recorded in the provider portal, 51% of participants screened were followed up post event. There was wide variability in recording of follow-up rates across sites. Three sites recorded follow-up rates over 80%, while two sites had recorded rates below 15%. Participants with, or identified to be at high risk of diabetes, CVD or CKD had slightly higher follow-up rates compared to the total population at each site and overall.

Key findings — program implementation

A total of 297 participants completed satisfaction surveys at seven of the nine event sites (response rate 37%). The majority of respondents (>85%) reported being satisfied with event organisation and the information gained from the event day. Similarly, the majority of respondents (>90%) encountered few problems when asked about specific screening stations, although around 6% of participants did report problems with the urine and blood testing stations.

Twenty-one interviews were conducted with a diverse range of stakeholders at eight of the nine event sites. Interviewees included senior managers and chronic care coordinators at Aboriginal Community Controlled Health Services and Local Health Districts, frontline clinical staff including general practitioners, nurses and Aboriginal Health Workers and program staff at the ACI.

Pre-event themes highlighted the importance of the stakeholder working group in coordinating the event and the need for long lead times to mobilise staff and other resources to ensure adequate preparation. Event-related themes highlighted both opportunities and challenges with conducting a clinical program in a community setting. The program was viewed as being particularly strong in harnessing "community capital" as a means of increasing participation. However, this also uncovered particular challenges associated with using sensitive machinery outdoors and processing large numbers of people through the clinical screening stations. The role of Country Rugby League and sporting ambassadors was generally viewed favourably, however the level of support provided appeared to vary greatly across events. In general, the software enhancements appeared to greatly facilitate the screening and data management process. The main technical difficulties uncovered were related to data entry problems on the iPad software, error readings on point of care machines and network/ Wi-Fi outages impeding information uploads and printing of participant summaries.

Significant challenges and opportunities were highlighted in relation to post event follow-up of participants. At sites where follow-up rates were high, critical factors for success included dedicated clinic managers who took overall responsibility for follow-up, provision of GP and nursing services on the event day itself for participants to discuss their results and incorporation of follow-up data into routine clinical processes. The major barrier to follow-up related to those participants that did not identify an ACCHS as their nominated care provider. The main strategy to address this was to engage staff from the LHD to take a lead in liaising with participants and their usual care provider.

Additional themes emerged relating to sustainability of the program. There was broad recognition that the program was resource intensive to implement and that an overall coordinating body such as the ACI was essential. Staff also stressed the need to more effectively incorporate 1 Deadly Step into existing operational processes. Several opportunities were raised to facilitate this and these are summarised in the report recommendations

Conclusion

1 Deadly Step was implemented in nine communities in 2015-2016 and successfully assessed the chronic disease risks for a substantial number of Aboriginal people. The clinical data strongly supports the justification for such a program given the high levels of risk factors encountered, often including people who would otherwise have had no knowledge of these issues prior to the events. Overall the event implementation was highly successful and demonstrated high satisfaction by participants and staff alike. Several challenges, however, were highlighted particularly in relation to resource constraints and follow-up processes. Several opportunities were identified to enhance the program to address these issues. Although beyond the scope of this evaluation, a more detailed impact evaluation could provide critical information to assess the downstream system and health benefits of 1 Deadly Step. Specific recommendations to enhance the program are outlined below.

Our recommendations

Event related

1. Conduct a detailed workflow analysis to systematically identify opportunities to optimise event day processes.

2. Dedicate additional training in use of point-of-care machines and interpretation of results.

3. Consider creating a 'well-being expo' area with access to healthy refreshments and on-site health and well-being services such as traditional healing practices, smoking cessation counselling and treatments, health coaching, touch screen self-education resources, fitness equipment.

4. Dedicate additional resources to support sites where there is limited capacity to implement follow-up processes.

5. Consider development of inter-sectoral working groups with ACCHSs and LHD representatives to implement recall and reminder systems for non-ACCHS participants

Technical

6. Software enhancements to the app:

   • Modify the app to allow the three blood test results (HBA1C, cholesterol, blood glucose) to be saved after each test result is available.

   • Consider developing a low information algorithm for use in locations where provision of all screening services is not feasible.

   • Consider creating 1 Deadly Step app modules to allow services to focus on particular chronic conditions or disease risks (eg: '1 Deadly Step Kidneys').

7. Consider the following expansions to the software platform:

   • New functionality to support direct export of patient reports and results to practice management software systems.

   • Pre-population of Health Assessment templates to facilitate MBS billing for these items.

   • Facilitate electronic referrals on event day to services such as smoking cessation services or to the patient's nominated care provider using a secure messaging service.

General program considerations

8. Maintain the ongoing support role played by the ACI or an equivalent body to facilitate the administration and operationalisation of the program.

9. Foster the establishment of a learning collaborative comprising representatives from multiple ACCHSs and other service providers to increase peer-to-peer networking opportunities.

10. Conduct a detailed costing analysis to determine the real costs associated with conducting events including staffing, marketing and opportunity costs, provision of point-of-care testing equipment and cost of consumables associated with screening.

11. Assess clinical effectiveness of the program through the use of process and patient outcome measures and use of linked, primary care and other administrative datasets.

12. Conduct an economic modelling study to better understand the potential long-term cost-effectiveness of the program.

Background

1.1 Chronic disease burden

Chronic diseases including cardiovascular disease (CVD), diabetes, chronic kidney disease (CKD), chronic respiratory disease and cancer account for over 70% of health gaps between Aboriginal people and the rest of the Australian population.[1] Aboriginal and Torres Strait Islander peoples experience around five times greater CVD burden than other Australians.[1] Modifiable risk factors such as tobacco use, high body mass index (BMI), high cholesterol, physical inactivity, high blood pressure (BP), and low fruit and vegetable intake make a large contribution to the disparities in disease burden between Aboriginal and non-Aboriginal people. Aboriginal people also experience substantial inequities in access to primary health care and innovative, culturally safe strategies to improve access to high quality chronic disease care and prevention are needed.[2,3,4] Studies of CVD risk management in Australian general practice and Aboriginal Community Controlled Health Service (ACCHS) settings demonstrated that 50% of routinely attending adults lacked sufficient recorded information to comprehensively evaluate vascular risk.[5,6,7] For those identified at high vascular risk, only around 40% were prescribed guideline-indicated medicines. Community-based strategies that improve the uptake of best practice recommendations could substantially reduce both the disease burden from chronic diseases and help improve health system efficiencies.

1.2 1 Deadly Step program overview

The 1 Deadly Step program was developed in partnership with NSW Health and the Australian Rugby League to address the high prevalence of chronic diseases in NSW Aboriginal communities. It has been running now for several years and is currently managed by the NSW Agency for Clinical Innovation (ACI). The program aims to use a culturally safe, innovative, community-based model to increase awareness of chronic diseases and to promote prevention, early detection and evidence-based management of chronic diseases through timely referral and follow-up. Consenting participants are taken through an eight-step process that provides health checks, health referrals and follow-up care. Due to the popularity of rugby league in Aboriginal communities the program uses this sporting platform to encourage local communities to participate and cultural ambassadors are present to promote the importance of looking after one's health. An earlier evaluation of the program in 2012 concluded that the events represented a highly successful community screening approach and were rated as being highly acceptable to the participating communities. A key recommendation from that evaluation, however, was that there needed to be improvements to the way people were screened at each event, better management of the data collected, and better systems put in place to ensure appropriate follow up after screening.

1.3 Enhancements made to the existing program

As a result of the initial evaluation recommendations, the George Institute was commissioned to build an electronic platform to improve the implementation of the program. The enhancements consist of three components: (1) an iPad application for screening assessments; (2) a secure portal for nominated care providers to view the results of the screening assessment; and (3) a reporting portal for program administrators to monitor event data.

iPad screening application

A screening algorithm was programmed into an iPad application. ACCHS staff were engaged to inform the design requirements. Via a series of workshops a consultative, participatory approach was undertaken with iterative testing of software prototypes. A local Aboriginal artist was also engaged to work with the software design team to improve the visual appeal of the application. The core

---

1 Vos T, Barker B, Stanley L, Lopez AD. The burden of disease and injury in Aboriginal and Torres Strait Islander peoples 2003. Brisbane: University of Queensland; 2007.

2 Kelaher M, Dunt D, Thomas D, Anderson I. Comparison of the uptake of health assessment items for Aboriginal and Torres Strait Islander people and other Australians: implications for policy. Australia and New Zealand Health Policy. 2005;2:21

3 Si D, Bailie R, Cunningham J, Robinson G, Dowden M, Stewart A, et al. Describing and analysing primary health care system support for chronic illness care in Indigenous communities in Australia's Northern Territory - use of the Chronic Care Model. BMC Health Services Research. 2008;8:112

4 Cass A, Lowell A, Christie M, Snelling PL, Flack M, Marrnganyin B, et al. Sharing the true stories: improving communication between Aboriginal patients and healthcare workers. The Medical Journal of Australia. 2002;176(10):466-70

5 Heeley E, Peiris D, Patel A, Cass A, Weekes A, Morgan C, et al. Cardiovascular risk perception and the evidence practice gap in Australian General Practice (the AusHEART study). The Medical Journal of Australia. 2010;192(5):254-9

6 Peiris D, Patel A, Cass A, Howard M, Tchan M, Brady J, et al. Cardiovascular disease risk management for Aboriginal and Torres Strait Islander peoples in primary health care settings - findings from the Kanyini Audit. The Medical Journal of Australia. 2009;191(6):304-9

7 Webster R, Heeley E, Peiris D, Bayram C, Cass A, Patel A. Identifying the gaps in cardiovascular risk management. The Medical Journal of Australia. 2009;191(6):324-9

elements of the system built are shown in appendix 1. It comprises a step-by-step screening process (including point-of-care testing for cholesterol, BP, glycated haemoglobin (HBA1C), urinary albumin-to-creatinine ratio (ACR), a printable summary report and a real-time, secure upload of data to a standards-compliant repository.

Administrator portal

A web-based portal was built to allow program staff to manage events (appendix 2). This included setting up test events for staff training purposes, registration of staff users responsible for entering data into the iPad on event days and registration of nominated care providers who would be given access to the provider portal for follow-up care..

Provider portal

If the participant provides consent then the clinical summary report is accessible from a password protected, secure data repository for the nominated ACCHS/ GP to review. The ACCHS/ GP who has been registered into the system via the process described above is then able to view data for the participants who have nominated them as their care provider (appendix 3). Up to three care providers can be assigned to each participant (e.g. GP, ACCHS manager, local health district staff). The nominated care provider is able to generate a portable document format summary of the screening data and can upload this document to the patient's electronic record. Lists are collated to support follow-up and to prioritise patients according to their chronic disease risk status.

Web-based reporting tool and site evaluation report

A reporting tool was built to allow program administrators to access aggregated data reports on 1 Deadly Step events. The tool provides graphical information on the demographic and health profile of participants, numbers of assessments completed, and the nominated care providers. A site evaluation report was also provided post-event for dissemination to healthcare providers. These reports contained an overview of clinical outcomes from the screening event and commentary on how these outcomes were assessed (appendix 4). The George Institute generated these reports and they were disseminated by the ACI.

Methods

The enhanced program was implemented across NSW in 2015 - 2016. The George Institute was commissioned to conduct an evaluation of the program. A three-stage approach was taken to the evaluation design (figure 1). Stage one comprised development of a program logic model and evaluation framework. This involved detailed discussion with key stakeholders to identify core evaluation objectives and to design strategies and questions that appropriately measure these objectives. The model is grounded in the RE-AIM framework which outlines five steps to implementation of a program: (1) Reach the target population; (2) Effectiveness or efficacy; (3) Adoption by target staff, settings, or institutions; (4) Implementation consistency, costs and adaptions made during delivery; and (5) Maintenance of intervention effects in individuals and settings over time.[8] Appendix 5 outlines the logic model that was developed. Stage two involved implementation of the data collection measures and engagement with key stakeholders through the provision of interim reports. Stage three involved key informant interviews and final analyses of all quantitative data for preparation of the final report.

Figure 1: Evaluation framework

Stage One: Evaluation framework development	Stage Two: Evaluation execution	Stage Three: Final reporting
• develop program logic	• establish data collection and collation	• interview evaluation completed
• develop indicator framework and measurement strategy	• design quantitative and/or qualitative measurement tools	• final data analyses completed
• develop evaluation and stakeholder engagement strategy	• data collection	• final report preparation
	• provision of interim reports after each event	• dissemination of findings
	• ongoing stakeholder engagement and consultation	

2.1 Data collection

A mixed methods approach was taken to data collection and four main data sources were used to inform the evaluation. Table 1 highlights these data sources, the means of collection and the type of information that was collected. The quantitative and qualitative data were used concurrently to gain a detailed understanding of the activities, inputs and outputs of the project as identified in the program logic model.

Table 1: Data elements for evaluation of the 1 Deadly Step program

Data element	Means of collection	Information collected
Screening assessment de-identified data	Secure access to the data repository	Demographic information Clinical information including: Cardiovascular disease risk Diabetes risk Kidney disease risk Current treatment being received
Satisfaction surveys for participants	Anonymous paper survey at the end of a screening event	Satisfaction, acceptability and utility of the program
Reporting website follow-up data	De-identified data extract at end of project	Follow-up status of all participants screened
Key stakeholder interviews	Semi-structured interviews with health service managers, local health district staff, clinical staff and the ACI program staff	Satisfaction, acceptability and utility of the program

Clinical data

A chronic disease risk factor analysis was conducted providing estimates of the prevalence of these risk factors for the total sample

---

8 Gaglio B, Shoup JA, Glasgow RE. The RE-AIM Framework: A Systematic Review of Use Over Time. American Journal of Public Health. 2013;103(6):e38-e46

population. An assessment of the proportion of participants at risk of diabetes, CVD and CKD was made based on the demographic and clinical data collected. The proportion of participants identified with or at high risk of these conditions, who are accessing appropriate management (e.g. self-reported use of guideline recommended medications and attainment of recommended treatment targets) was also assessed.

Participant satisfaction data

At the end of their screening assessment, participants were asked to complete a two-minute survey seeking feedback on the overall event and any problems encountered at each of the screening stations. Appendix 6 outlines the survey questions used.

Follow-up rates

The provider portal contained a reporting feature in which the nominated provider or organization could enter details of which participants were followed-up and the date of follow-up. Data were extracted to assess follow-up rates at the end of the program (August 31, 2016) and analyses were conducted to assess follow-up rates by site, demographic and clinical characteristics.

Interviews

Semi-structured interviews were conducted with a purposive sample of health service and program staff. A maximum diversity sampling strategy was taken in which participants were selected on the basis of site, staff role and involvement in the program. Interviews covered general views about the running of the events which was separated into pre-event, event and follow-up stages to identify barriers and enablers to its implementation. The interview guide template is provided in appendix 7. The interviews generally concluded with a focus on broader views about the program and factors required to support its future.

Interviews were generally conducted by telephone with two evaluation team members present, one of whom had little involvement in the program and another who had detailed knowledge after having worked on the initial design of the program in its earliest phases.

Interviews were digitally recorded, professionally transcribed and reviewed by one member of the evaluation team to ensure accuracy of the transcription. Thematic analyses were conducted seeking to identify themes that aligned with the areas of focus in the program logic model. The interview team met regularly to develop a coding framework and to discuss the significance of the emerging codes. This framework was iteratively revised using the constant comparative method. Member checking was informally conducted from time to time to ensure consistency of interpretation and future interviews were modified to enable deeper exploration of particular emergent themes.

2.2 Ethical considerations

The evaluation was approved by the Aboriginal Health & Medical Research Council Human Research Ethics Committee. Formal approvals from each of the participating sites were obtained. Informed consent was obtained from all participants who were interviewed.

2.3 Project timelines

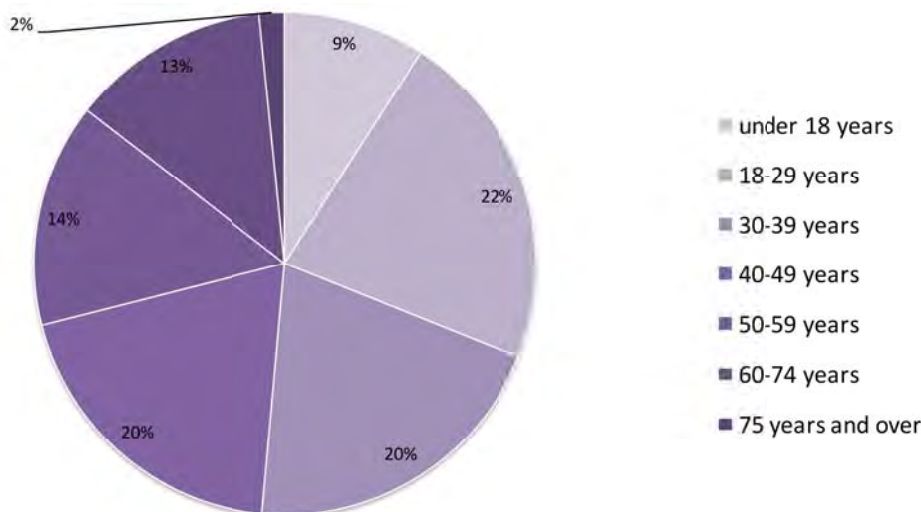| Activity	2015									2016								
	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1 Deadly events	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓					
Interim reports of event data		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓					
Follow-up period		▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	
Stakeholder interviews					▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓		
Analyses and final report preparation															▓	▓	▓	▓

Quantitative Results

3.1 Participant sample

A total of 1,046 people were screened between April 2015 and April 2016 at 9 events in NSW. Table 2 highlights the participant characteristics by site. An average of 116 participants were screened per site with a larger proportion of females than males screened at all sites (61.2% vs 38.8% overall). The majority of participants (91.5%) identified as an Aboriginal or Torres Strait Islander person. Participant ages ranged from 15 to 79 years. Figure 2 shows the breakdown by age of the participants.

Table 2: Demographic profile of participants screened

	Event location	Date	Number screened	Average age (years)	% female	% Aboriginal and/ or Torres Strait Islander
1	Airds	17/04/2015	132	42.2	64.4	84.1
2	Newcastle	06/07/2015	114	40.6	62.3	99.1
3	Orange	26/10/2015	107	34.6	58.9	84.1
4	Tamworth	01/12/2015	118	41.6	60.2	96.6
5	Wagga	06/03/2016	77	39.0	71.4	88.3
6	Moruya	12/03/2016	119	38.4	50.4	95.8
7	Coffs Harbour	17/03/2016	123	47.0	59.4	87.0
8	Armidale	23/03/2016	127	40.0	63.8	93.7
9	Casino	06/04/2016	129	37.9	62.8	93.8
	Total		1046	40.3	61.2	91.5

Figure 2: Age groups of participants screened

under 18 years
18-29 years
30-39 years
40-49 years
50-59 years
60-74 years
75 years and over

3.2 Chronic disease profile

Data on chronic disease risk factors by gender are summarised in Figure 3. For weight related measures 50.3% of the sample had a BMI in the obesity range (mean BMI 31.1 kg/m2) and 65.6% had an elevated waist circumference. Across sites, rates of elevated BMI ranged from 42.1% in Orange to 57.0% in Newcastle. Similarly, rates of elevated waist circumference varied from 46.7% in Orange to 75.4% in Newcastle. Based on World Health Organisation (WHO) guidelines for combining BMI and waist circumference measures, 12.4% of the sample were at very high risk of chronic disease (waist circumference >102cm for men and 88cm for women and BMI >40kg/m2). There were significant gender differences with females recording higher rates of obesity (53.8% vs. 44.8%) and elevated waist circumference (76.1% vs 49.0%).

For smoking status, 37.2% were current smokers with a further 6.7% having recently given up smoking in the previous 12 months. Another 16.4% identified as ex-smokers who had given up for greater than 12 months. Most current smokers had been smoking for more than 10 years (64%) and 44.0% smoked more than 10 cigarettes per day. Current smoking rates varied greatly from 27.6% in Armidale to 50.1% in Wagga. Smoking rates by gender were similar (34.7% males and 38.8% females). Of note, 20.0% of those under 18 years reported being current smokers.

The majority of participants (82.5%) reported inadequate vegetable intake (defined as less than five servings of vegetables per day). Conversely a minority (27.3%) reported inadequate fruit intake (less than two servings per day) and 17.9% reported less than 2.5 hours per week of physical activity. There were few gender differences in these parameters overall. The rate of inadequate vegetable intake varied by site from 70.0% in Moruya to 92.2% in Wagga.

Figure 3: Chronic disease risk factor profile by gender (Females = 640, Males = 406)
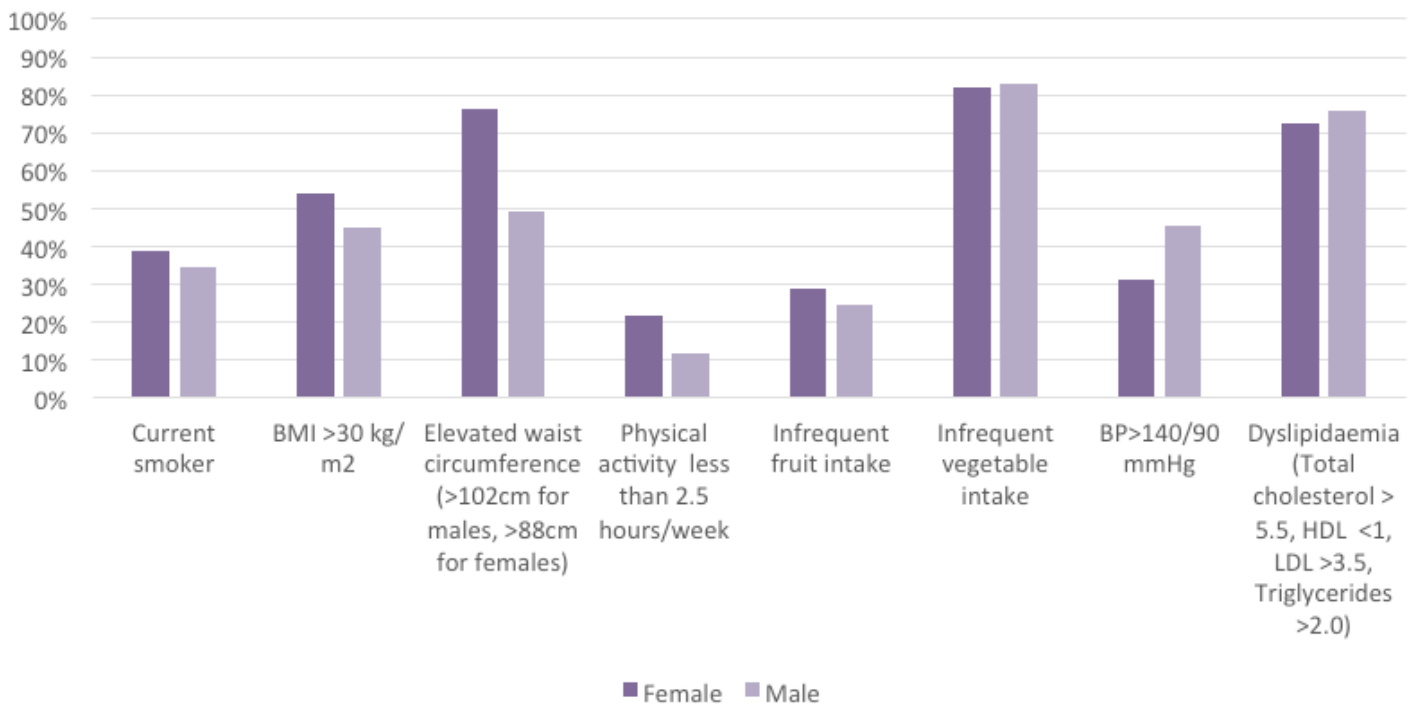
Figure 4: Cardiovascular risk profile
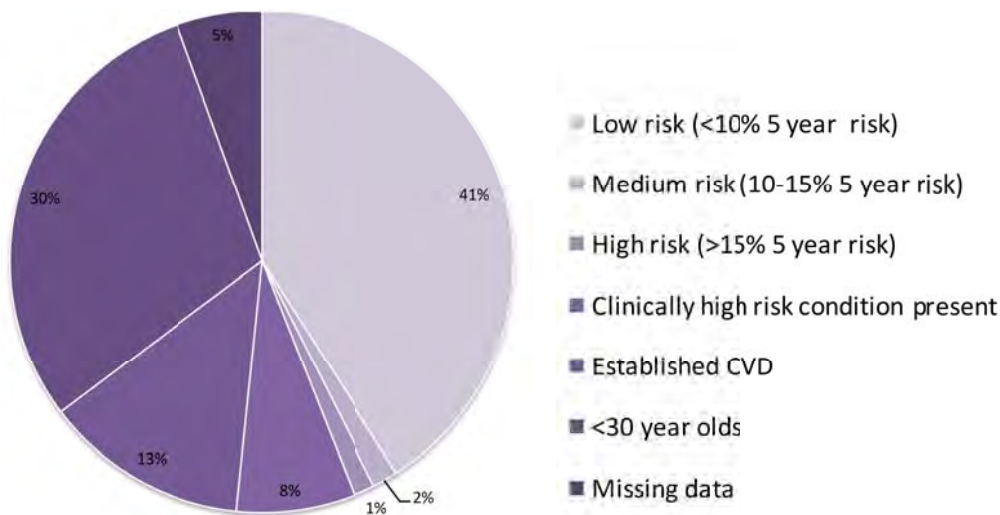
Data on the CVD risk of participants are summarised in figure 4. Risk estimation is based on National Vascular Disease Prevention Alliance and RACGP/NACCHO guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, and BP to determine risk. The risk equation is presented as a five-year risk of a CVD event and is based on the Framingham risk algorithm. This equation is validated for people aged 30-74 years of age. Risk estimates were not made for people aged < 30 years

unless they had an a priori health condition that was known to increase their CVD risk. Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease. Clinically high risk conditions include those conditions that can be captured from 1 Deadly Step data and include: diabetes and age $\geq$ 60 years, diabetes and albuminuria, BP $\geq$ 180/110mmHg, total cholesterol > 7.5 mmol/L, and Aboriginal and Torres Strait Islander people aged $\geq$ 75 years.

Around one in five (22.1%) of the sample were at high CVD risk either through having an existing CVD condition or one or more clinically high risk conditions. Prevalence of existing CVD varied substantially across sites (from 5.6% in Orange to 24.0% in Casino). There were minimal differences in CVD risk profile by gender.

The diabetes risk profile is show in figure 5. Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day. Overall 17% of the sample reported having diabetes. Prevalence rates of diabetes varied greatly across sites from 8.8% in Newcastle to 23.7% in Coffs Harbour. An additional 4.3% of the sample had diabetic range HbA1C levels $\geq$ 6.5% (48 mmol/mol) without a previous known diagnosis of diabetes. Another 28.9% of participants had potentially elevated glucose levels (random capillary blood glucose levels between 5.5mmol/L and 11.1mmol/L). There were few gender differences in the diabetes risk profile of the sample.

Figure 5: Diabetes risk profile

Low risk (AUSDRISK ≤6)

Medium risk (AUSDRISK 6-11)

High risk (AUSDRISK ≥12)

Impaired glycaemia

Possible new diabetes diagnosis

Established diabetes
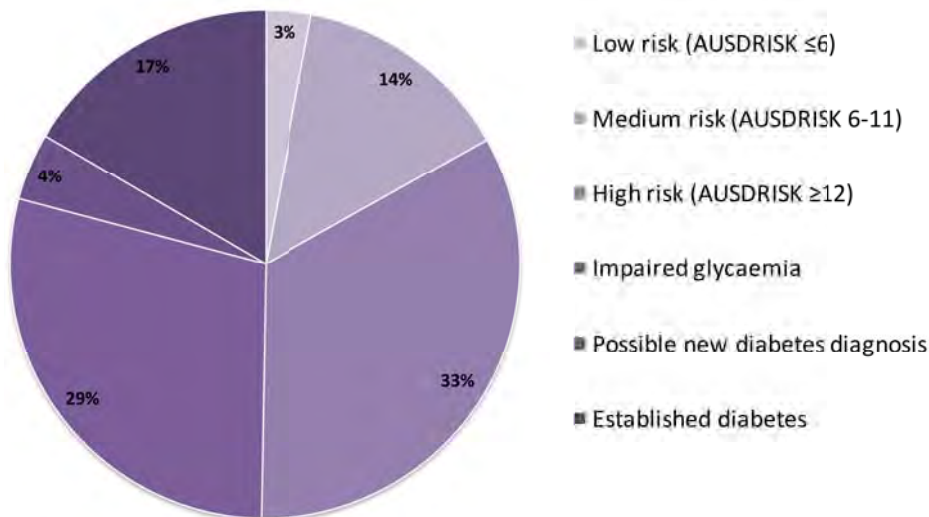
RACGP/ NACCHO and Kidney Disease Australia guidelines identify the following groups to be at high risk of CKD: BMI>30 kg/m2, current smoker, presence of CVD, family history of CKD, presence of diabetes, and all Aboriginal people over 30 years of age. Based on these criteria the majority of the sample (83.0%) was at high risk of developing CKD. Even after removing the last of these criteria (Aboriginal and Torres Strait Islander people over 30 years), 77.0% remained at high risk. Importantly 17.3% had an elevated urinary ACR ($\geq$ 2.5 mg/mmol for males

and $\geq$ 3.5mg/mmol for females). It should be noted that falsely elevated ACR levels can occur and repeat testing and medical review was recommended for these participants. There were neglible gender differences in the proportion of people at high risk of CKD overall and in those with elevated ACR, a family history of CKD or past history of CKD. There were differences in rates of albuminuria across sites ranging from 10.4% in Newcastle to 22.5% in Casino.

3.3 Care practices

Medication use is based on self-report by the participant. An information pop-up box was available in the iPad application with common medication names to assist in answering these questions. All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications. All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications. National Vascular Disease Prevention Alliance guidelines recommend the following targets: BP $\leq$ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease and $\leq$ 140/90 mmHg for all others; total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol $\geq$ 1mmol/L and a triglyceride level <2mmol/L. Figure 6 illustrates the proportion of patients with CVD and at high risk of CVD meeting various care practice parameters.

There was a large variation in the proportion of people with or at high risk of CVD who reported taking guideline recommended treatments (from 13.3% at Orange to 56.8% at Airds). There were no significant gender differences in those who reported currently taking these medicines.

Figure 6: Management for people at high CVD risk
Note: * Only people with established CVD are recommended blood thinning medication unless there are contraindications and therefore data are not provided for people at high risk without CVD

For those with a known diagnosis of diabetes (173 participants), the majority (80.4%) reported taking an oral glucose lowering medication and 34.7% reported taking insulin. Overall, 42.2% were attaining a target HbA1C of $\leq$7% (53 mmol/mol) and 61.9% were attaining a target HbA1C $\leq$ 8% (64 mmol/mol). There was a large variation in attainment of target HbA1C levels $\leq$7% ranging from 29% in Casino to 67% at Wagga. A higher proportion of women were meeting HbA1C targets than men (46.3% vs 35.4% respectively).
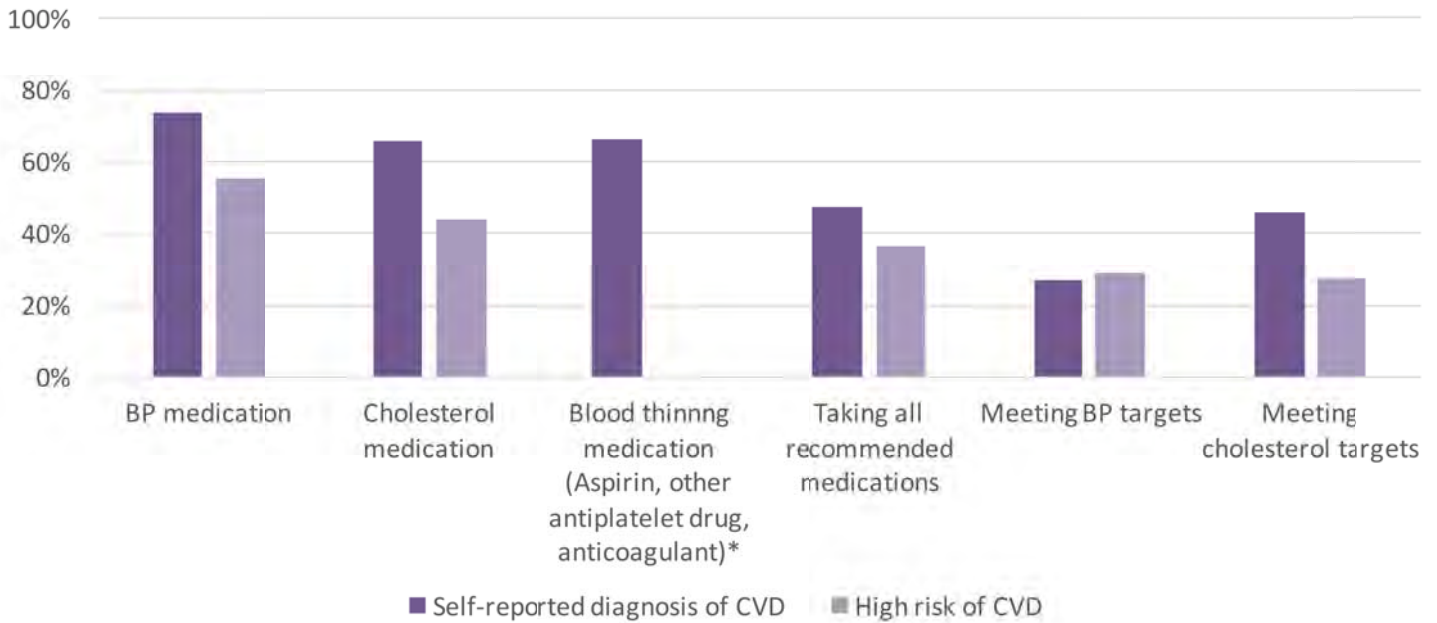
Nominated care providers were asked to indicate in the reporting portal if participants had been followed up post-event. Data extracted from this portal in August 2016 shows that 538 of the 1046 participants screened had been recorded as followed up (51.4%). There was wide variability in recording of follow-up rates across sites (figure 7). Three sites (Airds, Tamworth and Wagga) recorded follow up rates over 80%, while two sites (Newcastle and Orange) recorded rates below 15.0%. Participants with or identified to be at high risk of diabetes, CVD or CKD had slightly higher follow-up rates than the total population at each site and overall.
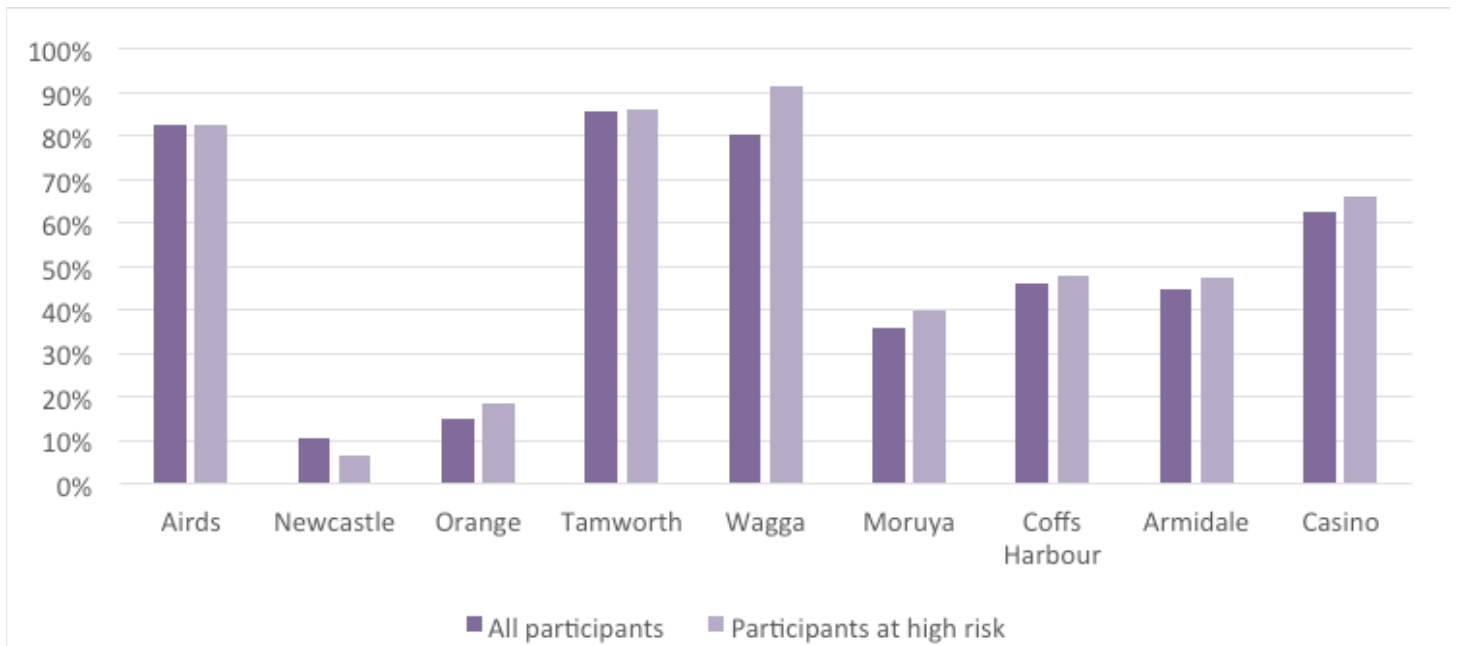
3.4 Participant survey

Satisfaction surveys were administered post- screening at seven events. The survey was not administered at Airds or Moruya. A total of 297 participants completed the surveys for those sites that administered the survey (response rate 37.4%). Overall impressions of the program were positive with the vast majority of participants satisfied with event organisation and the information gained from the event day (figure 8). Similarly, the majority of responders encountered few problems when asked about specific screening stations, although around 6% of participants did report problems with the urine and blood testing stations (figure 9). Free text entries were also analysed and were concordant with these findings.

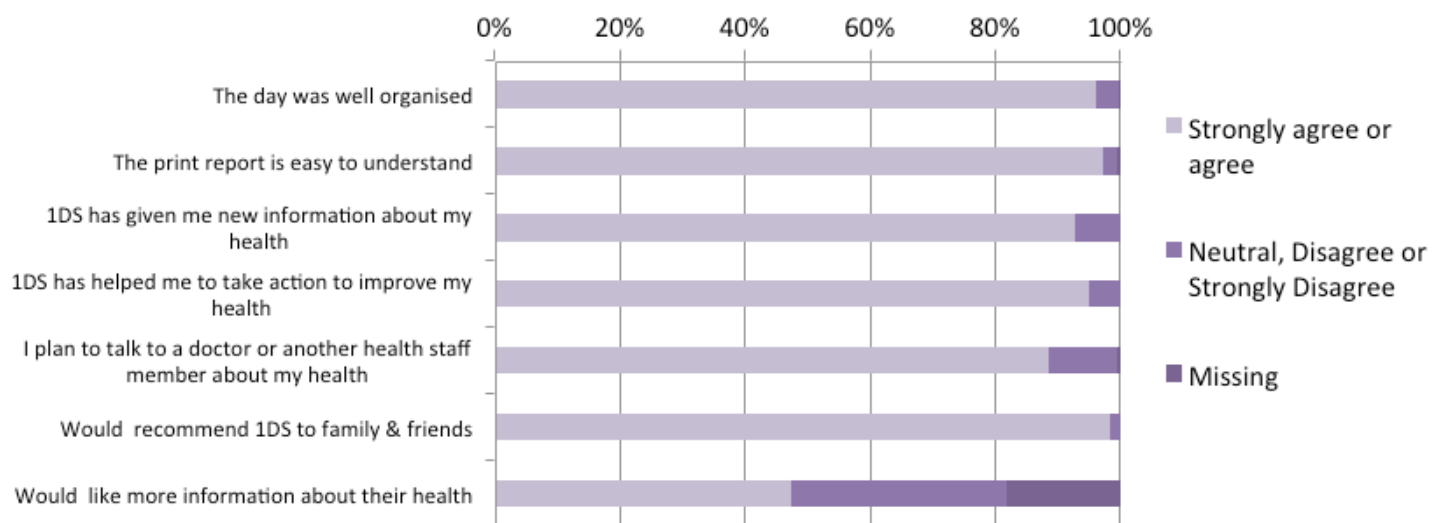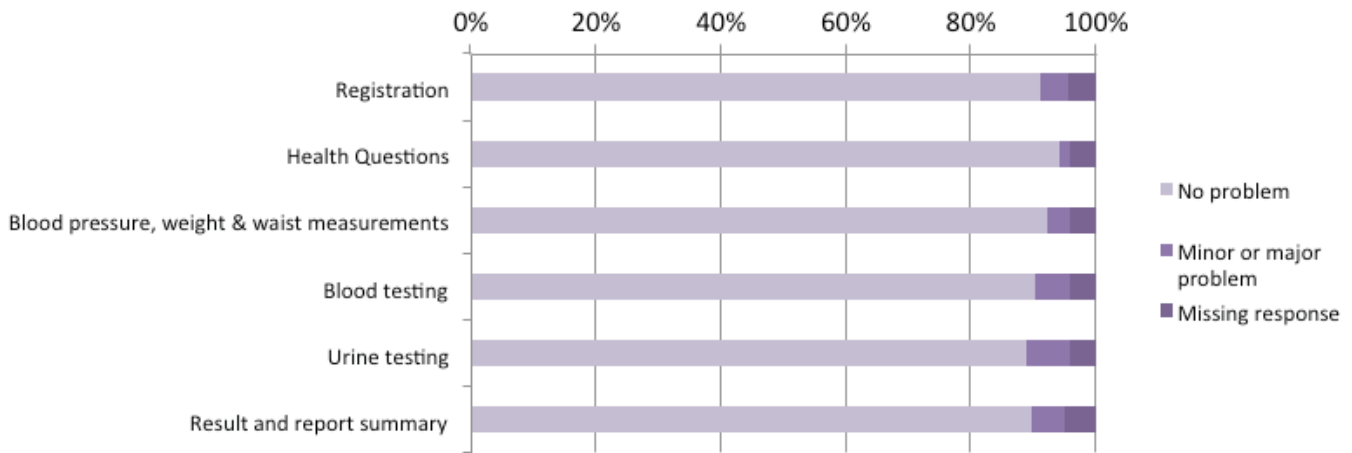*Figure 8: Participant survey - overall program impression (n=297)*

Figure 9: Participant survey - problems encountered (n=297)

1 Deadly Step.
Process evaluation of a chronic disease screening program in NSW Aboriginal communities

Qualitative Results

Twenty-one interviews were conducted with a variety of staff to gain perspectives on the design and implementation of 1 Deadly Step. Table 4 highlights the professional categories interviewed. Event sites have been de-identified and do not represent the chronological order of the events conducted.

Table 3: Interviews by professional category

Site	CEO	Clinic manager	GP	Nurse	Aboriginal project/ liaison officer	LHD staff	Program staff	Other	Total
1		1		1	1				3
2	1				1	1			3
3		1		1		2			4
4	1			1		2		1	5
5									0
6				1	1				2
7			1						1
8									0
9				1					1
Other							2		2
Total	2	2	1	5	3	5	2	1	21

Interview themes have been organised to align with the three key stages of the program (pre-event, event and post-event). An additional theme on sustainability considerations for the program is also provided. Figure 10 highlights the principal themes emerging at each of these stages.

Figure 10: Interview themes organised by event stage

PRE-EVENT

Theme 1: Importance of the working group

Theme 2: Event preparation considerations

EVENT

Theme 3: Implementing a clinical program in community setting

Theme 4: Opportunties and risks when combining 1 Deadly with other community events

Theme 5: Event day work flow considerations

Theme 6: Role of Country Rugby League and marketing activities

Theme 7: Technical challenges

POST-EVENT

Theme 8: Resource burden issues for implenenting follow-up processes

Theme 9: Challenges in following up non-ACCHS participants

Theme 10: Availability of GPs and senior nurses on event day

Theme 11: Implementing population management processes

Sustainability considerations

4.1 Pre-event

Theme 1: Importance of the working group

An important initial stage in organising a 1 Deadly Step event involved the ACI engaging local stakeholders, in particular the ACCHS and the Local Health District, to determine interest and capacity to conduct an event. Once formal agreements to hold an event were finalised, a working group was formed involving individuals from the relevant stakeholder groups. This working group was responsible for pre-event planning, estimation of staffing and equipment requirements, engagement with Country Rugby League, running the event, and providing oversight for follow-up of participants.

The working group roles were viewed favourably by interviewees. One ACCHS CEO commented that "getting all the main players (together)....worked really well." Interviewees expressed positive sentiments about the ACI's administration and management of the working group with one ACCHS project officer stating she "couldn't fault this part of the support". The sound preparation that went into pre-event planning appeared to contribute substantially to smooth event operations.

> *"...It was a credit to ... the working party that ... most things were at least addressed and acknowledged. I don't think there were any real surprises on the day as far as things not working" (LHD CNC)*

The model of collaboration was seen as a blueprint for a broader range of health promotion activities:

> *"ACI, LHD,... the staff just came in droves and the planning, having those meetings, it was just so great. That's the way we should do all of our health promotion. And that's certainly something we are taking on board here" (ACCHS practice manager)*

Another key role of the working group was to determine how to use Country Rugby League and the ambassadors on event day. The ACI provides advice on how these groups have been used at previous events, but ultimately the decision on how to use Country Rugby League and ambassadors is a matter for each community.

> *".... we use two Aboriginal ambassadors for each event as part of the marketing to get people to attend. On top of that, there's regionally based coordinators.. (and).., if the committee (working group) were happy, they could use their services.." (ACI Manager)*

Theme 2: Event preparation considerations

Interviewees considered a lead time of around three months was required to ensure sufficient time for planning of the event:

> *"It has to be a good three months before the event to make sure mail-outs happen, promotion stuff is up in the doctor's clinic...." (ACCHS practice manager)*

At one event there was a six week lead time and some considered this was too short:

> *"Just the coordination of staffing and organising resources to be available on the day. For some of the machines we had to identify which organisation could bring what. ....If we had more time we probably could have...got what we needed and have...the machines calibrated. It felt a bit rushed." (ACCHS CEO)*

In general the pre-event staff training was considered sufficient.

> *"It was just about understanding the tools and that basically was all done by the end of the session that they held. Everybody was pretty confident and ready for the day." (ACCHS practice manager)*

Training was usually conducted as a one-off, half to whole day activity. This meant that not all staff were able to attend resulting in some staff needing to be trained on the event day. This was a source of frustration for some:

> *"We did a training day and that went pretty well. The only thing I was a bit disappointed (about) was that a lot of the*

staff from the local health district didn't make the training day. So it meant that we were trying to train people on the day....even though they knew about it for a long time."(ACCHS Chronic Care Coordinator)

For ACCHSs, staff participation at training events required support from managers and advanced planning to free up staff time for attendance.

"...for our health service...I think only one person turned up...that's probably not anybody's fault except ours to manage that process better." (ACCHS project officer)

Another interviewee felt it was 'up to management pushing that need for people to attend.' At some sites, however, the inability to do pre-event training did not appear to be a major barrier:

"No training had been done with the app at all [due to technical difficulties on the training day]... and so we winged it on the day....it took probably about a minute with each person and everyone had the hang of it. So that just proves how simple the app is to use I guess." (LHD co-ordinator)

There were some suggestions to improve the pre-event training. One practice manager commented that the training could be more structured and that trainers could be more assertive in checking if people understood what was required of them. This was considered important for less experienced staff who might benefit from small group based learning. Several interviewees also suggested dedicating more training in use of the point-of-care machinery. This was particularly important in services that did not have the machinery, but was also considered important in those sites where different machines were used or where the staff who had been trained were not those participating on event day:

"If I had my time again I would probably hold a bit more training for the clinicians who hadn't used the equipment before....I thought three hours might be enough but that included training for the app and talking about the program...." (LHD Clinical Nurse Consultant)

4.2 Event day

Theme 3: Implementing a clinical program in a community setting
Interviewees were generally positive about event day, viewing it as an opportunity for family and friends to come together. Holding events outdoors rather than inside a clinic facility was seen as particularly important:

"It's a good get together and I think that you can't put any money or value on community getting together... having a yarn and catching up with each other." (ACCHS registered nurse)

This community-centred approach was also seen as key in maximising participation in the screening:

"...finding a facility where people feel comfortable to come along....certainly helps with uptake.. and engagement." (LHD Clinical Nurse Consultant)

For staff and stakeholders, the event also appeared to be a useful avenue for raising community awareness, fostering the opportunity to engage or re-engage people who might otherwise not access health care. It was also perceived to be a fun way to learn more about risk factors for chronic disease. One LHD nurse felt that:

"Aboriginal people must get ... bored of the statistics thrown at them about chronic disease and that they're at risk of diabetes....and their lifestyle management is causing all of these problems. Whereas I don't think that's what 1 Deadly Step did. I think it was a really positive way of getting the message across that you can do something about this and we're here to help you." (LHD Clinical Nurse Consultant)

It also gave staff an opportunity to strengthen relationships with staff from other organisations.

'I think our staff got to know their staff a little better. That was a positive." (ACCHS CEO)

A successful event appeared to also boost ACCHS staff morale and make their work more visible to board members.

It was well put together and that's a pat on the back not just for the staff here, but for everybody that was involved in all the other services..... they were really pleased to have been involved... (ACCHS CEO)

Board members...don't always get to see how things work on a day to day basis We might include it in a report but they actually don't get to see the mechanics of it. So we got some positive feedback from Board members when they saw people in action working together. (ACCHS project officer)

One LHD coordinator highlighted there were few opportunities to work in this way commenting that this level of inter-agency collaboration is something *'you don't see throughout any other time'.*

Theme 4: Opportunities and risks when combining 1 Deadly with other community events
Some events were held concurrently with other cultural events such as NAIDOC week. This appeared to be an effective strategy to 'de-medicalise' the event.

" (NAIDOC) draws everybody because they want to get out for the day.... They don't really see it as coming here to get screened. They see it as - if I do all these steps I get that cool jersey and I get to have a feed and I get to have a day out with my family." (ACCHS practice manager)

There was also the added advantage of attracting more people for screening, in particular groups who might not usually attend the clinic such as teenagers. Further, the event provides services with an opportunity to showcase their work to the community.

"We're trying to raise the profile of health in this community and what we can do around that, and so in that I think it did offer some insight for the community as to what we can do here." (ACCHS CEO)

It also created opportunities to allow external stakeholders including the ACI staff to increase their familiarity with the local health service:

"I think it was good for other people to see our community too. .... I don't think ACI has been out here, and to be a part of the day gives (them) a different community exposure... and people go back with that knowledge" (ACCHS clinic manager)

Despite clear benefits from running an event alongside another community event, it also increased operational complexity. NAIDOC celebrations place considerable demands on staff in their own right. Aboriginal staff in particular have community and family responsibilities at these events in addition to their work responsibilities. This appeared to make management and oversight of the day more difficult:

"When staff were rostered on to relieve other staff they just didn't do that....(because they) were over at the community event. Like hello, people need to eat, you need to come over and...give them a break." (ACCHS Project Officer)

This project officer went on to say:

"I was the lead for <name withheld> event but I had my grandchildren there on the day. So I was just running around and, although other staff were trying to help out, it just didn't.. work out I guess."(ACCHS Project Officer)

In addition, the flow of people attending for health screening was influenced by activity at the NAIDOC event, potentially creating bottlenecks:

"..... so maybe NAIDOC wasn't a great day to do it.... only because there are so many people from the community there, and...we were influxed with people..." (LHD Chronic Care Coordinator)

This rapid influx had repercussions for access to all stations but in particular those stations where blood and urine samples needed to be collected:

"...it was a good idea to have the screening as part of the community day because we get people that... wouldn't normally access our health service. But the layout of the screening in relation to other parts of the day didn't facilitate easy access." (ACCHS CEO)

There were additional challenges associated with holding outdoor events with unpredictable weather changes. One interviewee suggested it might have been better to hold the event indoors under such circumstances, noting that sensitive machines (such as the Affinions) did not work well in extreme weather.

"It was absolutely freezing cold, it was blowing a gale and the machines...just don't function, let alone the staff in those sorts of elements....So we had to keep putting them up our jumpers...to get them warmed up.' (ACCHS project officer)

Inclement weather also led to additional workplace considerations such as exposed electrical cords, marquees and tents becoming unstable in the wind, and an increased potential for clinical samples to become misplaced or tipped over.

Theme 5: Event day work flow considerations

Although generally event day workflow was well managed, a few interviewees were concerned that participants did not know what occurred at any particular station and that staff had some difficulty finding the station they were allocated to work at. One interviewee recommended that participants be provided with a passbook to help them navigate the day.

Most people considered the clinical information collected to be important, however, this needed to be balanced against managing the workflows associated with large scale screening. Consequently there were mixed views concerning the optimal amount of information that should be collected. Some interviewees considered that all of the data were important as they could support other service activities such as completion of Medicare rebated Aboriginal Health Assessments. One ACCHS manager also considered this information as being particularly important for improving the quality of their key performance indicator (KPI) data which is provided to funding bodies.

"So the KPIs were identified as a massive thing. For every second person in the (1 Deadly) report, we didn't have the KPIs on file." (ACCHS clinic manager)

Other interviewees questioned the relative merits of conducting point of care testing for cholesterol, diabetes and kidney disease for all participants.

"...we've got stages where we're going to have bottlenecks because the testing takes a set amount of time.....and people look frustrated which may deter other people from coming along" (ACI Project Officer)

Some questioned whether it was necessary to do HBA1C testing on all participants. This particular test was seen as time-consuming and frequently resulted in bottle-necks:

".. my main recommendation is that they review the HBA1C test only if it shows up that the patient is at high risk on that initial AusDiab screen... they take a while to do and maybe I would...just do a basic sugar level instead" (ACCHS Chronic Care Coordinator)."

Other interviewees felt it was important to conduct these tests and that more resources needed to be invested in providing more machines on the day. This would inevitably require more investment in resources to support attendees while they are waiting.

"So come over to this tent, and you're going have a piece of fruit and I'll give you a nice drink of water, and then when the line gets down a bit, we'll take you back over there." (ACCHS practice manager)

See below for more discussion on the technical challenges associated with point of care testing.

Theme 6: Role of Country Rugby League and marketing activities

The use of Country Rugby League ambassadors was considered a successful community engagement strategy, making the event more fun for children and freeing up parents' time for screening:

> *"…(having) prominent Aboriginal rugby league players promoting this event…. the kids loved itthey drew a crowd.'*
> *(ACCHS CEO)*

The use of rugby league ambassadors also allowed some sites to leverage additional marketing opportunities through free local media advertising or via a Facebook page:

> *"We had Facebook, the local paper, the local news … ABC radio did a big event…. So, basically we flooded the*
> *media….they're happy to do a news story like that for free." (ACCHS CEO)*

However, a number of interviewees commented that the ambassadors need to be committed to supporting the program. There were circumstances where the ambassador was unable to attend or perceived to have no interest in their role and this could undermine the objectives of the program:

> *"There's a role for ambassadors, but…if…the ambassadors are not there… or can't speak passionately about it,*
> *people can see straight through that. ..Often it's sold as the rugby league player's going to be there and then*
> *they're not … it's like a con job." (ACCHS CEO)*

1 Deadly Step shirts were also critically important incentives to enhance event attendance:

> *"In all the years I've been working in Aboriginal health, shirts are a really big incentive, people…love to wear them*
> *and they love to promote them." (ACCHS clinic manager)*

A number of interviewees mentioned that staff wearing the 1 Deadly Step event shirts in the weeks leading up to the event was also a successful marketing strategy:

> *"…we all were wearing our shirts for a couple of weeks before the event. Patients were seeing the shirts and*
> *(asking) 'How do I get one of the shirts?' So that was really good advertising…." (ACCHS chronic care coordinator)*

Some participants were disappointed that the shirt design remained unchanged from the previous year, further highlighting the importance of refreshing the designs regularly:

> *"But quite a few of them, even though they loved their t-shirts they still want different ones." (ACCHS clinic*
> *manager)*

Theme 7: Technical challenges

• *iPad app*

There was general consensus that the 1 Deadly Step app was easy to use and required minimal training to become proficient in its use:

> *"The app was really simple and easy, user friendly….you only needed to do one or two rego's and it flowed quite*
> *easy" (ACCHS project officer)*

The main issue raised by some interviewees was related to the challenges of entering results on the blood test screen. The main problem appeared to be that all three results (cholesterol, glucose and HBA1C) needed to be entered before the page could be saved. Additional problems included an inability to enter an error code when a patient's result was outside the range of the machine.

Because of these challenges with both the app and the point of care machines, interviewees suggested taking a modular approach to screening events where event organisers could adapt the program to their specific requirements. This included provision of a 'light' version of the app which did not include all of the mandatory screening stations in the current program.

• Point of care machines

Following from the issues highlighted above on workflow bottlenecks, several interviewees raised the issue of bottlenecks associated with the blood and urine testing stations. The point-of-care machines take several minutes to process a result. One interviewee noted that tests had to sometimes be re-run on samples when an error code appeared and this created or exacerbated existing bottlenecks:

> *"...it's like the brake lights on the highway.... Once you start having to ... rerun samples and potentially getting the same error...it slows down the flow of people going through." (ACCHS CEO)*

Staff familiarity with the machines may also have been an issue. Although the Affinion machine was used to conduct point of care testing at the events, some ACCHSs use DCA machines as part of their routine health care services. The Quality Assurance for Aboriginal Medical Services program specifies that DCA machines should not to be used outdoors and therefore staff would have had to retrain in using Affinions, thereby creating a departure from usual practice.

• Network problems

Some interviewees reported problems printing patient reports. There appeared to be a range of issues related to this. Some sites used additional, older iPads where the allotted supply was insufficient and these iPads appeared to have more software problems:

> *".... We ended up borrowing iPads from a local TAFE... But what we found on the day was those non-ACI iPads were the ones that were having trouble talking to the wi-fi." (ACCHS Chronic Disease Coordinator)*

Other interviewees commented on problems related to insufficient network capacity and problems with the printers themselves. The delay in printing reports may have resulted in some participants leaving before receiving their report or having a discussion with GPs and nurses:

> *".......our system had shut down probably about 12 to 15 times on the day which then made a massive bottleneck at the end where we'd then print the health assessments out and send the people to the GP" (LHD CNC)*

One experienced practice manager appeared frustrated that there was no 'Plan B' in the event of these network outages or other equipment malfunctions:

> *"I was a bit cranky...... when you've worked in Aboriginal health for 20 years, sometimes you have to have a Plan A, B, C, and D ... What happens if we don't have Wi-Fi...what happens if something happens to the iPads, what are we going to do? There's no other option, I was told" (ACCHS practice manager)*

4.3 Post event

Theme 8: Resource burden issues for implementing follow-up processes

Most interviewees considered follow-up activities to be resource intensive. At one of the high performing sites with follow-up rates > 80%, the ACCHS clinic manager reflected that it was around a two-month process to implement adequately:

> *"It was six to eight weeks, and even saying that there are still..people with risk factors that came in low and we're still capturing them .... But all the ones that we listed as priority, have been followed up." (ACCHS clinic manager)*

One ACCHS CEO felt that these requirements could be made clearer in the working group when preparing for an event:

> *"I think they've got to be clear that yes, there's a lot of work in the event, but potentially there's a heap of work after the event and that you need to think through what your follow up strategies are going to be .... Who's your chronic disease management team and who's got capacity? I think that should be right up front" (ACCHS CEO)*

Much of the follow-up processes were implemented by managers, administrators and Aboriginal Health Workers. At sites where there were staff shortages these processes were particularly difficult to operationalise:

> *"...Because we are down so many staff at the moment...everybody's trying to help everybody out, and... it (follow-up) has kind of gone by the wayside," (ACCHS Chronic Disease Coordinator)*

Theme 9: Challenges in following up non-ACCHS participants

The major challenge encountered in follow-up processes related to provision of sufficient support to participants who nominated a care provider other than the local ACCHS for follow up. Many interviewees highlighted concerns about the importance of ensuring appropriate follow-up processes for these participants.

> *"We've struggled a bit with some of the follow-up with some of our patients. I can admit that; yes, we have struggled." (General practice Aboriginal Liaison Officer)*

For non-ACCHS participants, it was originally envisaged that the nominated GPs would be registered into the system and notified of the patients who had requested follow-up through them. However, in practice this process appears to have been difficult to implement.

Consequently, the ACI modified the process such that one staff member, usually from the LHD, was given responsibility for follow-up of non-ACCHS participants. This person was given consented access to participant reports in the reporting portal and liaised with the relevant care providers to ensure follow-up processes were implemented. Reflecting on its implementation at one site, the ACCHS CEO stated:

> *"We ensured that they were followed up by their GP practices...through booking appointments for them and having feed-back...from their general practice." (ACCHS CEO)*

Coordinating follow-up processes between different sectors was seen as a valuable outcome from LHD participation in the program. However, some staff suggested this needed to translate into more tangible benefits to justify their participation. For example, one LHD staff member would have liked the follow-up process to go one step further and allow for uploads of patient reports into the hospital record system.

> *" ....I suppose the question is what was in it for us? Quite a lot of staff were involved - paid for by the LHD - if we didn't get any access to the results and be able to have some input into those patients' care then why would we be involved in the first place?' (LHD care coordinator)*

Theme 10: Availability of GPs/ senior nurses on event day

A second alteration to the program to ensure better follow-up processes was to have GPs and/or senior nurses present on event day to discuss participant results.

> *"We had two GPs there on the day and anybody that needed follow up...went straight into the GPs and was seen there and then....Anybody that needed follow up post that, I had my my chronic disease coordinator make an appointment for them at the AMS" (ACCHS CEO)*

It appears that sites ensured this conversation occurred in a place where there was sufficient privacy for the participant:

> *"GPs had individual rooms where they were seeing the clients. It wasn't in an open space. They actually had an office where they could take the person in to speak to them, (and) go over the report in privacy...." (ACCHS CEO)*

This reduced the workload for managerial and administrative staff and Aboriginal Health Workers and overall was seen as a more efficient use of ACCHS resources.

Theme 11: Implementing population management processes

The principal process for follow-up was through use of the provider reporting portal. This allowed clinicians and managers to access and download patient reports and to prioritise participant follow-up on the basis of their chronic disease risk status. Although not all providers were active in use of this portal, those that had used it were generally positive and appreciated its simplicity:

> *"I love simplified systems, it was perfect. It wasn't complicated at all.." (ACCHS clinic manager)*

ACI training in use of the portal included face-to-face and telephone contact. Sites were also provided with a link via email with instructions on how to report follow-up status via the reporting portal. Interviewees were generally satisfied that this level of support was sufficient:

"ACI didn't really need to come in...., he (ACI project officer) just flicked me an email with a log on, type in a new password...and away you go." (ACCHS Chronic Disease Coordinator)

In addition to the patient specific reports, an overall event report summary was provided to key stakeholders. This report was generally viewed positively:

"I thought it [the event report Summary] was really good. Because its colour coded and ... it gives you exactly how many people were screened, how many people nominated the stakeholders as their provider....It highlighted for us as a health provider that you can target programs around some of that data." (ACCHS project officer)

Although this report was also reviewed by the working groups, it was unclear to what extent the information was used to inform population health activities – either at a clinic or LHD level. One ACCHS CEO felt that they could benefit from strategic advice on implementation of chronic disease management programs across their community in light of the findings.

"It would be useful for somebody to come and work with the services around what they might do with that information..... these are your risk factors in the community,... and do some projections around...where it could head." (ACCHS CEO)

Several interviewees also commented on the need for greater integration of the data into routine service provision. This included having the ability to upload participant reports directly into the practice management software and to generate referrals for specific services such as smoking cessation services. The current systems allowed only for uploading of static PDF documents into the patient file. There was strong interest in being able to upload results into the coded fields of the patient record. This could then be used to auto populate items required for KPI reports and for Medicare rebated health assessments.

"Once we made contact with that patient we gave them a copy [of their Patient report] and we kept that to scan it into their file. If that could automatically go in that would be great" (ACCHS clinic manager)

4.4 Sustainability considerations

Although stakeholders were generally enthusiastic about involvement in 1 Deadly Step, the trade-off between investing in this program versus other activities was raised, particularly by non-ACCHS interviewees:

"Well in the current climate where ... they're really pushing hard for activity based funding...we certainly had discussions early on about whether it would be possible (to justify)...the time away from people's usual...work activities." (LHD Clinical Nurse Consultant)

The funding grant provided to sites was generally considered insufficient to cover actual costs associated with running the day. It appears that a considerable amount of in-kind support (e.g. local equipment hire companies providing free generators) was also harnessed to support implementation of the events and that this varied across sites. Aside from staffing considerations, costs associated with equipment support were of particular concern. Although the ACI was able to provide some support through provision of additional point-of-care testing machines and iPads, some interviewees suggested that multiple stakeholders should pool resources to rationalise costs.

An aspirational goal for the 1 Deadly Step program was to allow local services to adopt the software tools and operational processes to conduct their own events without the need for oversight from the ACI. Although local service leadership seems critical, most interviewees felt they would have difficulty running a 1 Deadly Step event without the support of an organisation such as the ACI.

"We wouldn't have been able to do it without the help that we got from them, because our staff alone wouldn't have been enough to run it."(ACCHS chronic care coordinator)

The ACI appears to have played a central role in stakeholder engagement and management in the lead-up phase to an event. The time

---

9 Australian Bureau of Statistics Australian Aboriginal and Torres Strait Islander Health Survey: First Results, Australia, 2012-13 Cat 4727.0.55.001, ABS, Canberra, Australia

10 Patel A, Cass A, Peiris D, et al for the Kanyini Guidelines Adherence with the Polypill (Kanyini GAP) Collaboration, A pragmatic randomised trial of a polypill-based strategy to improve use of indicated preventive treatments in people at high cardiovascular disease risk 2014;22(7):920-30

invested by the ACI in these processes was significant, sometimes requiring up to five meetings prior to the event. This investment was highly valued by stakeholders and greatly facilitated participation:

".... we weren't trying to delegate to each other which can cause controversy and who's bossing who. It was someone else doing all the work and they (ACI) delegated. We knew exactly what we had to do and, with that, we found we were more inclined to give more work back into it." (LHD coordinator)

An additional sustainability opportunity that arose from the interviews was the need to establish a system whereby shared learnings from sites could be made available to other sites. One interviewee, for instance, raised the idea that an experienced person from a site which had held a 1 Deadly Step event earlier might mentor those responsible for conducting an event elsewhere:

"I would set up the station a lot differently now and I said that to <name withheld> if they're considering it in Tamworth, I said look I'll come up and help you set up the station because each clinician needs to have exactly what they need for that one set task area..." (LHD Clinical Nurse Consultant)

Discussion

In this report we have examined multiple data sources to evaluate the 1 Deadly Step program. The evaluation focussed on four main areas; (1) the demographic and clinical profile of participants; (2) implementation barriers and enablers as perceived by staff and participants; and (3) processes that might influence the maintenance and sustainability of the program. In this discussion we summarise the key findings and discuss the implications for future implementation of the program.

5.1 Demographic and clinical profile of participants

The Australian Health Survey (AHS) Aboriginal and Torres Strait Islander component was conducted in 2012-2013, and is a nationally representative sample of 13,250 Aboriginal and Torres Strait Islander people.[9] Drawing on published data from this sample we can make the following observations on the risk factor profile of the 1 Deadly Step sample compared with this survey.

Lifestyle behaviour, physical and biochemical measures
In terms of lifestyle behaviours, current smoking rates were slightly lower in 1 Deadly Step compared with the AHS (37% vs 41% respectively). The proportion of people who reported eating an adequate amount of daily intake of fruit was higher in 1 Deadly Step than in the AHS (62% vs 43% respectively). The proportion reporting adequate vegetable intake was low overall but higher in 1 Deadly Step when compared with the AHS data (17.5% vs 5% respectively).

For physical measurements the proportion of 1 Deadly Step participants with elevated waist circumference (66%) was similar to the AHS (60% for males and 81% of females). Combined overweight/ obesity rates were higher in 1 Deadly Step compared to the AHS (74% vs. 66% respectively). **There was a higher prevalence of elevated BP in 1 Deadly Step compared with the AHS (37% vs 20% respectively). For biochemical risk factors, there were also higher rates of dyslipidaemia in 1 Deadly Step compared to the AHS (74% vs 51% respectively).**

Chronic kidney disease, diabetes, cardiovascular disease
Rates of chronic kidney disease were slightly higher in 1 Deadly Step compared with the AHS (21% vs 17%), although slightly different criteria were used in the two samples for classification of CKD. **The high rates of albuminuria (17%) in 1 Deadly Step for people not previously known to have kidney disease is particularly concerning.**

The prevalence of diabetes and newly diagnosed diabetes based on the HBA1C result in 1 Deadly Step compared to the AHS was more than double (21% vs 11% respectively). Despite being a predominantly non-remote sample, these elevated rates are closer to those observed in people from remote areas in the AHS. There were similar rates of people with diabetes who met glycaemic targets (HbA1C < 7%) in both 1 Deadly Step and the AHS (42% vs 39%). Also noteworthy was the high proportion in 1 Deadly Step participants with elevated random blood glucose levels and AUSDRISK scores (a further 62% of the sample).

The prevalence of self-reported CVD in 1 Deadly Step was similar to those reporting heart disease in the AHS (13% vs 12%). The AHS does not provide estimates of cardiovascular risk in those without established disease, however in the 1 Deadly Step sample a further 9% were at high overall or absolute CVD risk primarily due to the presence of other conditions such as diabetes and chronic kidney disease. **The rates of taking recommended treatments for those with or at high risk of CVD were low (47% for CVD and 36% for high CVD risk).** There are no data on use of recommended cardiovascular medicines in the AHS, however in our previous audits of care practices in ACCHSs we found around 50% of people with or at high risk of CVD were prescribed recommended medicines. Data from the Kanyini GAP polypill study also found that around 47% of the control group reported being adherent to these medicines.[10]

Summary
Although the 1 Deadly Step sample was similar to the AHS it is important to note that the AHS is representative of remote and non-remote areas while 1 Deadly Step focusses on mainly non-remote communities. Given that published data on the AHS demonstrate a higher prevalence of chronic diseases and their risk factors in remote areas, the rates observed in 1 Deadly Step are generally higher than those in the non-remote subgroup of the AHS. The three most important areas of concern were the high observed rates of elevated blood pressure and cholesterol, diabetes and those at high risk of diabetes and albuminuria.

---

11 Centre for Epidemiology and Evidence. 2012. The health of Aboriginal people of NSW: Report of the Chief Health Officer, 2012. Sydney: NSW Ministry of Health

Although NSW specific data are not as detailed as those available from the AHS, the risk factor prevalence rates for smoking, diabetes, fruit and vegetable intake were broadly similar in 1 Deadly Step to those reported in the NSW Chief Health Officer (CHO) report.[11] Rates of obesity/overweight and elevated blood pressure, however, were much higher in 1 Deadly Step than those reported in the CHO. Again it should be noted that the data from the CHO report are based on the NSW population health survey. This survey relies on self-report from computer assisted telephone interviews and therefore may not be comparable to data obtained from 1 Deadly Step.

Taking these observations into account, two broad conclusions can be made. First, 1 Deadly Step is a highly effective strategy for identifying people in the community at high risk of chronic disease. When compared to non-Indigenous Australians, the risk factor prevalence rates for 1 Deadly Step participants are considerably higher and occur at younger ages. Further, for some risk factors these prevalence rates are higher than those seen in representative surveys of Aboriginal and Torres Strait Islander people. Although difficult to quantify, it does appear that some 1 Deadly Step participants do not access regular health care providers and therefore there is a substantial opportunity to use the program to address access barriers for this group. Second, substantial gaps in optimal care for those with or at high risk of chronic diseases were observed and consequently there are also major opportunities for providing higher quality care for these groups through better linkages with their primary care providers.

5.2 Implementation barriers and enablers

Several factors affecting the implementation of the program have emerged from this evaluation. Using a SWOT (strengths, weaknesses, opportunities and threats) framework we summarise these factors below and highlight key recommendations that arise from these.

Strengths

There are many strengths to the 1 Deadly Step program that were consistently observed from both the quantitative and qualitative data. The program was highly successful in implementing a screening process in nine communities and in doing so was able to identify a large proportion of people at high risk of chronic diseases – diseases that could significantly impact on their health and well-being and future utilisation of health care services in NSW. Participants were highly satisfied with the program and staff involved in its implementation were generally positive about their involvement.

The ability of 1 Deadly Step to draw on existing 'community capital' is a strong asset of the program. Implementation of traditional clinical processes into such a setting requires considerable planning and harnessing of resources and the ability to effectively engage communities in this process is noteworthy. Use of existing community events such as NAIDOC, judicious marketing through local and social media, involvement of country rugby league ambassadors and coordination of activities via a local working group were highly effective strategies to support program participation.

Overall, the staff engaged in running 1 Deadly Step events demonstrated a high level of commitment to the program. Staff from all health service sectors and levels within their organizations demonstrated immense enthusiasm for conducting activities that could address the high chronic disease burden experienced by Aboriginal communities. Staff welcomed the opportunity to work collaboratively and to showcase their efforts to the community. Given the resource constraints under which these staff were working, this level of support for the program was an essential enabler to its successful implementation.

The ACI played a critical role in supporting implementation of the program. Several participants commented favourably about the ACI's activities in convening working groups, consulting key stakeholders, provision of training and support prior to the event and supporting the event day activities. Most interviewees felt that such a role was needed and most ACCHS participants suggested that they would find it difficult to run an event without this support. This was especially so for those sites conducting events for the first time, but even in those sites with prior experience there was general agreement that this type of support was needed. Many viewed the increased engagement between LHD staff and ACCHS staff as a positive outcome and the ACI appears to have been well positioned to facilitate this engagement. This ability to be locally responsive while at the same time provide a 'macro-level' view of the program is an important role and the ACI appears to have successfully carried out the tasks associated with this role.

Weaknesses

A number of areas were identified where the program was hindered by specific challenges. The most substantial issue related to follow-up of participants. Follow-up rates as indicated by the provider portal were highly variable across sites and suggests that there

are particular local service issues at play. Services with high follow-up rates appear to have committed substantial internal resources to supporting follow-up. Some sites were able to effectively integrate 1 Deadly Step into existing operational processes and used it as an opportunity to strengthen their reporting capacity to funders.

Recommendation

- Dedicate additional resources to support sites where there is limited capacity to implement follow-up processes.

The most significant challenge was related to follow-up for participants who nominated another service provider other than the local ACCHS. Although ACI identified this challenge early in the program and implemented alternative processes, it does appear to be one of the main drivers for low follow-up rates at some events. This highlights the challenge of inter-sector collaboration between LHDs, private general practitioners, ACCHSs and other agencies given that there are different jurisdictional responsibilities, information systems and care processes across these stakeholder groups.

Recommendation

- Consider development of inter-sectoral working groups with ACCHSs and LHD representatives to develop robust recall and reminder systems for follow-up of 1 Deadly Step participants.

Another important issue that weakened program implementation was a range of technical hurdles that needed to be overcome. These appeared related to the use of point of care machines, network connectivity and entering data on the iPad software itself. Aside from fixing technical bugs, a major implication is determining the most feasible amount of clinical information that can be collected.

Recommendation

- Conduct a detailed workflow analysis to systematically identify opportunities to optimise event day processes.

- Dedicate additional training in use of point-of-care machines and interpretation of results.

- Modify the 1 Deadly Step app data screens to allow the three blood tests (HBA1C, cholesterol, blood glucose station) to be individually saved after each test result is available.

Some software modifications could be considered to reduce the amount of information collected at an event. A modular approach could be taken to screening where only certain high risk sub-groups need to have blood and urine testing. A 'low information' algorithm for risk prediction could also be used that was less reliant on complete risk factor information and this could considerably shorten screening time and reduce bottle necks. Such algorithms have been developed and validated in overseas populations but would likely need some adaptation and validation work prior to use in this setting. Balanced against this however, is that high risk factor prevalence rates observed in this program were apparent for a large proportion of the population screened. This provides a strong justification for comprehensive screening. Thus there is an inherent tension between collecting sufficient information to make the clinical assessment meaningful and over-burdening services and participants on the event day.

Recommendation

• Explore the following software enhancements to the app

- Develop a low information algorithm for use in locations where provision of all screening services is not feasible.

- Develop 1 Deadly Step app modules to allow services to focus on particular chronic conditions or disease risks (eg: 1 Deadly Step Kidneys)

Opportunities

There are several opportunities that could be derived from 1 Deadly Step. The most important is to integrate 1 Deadly Step data into service processes thus making it a part of routine business planning and operations. Several participants recommended making the data accessible within local electronic medical record systems rather than as static PDF reports. We therefore see a major opportunity in providing report data in HL7 format to assist with this. These data would then be reviewed by providers in much the same way as specialist and pathology reports, actioned by staff and able to be extracted for auditing and follow-up processes. As mentioned by some staff this would enhance reporting requirements to ACCHS funders and increase capacity to meet key performance indicator

requirements associated with these funding agreements.

Recommendation

- Develop new software functionality to support direct export of participants reports and data elements into practice management software systems.

Another important opportunity is the potential to integrate 1 Deadly Step with other services provided by local health organizations. Participants could be directly referred for smoking cessation services, nutritional counselling and local healthy lifestyle programs. Some of these services could be made available on site immediately following the screening or electronic referrals with a call back facility integrated into the 1 Deadly app itself.

Recommendation

- Develop new software functionality to facilitate electronic referrals to services such as smoking cessation services or to the patient's nominated care provider using a secure messaging service.

- Consider creating a 'well-being expo' area with access to healthy refreshments and on-site health and well being services such as traditional healing practices, smoking cessation counselling and treatments, health coaching, touch screen self-education resources, fitness equipment. Encourage participants to access these areas when wait times are long.

There are also business revenue opportunities for local providers as much of the 1 Deadly Step screening data meets the requirements for MBS Health Assessments. Given the resource challenges expressed by several interviewees these factors could make an important contribution in alleviating some of this resource burden. Improved integration with LHD information systems could also make an important contribution to improving the value proposition for LHD staff to commit resources to the program.

Recommendation

- Build new software functionality to support pre-population of Health Assessment templates to facilitate MBS billing for these items

Another important opportunity to build on the strengths of the 1 Deadly Step program is to foster collaboration and learning between communities that have participated in events. Some interviewees reflected on what they learnt from running an event, how they would do things differently and recommendations they would make for other communities as they prepared for their own events. Currently these events are run in a standalone manner, however, it would be worth considering the establishment of a 'learning collaborative' in which nominated representatives could come together, share resources and determine optimal operational approaches together. There is also the potential post-event for service providers to share data, benchmark their performance and develop data-driven strategies to address follow-up challenges.

Recommendation

- Foster the establishment of a learning collaborative comprising representatives from multiple ACCHSs and other service providers to increase peer-to-peer networking opportunities.

Threats

Taking into consideration some of the existing strengths of the current program, the major challenges faced by 1 Deadly Step relate to its ability to sustain current levels of activity and scale-up activity across NSW. Considerable effort was expended to run these nine events and there is a risk that the goodwill associated with this may diminish, particularly as competing demands may displace 1 Deadly Step for other higher priority areas. It is therefore important that the value proposition to staff and stakeholder organizations be high. An overarching support structure is of central importance in addressing this given that local organizations are unlikely to lead the program without this support. Although there is potential that 1 Deadly Step events could be autonomously run without input from the ACI, the program does not appear to be sufficiently embedded strategically or operationally at the present time to make this possible.

Recommendation

- Maintain the support role played by the ACI or an equivalent body to facilitate the administration and operationalisation of the program.

Perhaps more importantly are broader considerations around determining the optimal resource investment required by all stakeholders to implement the program. The interviews revealed that most stakeholders are committing considerable staff and other resources to run an event and conduct appropriate follow-up and that internal funding was needed in addition to the support provided by the ACI. Some staff questioned whether the return on investment of their time was sufficient. This needs to be balanced against the major disease burden experienced by these communities and the considerable opportunities to intervene and make a substantive impact on lowering this burden. It is important therefore that the real program costs be assessed to allow stakeholder organizations to gain a better understanding of the resource requirements to implement 1 Deadly Step.

Recommendation

- Conduct a detailed costing analysis to determine the real costs associated with conducting 1 Deadly Step events including staff, marketing and opportunity costs, provision of point-of-care testing equipment and cost of consumables associated with screening.

In parallel it is also important to assess any downstream impact the program may have in terms of savings to federal and state health systems made through earlier intervention for chronic disease risk factors and management. An economic evaluation that links 1 Deadly Step participants to other routinely available datasets may aid in addressing this question. As the returns to the health system may take time to realise, it would also be important to conduct an economic modelling study with an appropriate comparison group (using statistical techniques such as propensity score matching) to more fully understand its impact.

Recommendation

- Assess clinical effectiveness of the program through the use of process and patient outcome measures and use of linked, primary care and other administrative datasets.

- Conduct an economic modelling study to better understand the potential long-term cost-effectiveness of the program.

Appendices

Appendix 1: Samples of the screening application

1 Deadly Step.
Process evaluation of a chronic disease screening program in NSW Aboriginal communities

Appendix 2: Administrator portal

Appendix 3: Provider portal

Appendix 4: Site Feedback Report

1 Deadly Step
Feedback report for event held at
Sample Health Service, 1 July 2015

1. Population profile at a glance

Legend:
- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 118 screening assessments were conducted on the event day
- The average age of participants was 41.6 years
- 39.8% of participants were male, 60.2% females
- 97% of participants identified as an Aboriginal or Torres Strait Islander person
- 62% of participants nominated sample health service as their primary health care provider

2. Smoking status (n=118)

Legend:
- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
- Missing information

Comment:

Of those who reported to be current smokers (n=56):

- 34% had smoked for >20 years
- 38% of 11-20 years
- 29% for less than 10 years

- 16% smoke >20 cigarettes/ day
- 30% smoke 11-20 cigarettes/ day
- 34% smoke 5-10 cigarettes/day
- 20% smoke <5 cigarettes/day

3. Lifestyle risk factor profile (n=118)

4. CVD risk profile (n=118)

Legend:
- Low risk (<10% 5 year risk)
- Medium risk (10-15% 5 year risk)
- High risk (>15% 5 year risk)
- Clinically high risk condition present
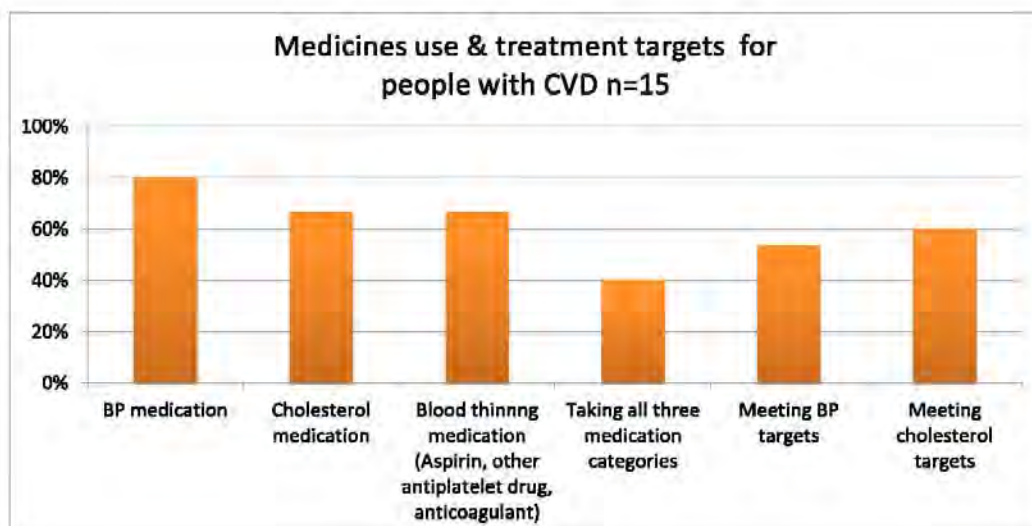- Established CVD
- <30 year olds
- Missing data

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5 year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:

- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people at high risk of CVD n=9

Comment:
Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
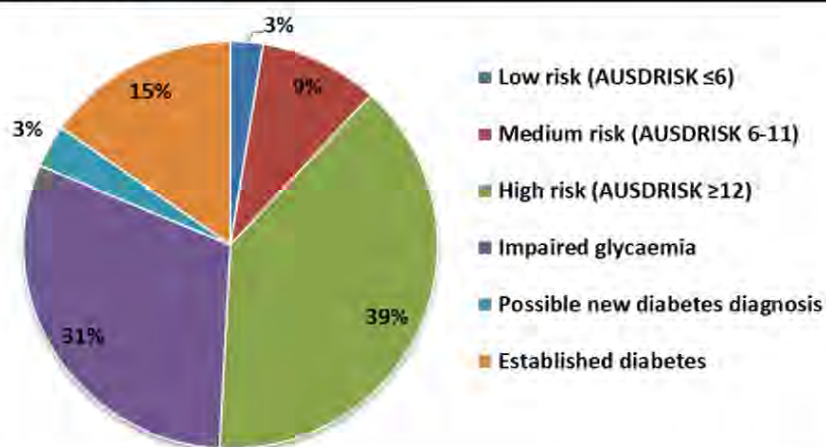
All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=118)

Comment:
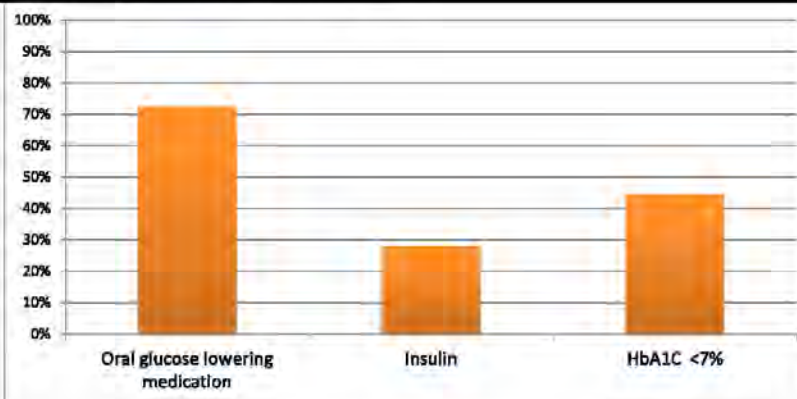- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 3.4% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting >7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.
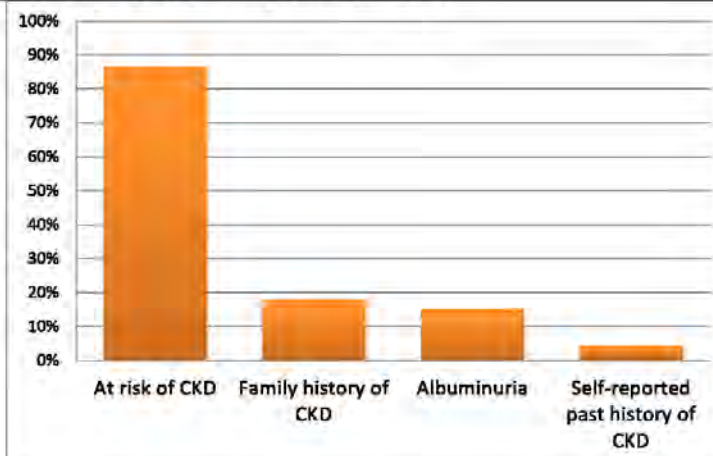
7. Management for people with diabetes (n=118)

Comment:

- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always be appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=118)

Comment:

At risk of CKD is defined as any of the following:

- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

15% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

Appendix 5: Logic Model

Inputs

Problems
- High prevalence of chronic disease
- Limited access to screening and follow-up
- Current services not acceptable/appropriate (cultural, socioeconomic, historical factors)

Solutions
- Community event in partnership with local ACCHSs
- Culturally safe health care for effective engagement with Aboriginal communities
- Mobile device-based support for screening, tailored feedback and follow-up by GP at ACCHSs
- Aboriginal Health Workers and Nurses engaging Aboriginal adult patients for screening, risk communication and follow-up – builds trust with communities
- Use of ambassadors (trustworthy, role models,
- Build capacity among AMS' and LHDs to deliver culturally safe screening
- Evidence-based medical care
- Business and clinical opportunities for ACCHSs/ GPs (eg. easier Medicare care planning claims)

Stakeholders
- Community participants
- Steering committee
- ACCHS healthcare providers and administrative staff
- Local Health District/ PHN
- AHMRC
- Researchers
- NGOs- local (transport, men's groups, rugby league clubs)
- Ambassadors
- NSW Health and Agency for Clinical Innovation

Activities

1. Formulation
- Review strategies
- Draft program plan
- Develop and pilot intervention at one event
- Revise screening and implementation

2. Enactment
- Engage ACCHSs to deliver event
- Engage stakeholders
- Enact plan

3. Implementation
- Recruit ACCHs to hold community screening event
- Train local partnerships in how to plan, deliver a community screening event including how to create local partnerships and tools to support resource sharing
- Train ACCHS healthcare providers (GPs, AHWs, and Nurses) – on use of intervention and screening process
- Support from stakeholders
- Distribute resources / incentives
- Support follow-up of patients

4. Maintenance/ Modification
- Maintain relationship with ACCHSs and communities
- Monitor and evaluate program

Outputs

Implementation processes
- Prioritize policy/program agenda
- Local working group actions
- Processes to support event planning/delivery
- Enacted plans and policies
- Resources leveraged

- **Reach** to Aboriginal communities (intended population) and ACCHSs health professionals
- **Adoption** of community events by ACCHSs
- **Implementation** as intended & acceptable/feasible/affordable
- Enforcement (monitoring compliance)
- Acceptability – explicit understanding of why it works and what needs to be retained in the model
- **Maintenance** of funding, partnerships, implementation, enforcement and reach
- Ongoing support and training

Data Sources

- Participant clinical data from screening
- Health provider and administrative staff interviews
- Participant satisfaction surveys
- Reporting portal audit (6 months post event)

Outcomes

Short term (1 year)
- Increase screening of chronic disease (CD)
- Increase proportion of people identified at high risk of CD
- Increased use of recommended treatments

Intermediate
- Increase follow-up clinical care
- Improved risk factor control
- Decrease proportion at high risk of CD by screening, treatment and lifestyle changes

Long term
- Increased % of Aboriginal people detected early with CD
- Decrease in CD incidence and improved quality of life
- Equitable distribution of improvements across population subgroups
- Cost effective in achieving improvements
- ACCHSs AND LHDs have the capacity and resources required to deliver program with minimal support

Appendix 6: Participant survey

Please help us to improve future 1 Deadly events by filling out this brief, confidential survey

Please indicate your level of agreement or disagreement with the following statements					
	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
The event day was well organised	☐	☐	☐	☐	☐
The 1 Deadly report is easy to understand	☐	☐	☐	☐	☐
1 Deadly has given me new information about my health	☐	☐	☐	☐	☐
1 Deadly has helped me to take action to improve my health	☐	☐	☐	☐	☐
I plan to talk to a doctor or another health staff member about my health	☐	☐	☐	☐	☐
I would recommend 1 Deadly to my friends and family	☐	☐	☐	☐	☐

Please indicate if you had any problems at the following health check stations			
	Major problems	Minor problems	No problems
Registration desk	☐	☐	☐
Questions about your health	☐	☐	☐
Blood pressure, weight and waist measurement	☐	☐	☐
Blood testing	☐	☐	☐
Urine testing	☐	☐	☐
Results and report summary	☐	☐	☐

Are there any things you would recommend to improve 1 Deadly?
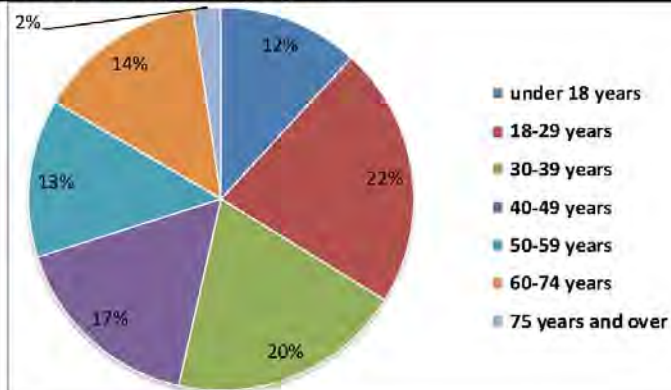
Appendix 7: interview questions

Area of Interest	Initial question	Possible Probing Questions (These are a guide only. It is not expected that you ask all these questions)
General Impact of the program	What was your overall impression of the 1 Deadly event?	• What was the impact on you and the health service in choosing to be a part of a 1 Deadly Event? • Were there any benefits from participating? If so please explain? • Were there any problems with participating? If so please explain?
Event conduct	What barriers did you/ your service face in taking part in the 1 Deadly Event?	• **Software**: Were there any issues using the app on the event day • **Equipment**: Were there any issues with using the equipment on the event day? (eg. blood and urine tests) • **Event workflow**: Were there any issues with processing participants through each of the 1 Deadly screening steps?
Event support	How did you find the overall support for running the event?	• Who at the health service was dedicated to work with the project team? • How did you find the support/training provided to prepare for the event? • Were staff able to to confidently use the tools? If not, why not?
Post event follow-up	How did the service follow up participants post event?	• How useful was the reporting portal? • How did staff use the portal for arranging follow-ups? • Were there any problems accessing and using the reporting portal? • How useful was the event report summary provided to you? • Are there any ways you would recommend to improve the follow-up process?
Sustainability	What would be needed to regularly run 1 Deadly events at your health service?	• Would you be happy for the health service to participate in future events (Why/ Why not?) • What types of resources, support, and training do you think would be needed to run these events on your own? • What advice would you give to government on implementation of 1 Deadly to all health services in New South Wales?
Final comments	Is there anything else you would like to add that we have not discussed in this interview?	

1 Deadly Step
Feedback report for event held at
Armidale March, 23, 2016

ACI • THE GEORGE INSTITUTE for Global Health

1. Population profile at a glance

- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 127 screening assessments were conducted on the event day
- The average age of participants was 40.0 years
- 36.2% of participants were male, 63.8% females
- 93.7% of participants identified as an Aboriginal or Torres Strait Islander person
- 66 participants nominated Bookalil Surgery as their primary health care provider

2. Smoking status (n=127)

- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
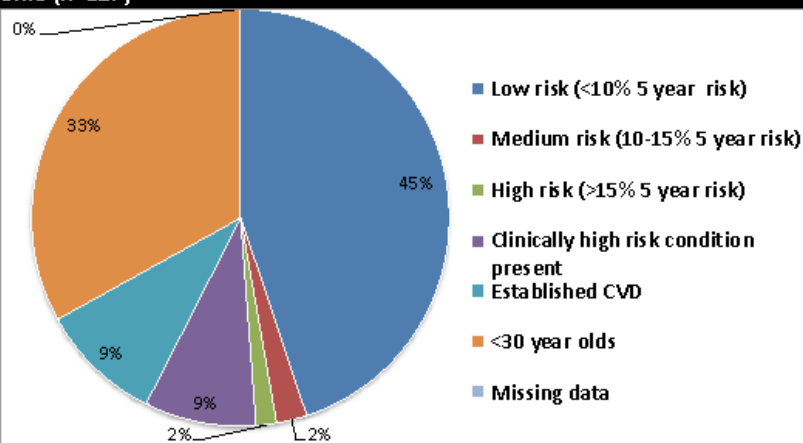- Missing information
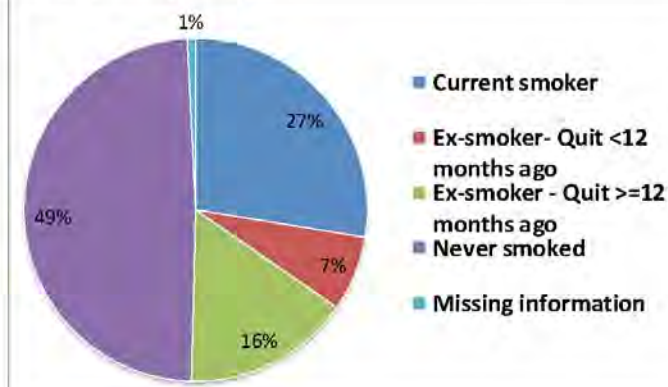
Comment:

Of those who reported to be current smokers (n=35):

- 31% had smoked for >20 years
- 37% of 11-20 years
- 31% for less than 10 years

- 0% smoke >20 cigarettes/ day
- 23% smoke 11-20 cigarettes/ day
- 51% smoke 5-10 cigarettes/day
- 26% smoke <5 cigarettes/day

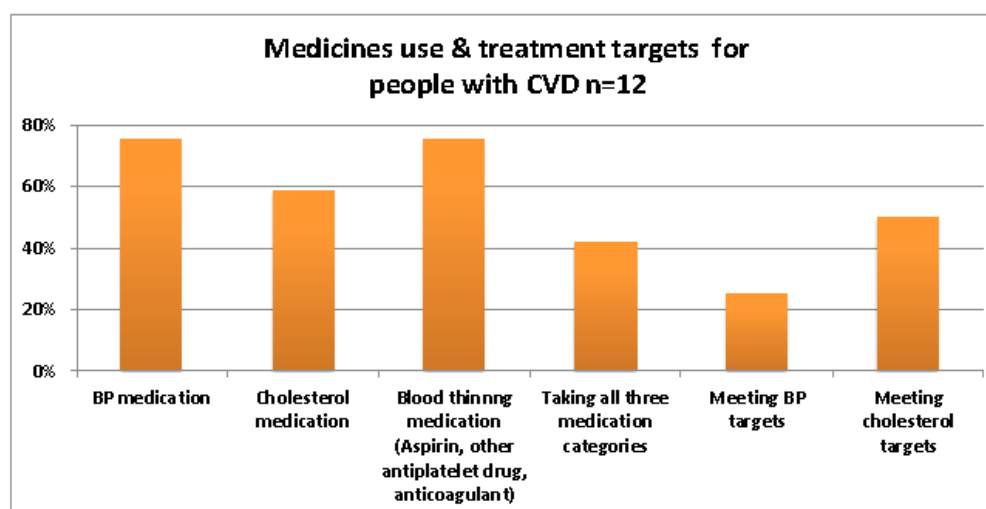### 3. Lifestyle risk factor profile (n=127)

4. CVD risk profile (n=127)

Legend:
- Low risk (<10% 5 year risk)
- Medium risk (10-15% 5 year risk)
- High risk (>15% 5 year risk)
- Clinically high risk condition present
- Established CVD
- <30 year olds
- Missing data

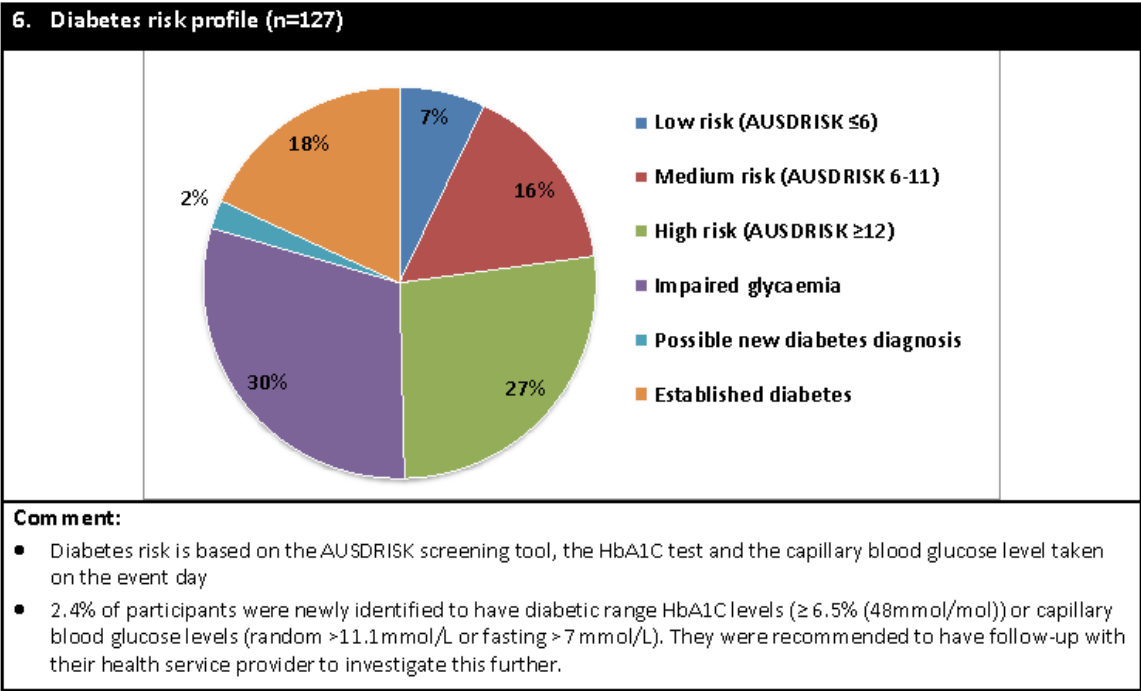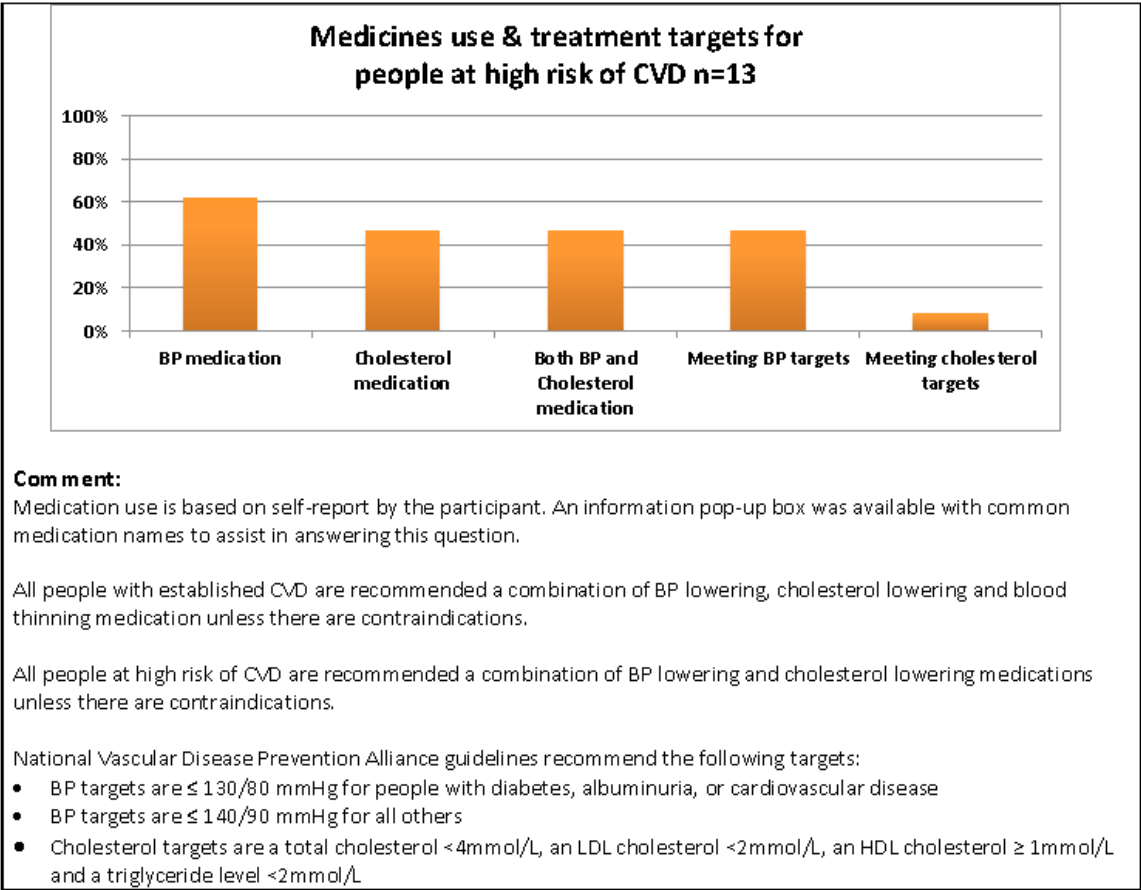Pie chart values: 45%, 33%, 9%, 9%, 2%, 2%, 0%

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5-year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.
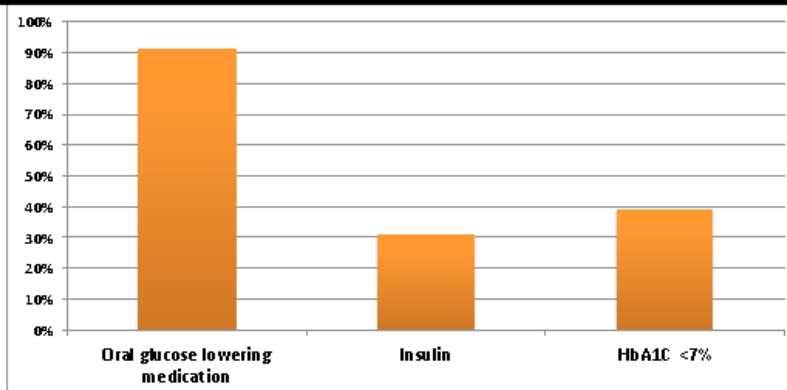
High risk conditions include any of the following:

- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%
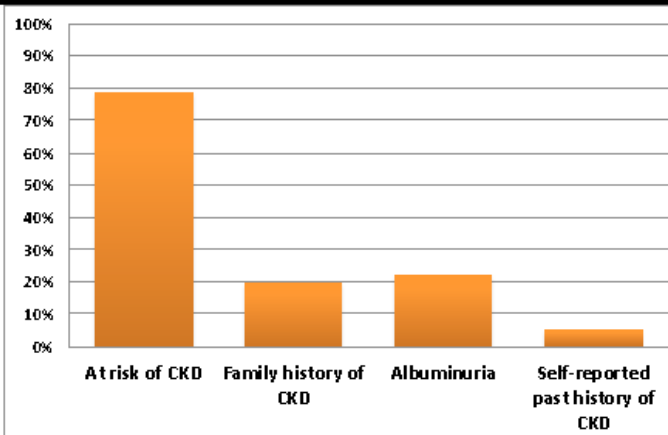
5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=12

Bar chart categories and approximate values:
- BP medication: ~75%
- Cholesterol medication: ~58%
- Blood thinning medication (Aspirin, other antiplatelet drug, anticoagulant): ~75%
- Taking all three medication categories: ~42%
- Meeting BP targets: ~25%
- Meeting cholesterol targets: ~50%

Medicines use & treatment targets for people at high risk of CVD n=13

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.

All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=127)

- Low risk (AUSDRISK ≤6)
- Medium risk (AUSDRISK 6-11)
- High risk (AUSDRISK ≥12)
- Impaired glycaemia
- Possible new diabetes diagnosis
- Established diabetes

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 2.4% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting >7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.

7. Management for people with diabetes (n=23)

Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=127)

Comment:

At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

22% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at
Casino, April 6, 2016

ACI

THE GEORGE INSTITUTE
for Global Health

1. Population profile at a glance

- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:

- A total of 129 screening assessments were conducted on the event day
- The average age of participants was 37.9 years
- 37.2% of participants were male, 62.8% females
- 93.8% of participants identified as an Aboriginal or Torres Strait Islander person
- 110 participants nominated Bulgarr Ngaru AMS as their primary health care provider

2. Smoking status (n=129)

- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
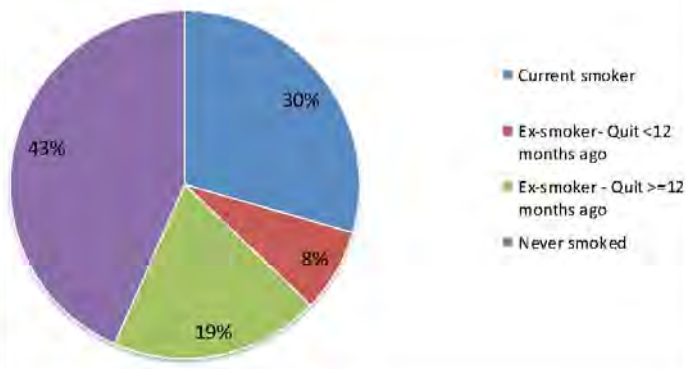
Comment:

Of those who reported to be current smokers (n=38):

- 16% had smoked for >20 years
- 32% of 11-20 years
- 53% for less than 10 years

- 16% smoke >20 cigarettes/ day
- 42% smoke 11-20 cigarettes/ day
- 29% smoke 5-10 cigarettes/day
- 13% smoke <5 cigarettes/day

3. Lifestyle risk factor profile (n=129)

4. CVD risk profile (n=129)

- Low risk (<10% 5 year risk) — 33%
- Medium risk (10-15% 5 year risk)
- High risk (>15% 5 year risk)
- Clinically high risk condition present
- Established CVD
- <30 year olds — 36%
- Missing data

Pie chart values: 1%, 33%, 1%, 2%, 3%, 24%, 36%

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5-year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:
- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP ≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=31

Bar chart categories: BP medication, Cholesterol medication, Blood thinning medication (Aspirin, other antiplatelet drug, anticoagulant), Taking all three medication categories, Meeting BP targets, Meeting cholesterol targets

Medicines use & treatment targets for people at high risk of CVD n=6

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
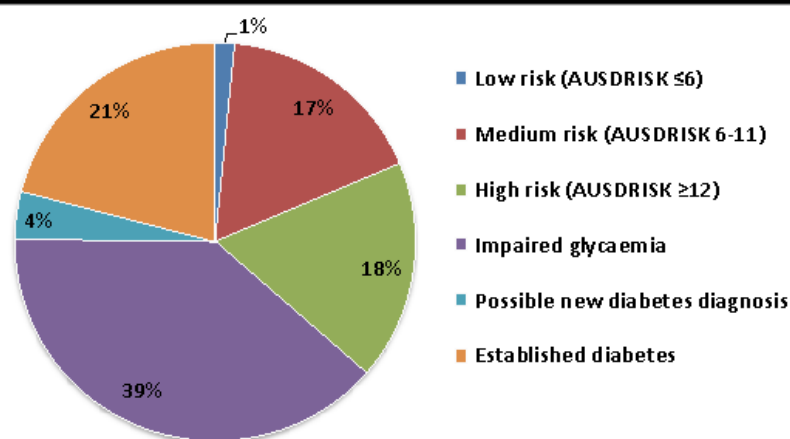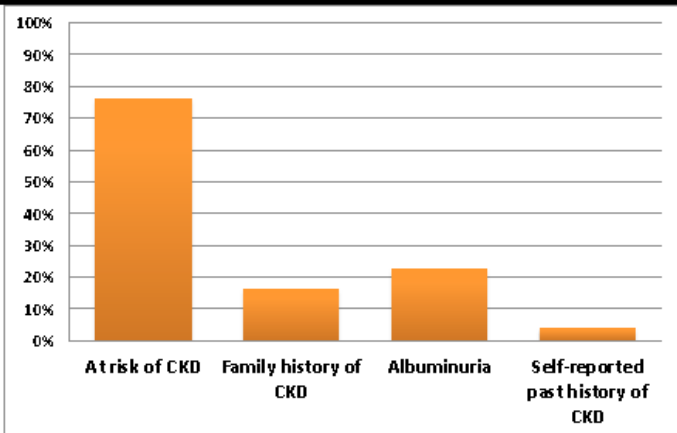
All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=129)

- Low risk (AUSDRISK ≤6)
- Medium risk (AUSDRISK 6-11)
- High risk (AUSDRISK ≥12)
- Impaired glycaemia
- Possible new diabetes diagnosis
- Established diabetes

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 3.9% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1 mmol/L or fasting > 7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.

7. Management for people with diabetes (n=27)
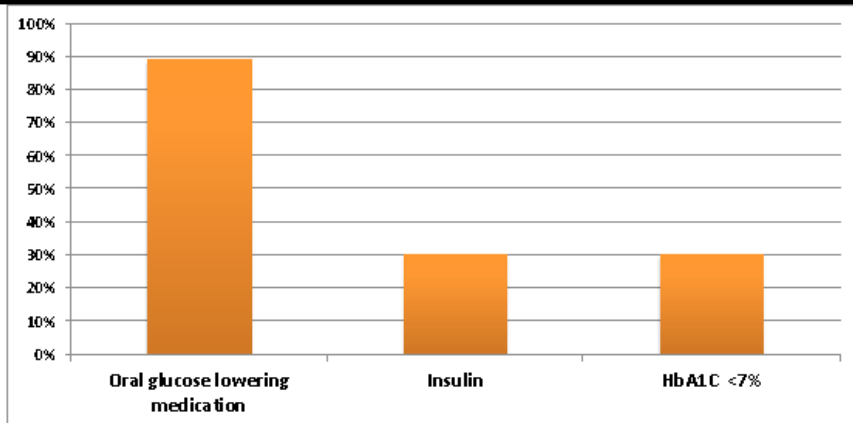
Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always be appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=129)

Comment:
At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

22% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at
Coffs Harbour March 17, 2016

ACI | **THE GEORGE INSTITUTE** for Global Health

1. Population profile at a glance

Legend:
- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Pie values: 1%, 5%, 18%, 13%, 16%, 18%, 29%

Comment:
- A total of 123 screening assessments were conducted on the event day
- The average age of participants was 47.0 years
- 40.7% of participants were male, 59.3% females
- 87.0% of participants identified as an Aboriginal or Torres Strait Islander person
- 72 participants nominated Galambila AMS as their primary health care provider

2. Smoking status (n=123)

Legend:
- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
- Missing information

Pie values: 2%, 32%, 43%, 15%, 8%
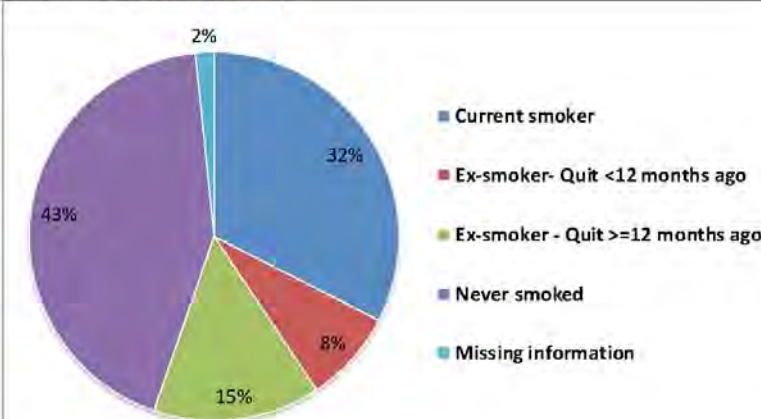
Comment:

Of those who reported to be current smokers (n=40):

- 48% had smoked for >20 years
- 25% of 11-20 years
- 28% for less than 10 years

- 15% smoke >20 cigarettes/ day
- 43% smoke 11-20 cigarettes/ day
- 33% smoke 5-10 cigarettes/day
- 10% smoke <5 cigarettes/day

3. Lifestyle risk factor profile (n=123)

Categories: BMI >30 kg/m2; Elevated waist circumference (>102cm for males, >88cm for females); Physical activity less than 2.5 hours/week; Infrequent fruit intake; Infrequent vegetable intake; BP>140/90 mmHg; Total cholesterol >4 mmol/L

4. CVD risk profile (n=123)

Legend:
- Low risk (<10% 5 year risk)
- Medium risk (10-15% 5 year risk)
- High risk (>15% 5 year risk)
- Clinically high risk condition present
- Established CVD
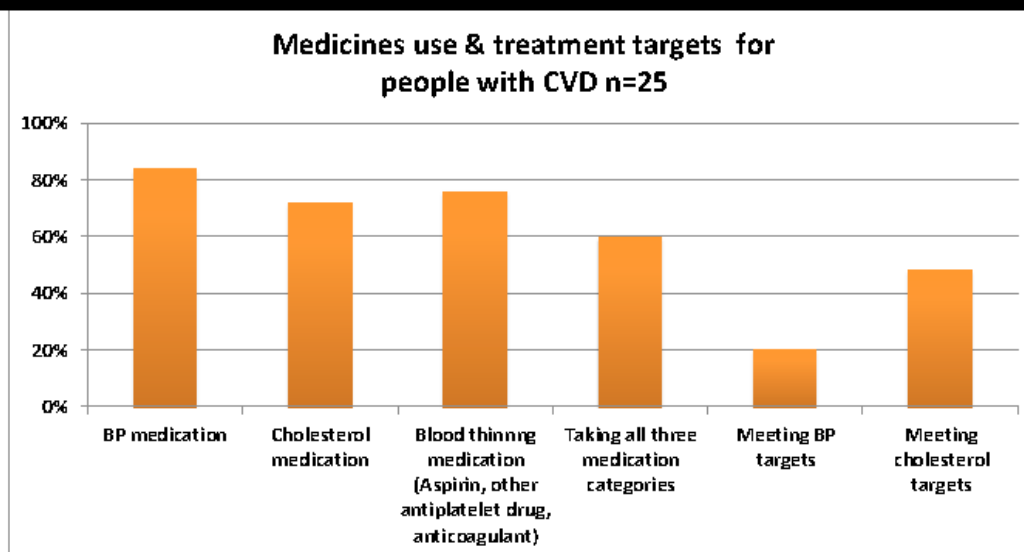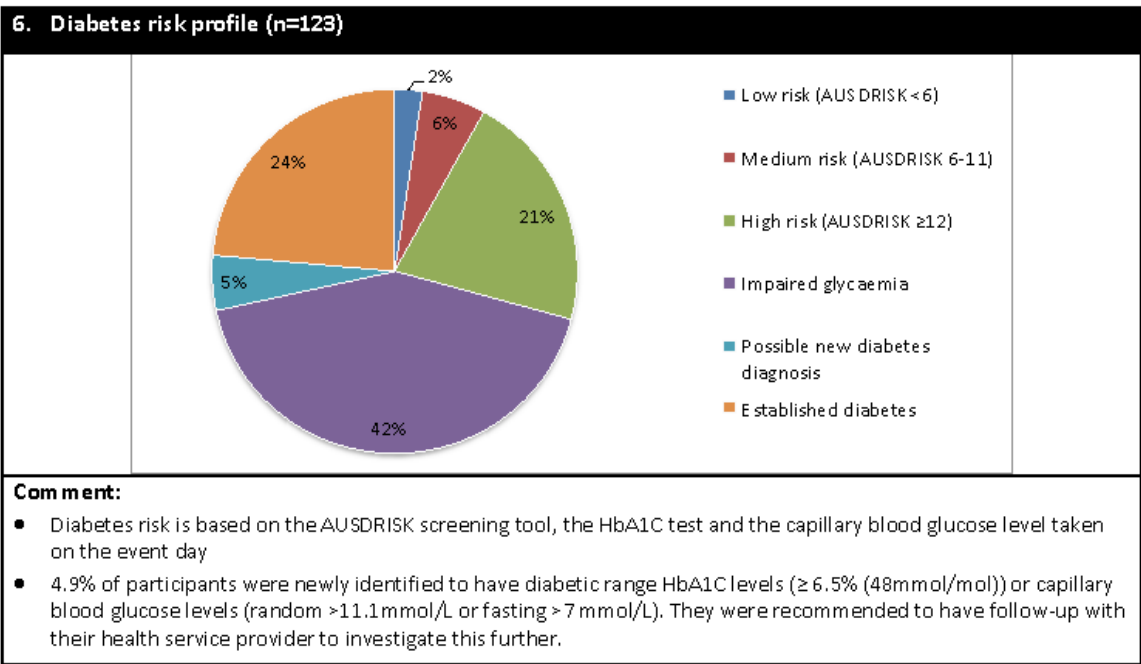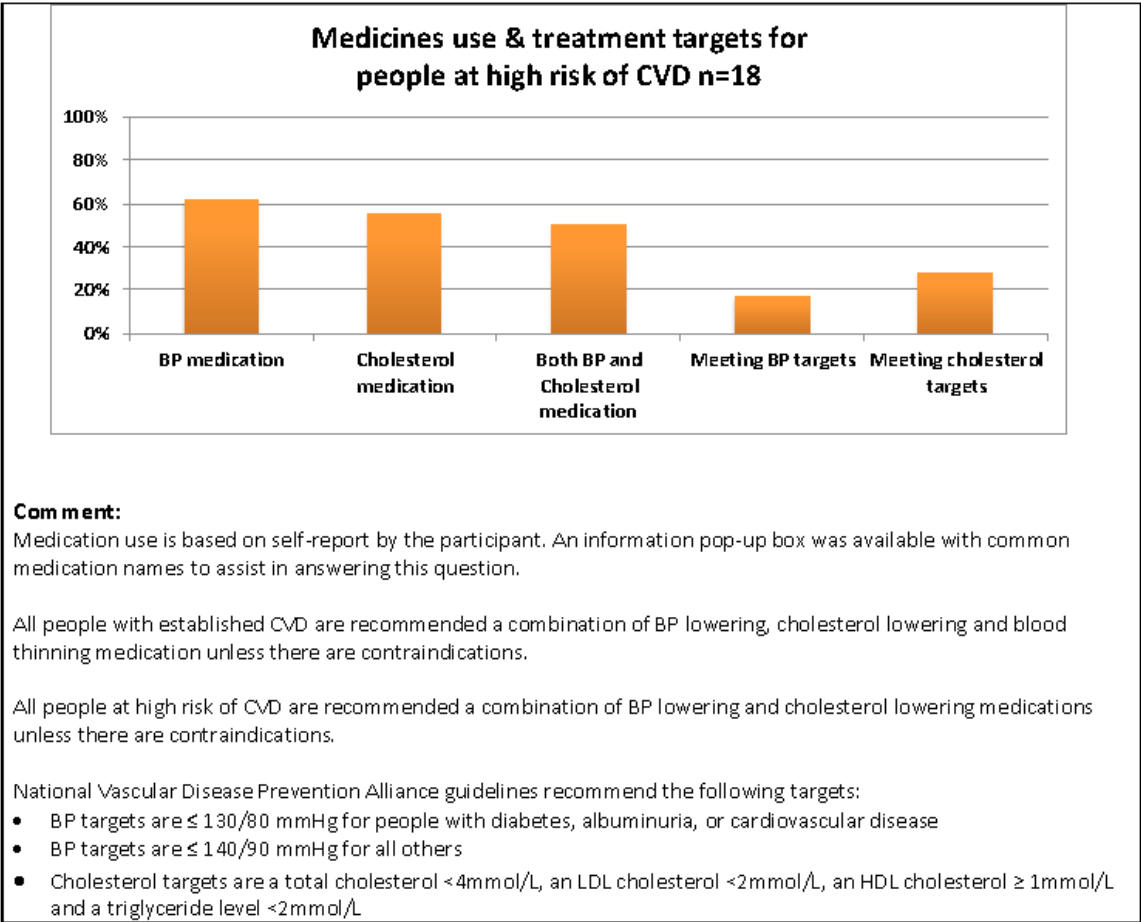- <30 year olds
- Missing data

Comment:
- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5-year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:
- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%
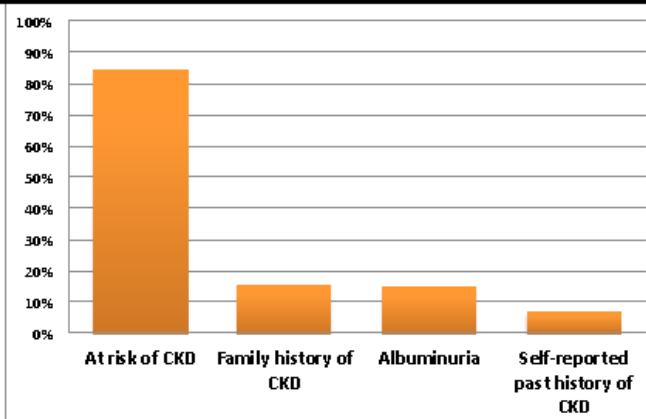
5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=25

Medicines use & treatment targets for people at high risk of CVD n=18

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.

All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=123)

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 4.9% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting > 7mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.

7. Management for people with diabetes (n=29)

Comment:

- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=123)

Comment:

At risk of CKD is defined as any of the following:

- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

15% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at
Moruya March 12, 2016

ACI · THE GEORGE INSTITUTE for Global Health

1. Population profile at a glance

- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 119 screening assessments were conducted on the event day
- The average age of participants was 38.4 years
- 49.6% of participants were male, 50.4% females
- 95.8% of participants identified as an Aboriginal or Torres Strait Islander person
- 79 participants nominated Katungal AMS as their primary health care provider

2. Smoking status (n=119)

- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
- Missing information
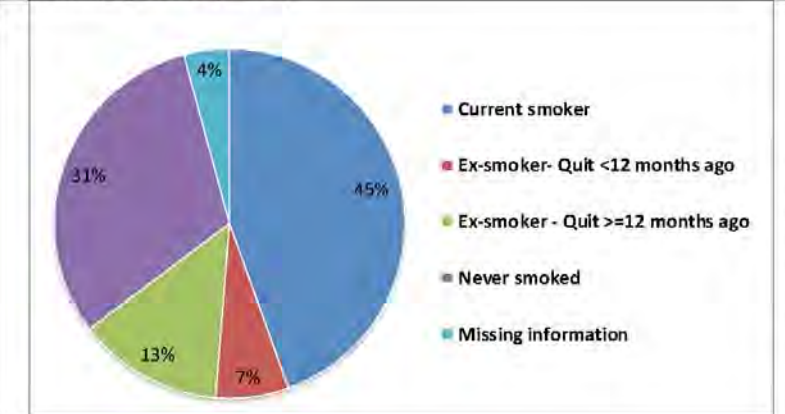
Comment:

Of those who reported to be current smokers (n=53):

- 28% had smoked for >20 years
- 40% of 11-20 years
- 32% for less than 10 years

- 2% smoke >20 cigarettes/ day
- 36% smoke 11-20 cigarettes/ day
- 38% smoke 5-10 cigarettes/day
- 25% smoke <5 cigarettes/day

3. Lifestyle risk factor profile (n=119)

4. CVD risk profile (n=119)

Legend:
- Low risk (<10% 5 year risk) — 36%
- Medium risk (10-15% 5 year risk) — 1%
- High risk (>15% 5 year risk) — 2%
- Clinically high risk condition present — 7%
- Established CVD — 7%
- <30 year olds — 34%
- Missing data — 13%

Comment:
- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5-year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:
- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP ≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

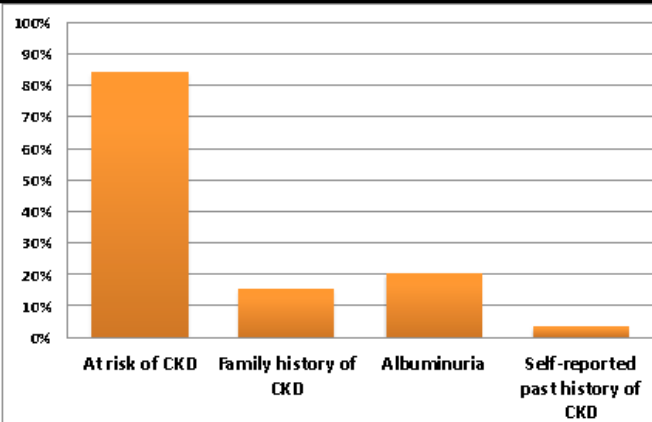Medicines use & treatment targets for people with CVD n=9

Medicines use & treatment targets for people at high risk of CVD n=11

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.

All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=119)

Legend:
- Low risk (AUSDRISK <6)
- Medium risk (AUSDRISK 6-11)
- High risk (AUSDRISK ≥12)
- Impaired glycaemia
- Possible new diabetes diagnosis
- Established diabetes

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 1% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting > 7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.

7. Management for people with diabetes (n=17)
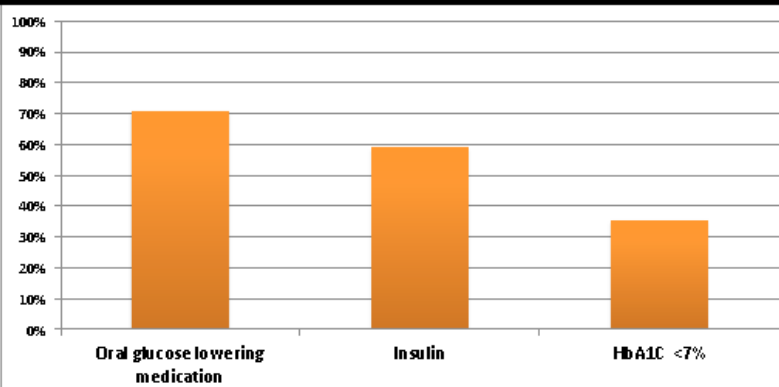
Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=119)

Comment:
At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

20% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at
Newcastle July, 6, 2015

1. Population profile at a glance

- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 114 screening assessments were conducted on the event day
- The average age of participants was 40.6 years
- 37.7% of participants were male, 62.3% females
- 99% of participants identified as an Aboriginal or Torres Strait Islander person
- 52 participants nominated Awabakal AMS as their primary or secondary care provider.

2. Smoking status (n=114)
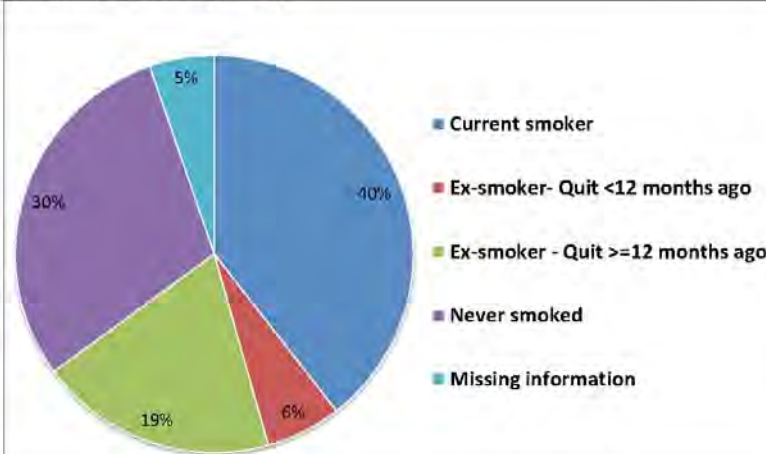
- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
- Missing information

Comment:

Of those who reported to be current smokers (n=45):

- 20% had smoked for >20 years
- 33% of 11-20 years
- 46% for less than 10 years

- 11% smoke >20 cigarettes/ day
- 33% smoke 11-20 cigarettes/ day
- 33% smoke 5-10 cigarettes/day
- 22% smoke <5 cigarettes/day

3. Lifestyle risk factor profile (n=114)

4. CVD risk profile (n=114)

- Low risk (<10% 5 year risk) — 45%
- Medium risk (10-15% 5 year risk) — 5%
- High risk (>15% 5 year risk) — 2%
- Clinically high risk condition present — 5%
- Established CVD — 12%
- <30 year olds — 22%
- Missing data — 9%

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5 year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:
- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=14

Medicines use & treatment targets for people at high risk of CVD n=8

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
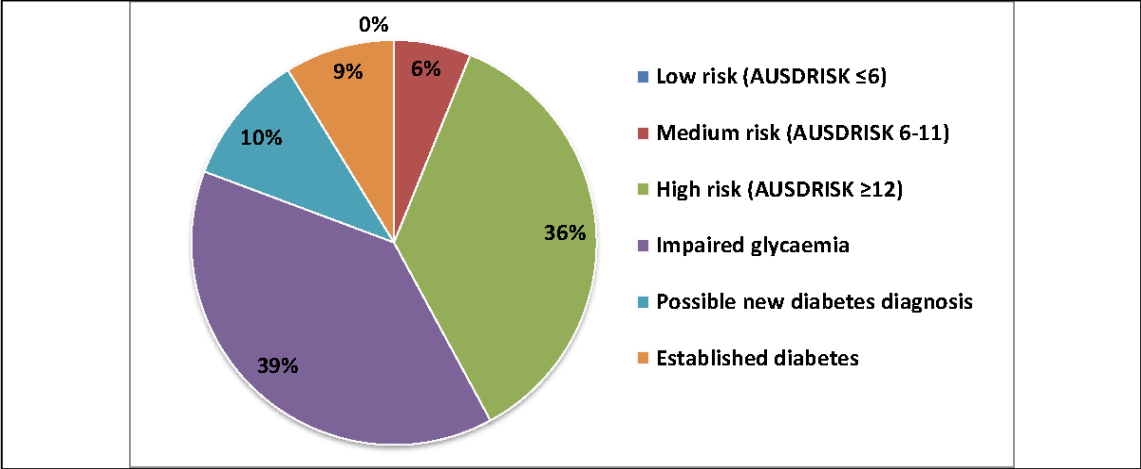
All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=114)

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 10.5% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting >7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further
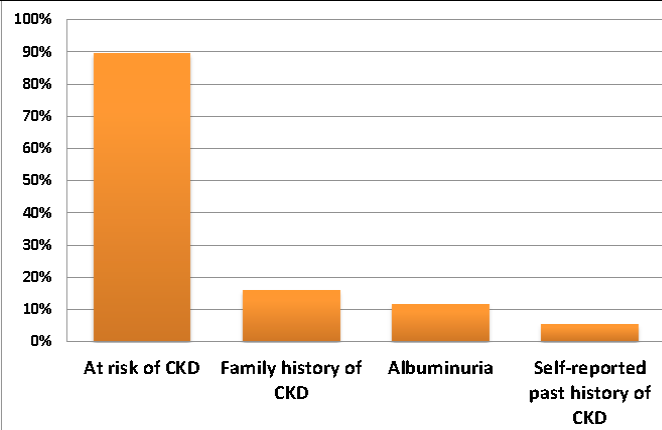
7. Management for people with diabetes (n=10)
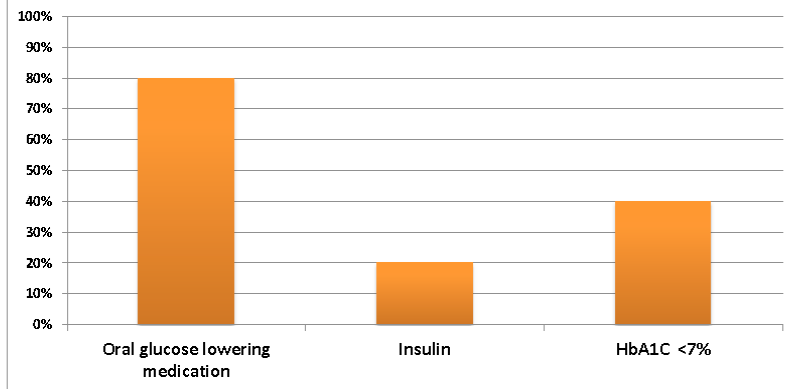
Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=114)

Comment:
At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

11% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants
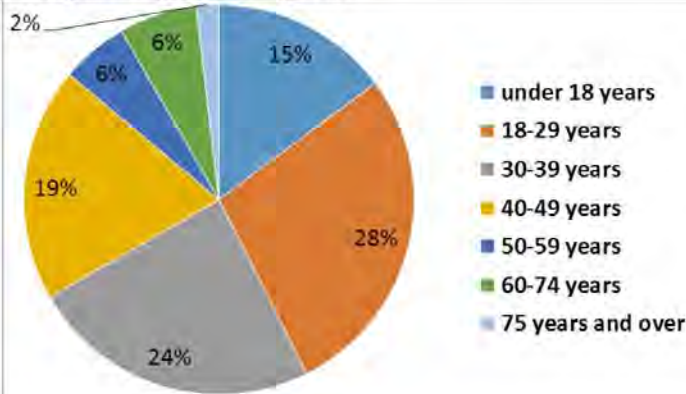
Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at Orange
October 26, 2015

ACI   THE GEORGE INSTITUTE for Global Health

1. Population profile at a glance

- under 18 years
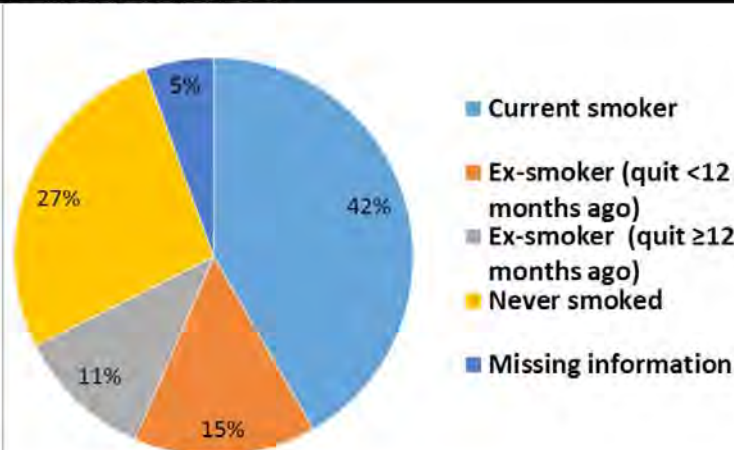- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 108 screening assessments were conducted on the event day
- The average age of participants was 34.5 years
- 40.7% of participants were male, 59.3% females
- 84.3% of participants identified as an Aboriginal or Torres Strait Islander person
- 80 participants nominated Orange AMS as their primary health care provider
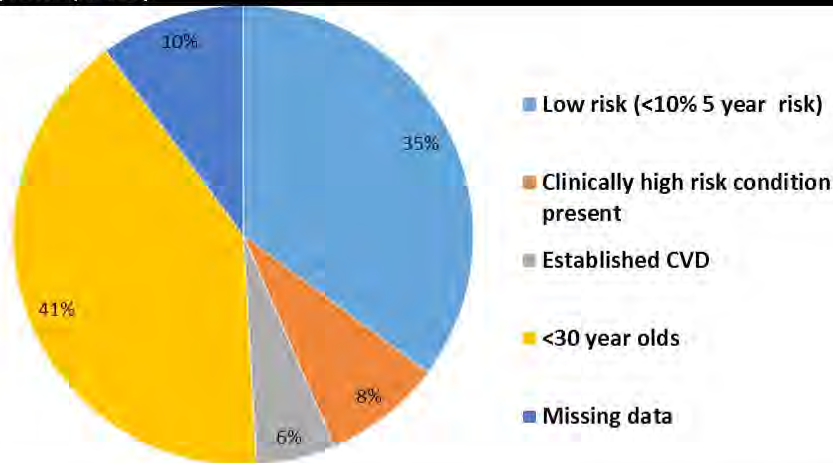
2. Smoking status (n=108)

- Current smoker
- Ex-smoker (quit <12 months ago)
- Ex-smoker (quit ≥12 months ago)
- Never smoked
- Missing information

Comment:

Of those who reported to be current smokers (n=45):

- 20% had smoked for >20 years
- 33% of 11-20 years
- 47% for less than 10 years

- 9% smoke >20 cigarettes/ day
- 27% smoke 11-20 cigarettes/ day
- 44% smoke 5-10 cigarettes/day
- 20% smoke <5 cigarettes/day

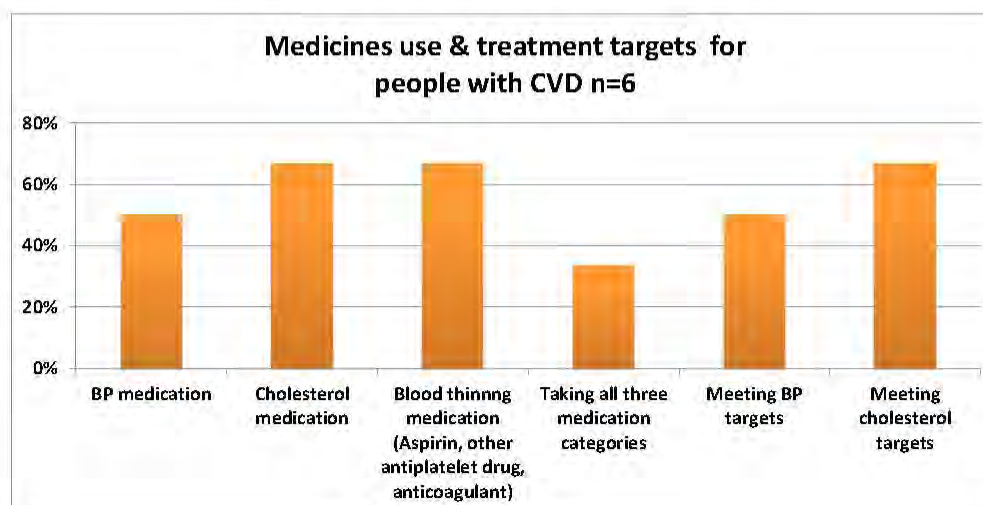### 3. Lifestyle risk factor profile (n=108)

4. CVD risk profile (n=108)

- Low risk (<10% 5 year risk) — 35%
- Clinically high risk condition present — 8%
- Established CVD — 6%
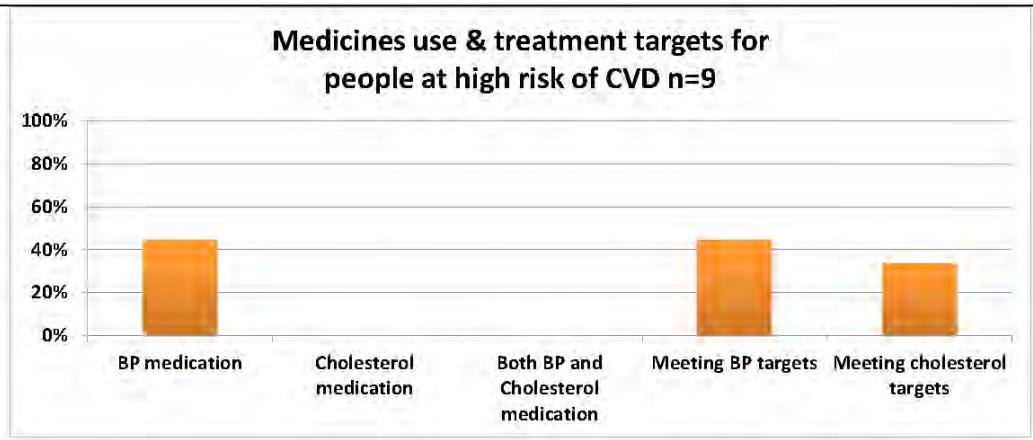- <30 year olds — 41%
- Missing data — 10%

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5 year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:

- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=6

Medicines use & treatment targets for people at high risk of CVD n=9

Comment:
Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
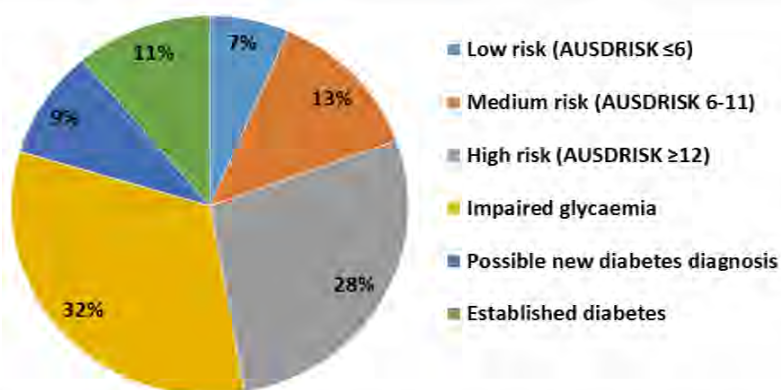
All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=108)

Low risk (AUSDRISK ≤6)
Medium risk (AUSDRISK 6-11)
High risk (AUSDRISK ≥12)
Impaired glycaemia
Possible new diabetes diagnosis
Established diabetes

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 9.2% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting >7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.

7. Management for people with diabetes (n=12)
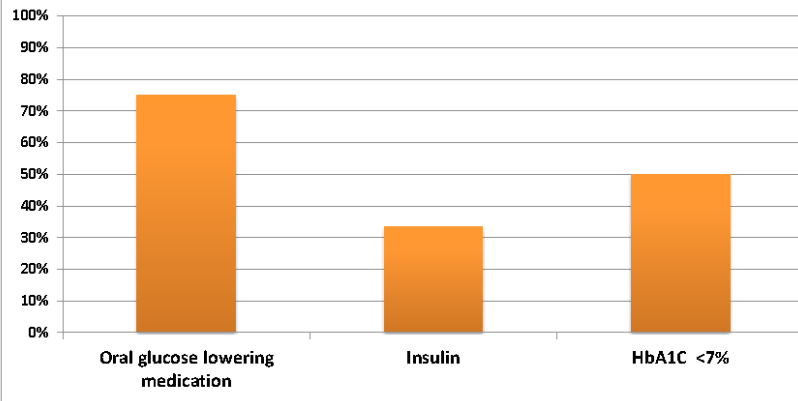
Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=108)
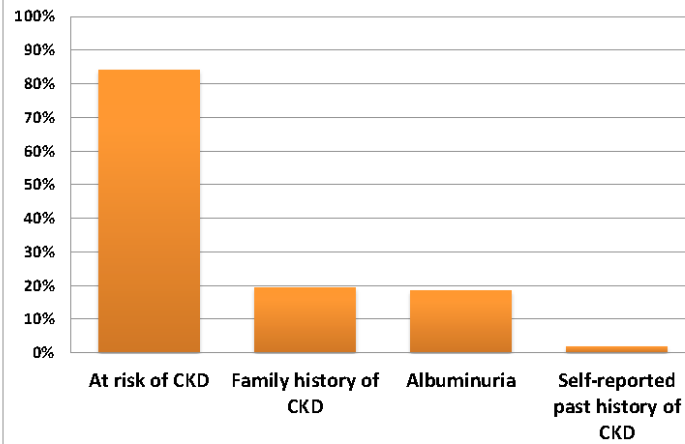
Comment:

At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
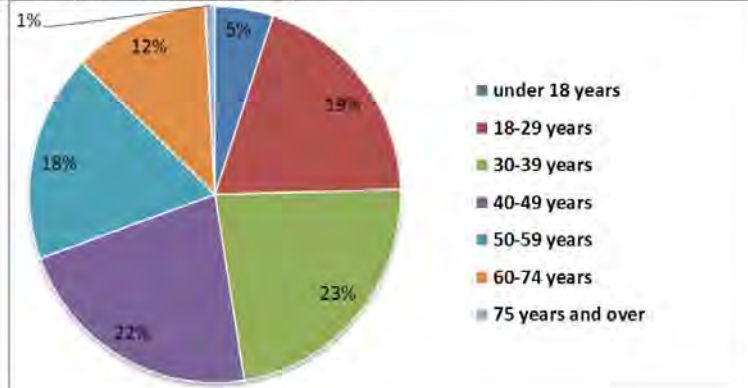- Aboriginal people over the age of 30 years

18.5% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at Tamworth, 1 Dec 2015

1. Population profile at a glance

Legend:
- under 18 years
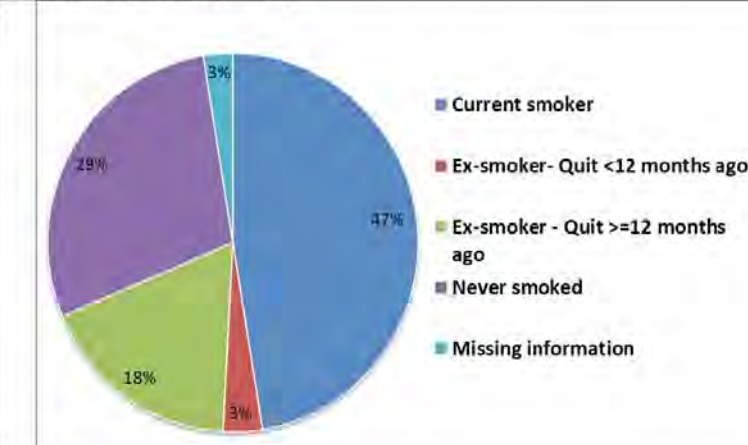- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 118 screening assessments were conducted on the event day
- The average age of participants was 41.6 years
- 39.8% of participants were male, 60.2% females
- 97% of participants identified as an Aboriginal or Torres Strait Islander person
- 62% of participants nominated Tamworth AMS as their primary health care provider

2. Smoking status (n=118)

Legend:
- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
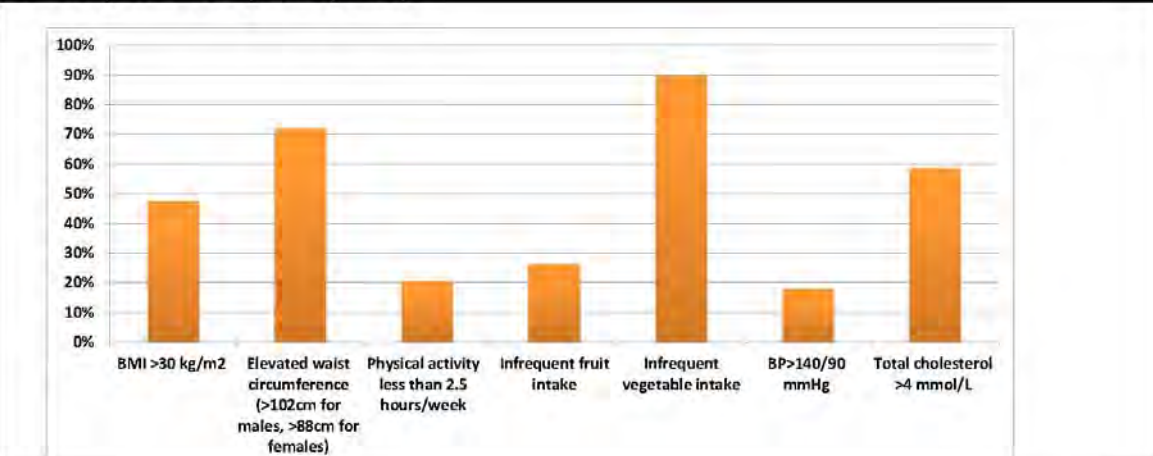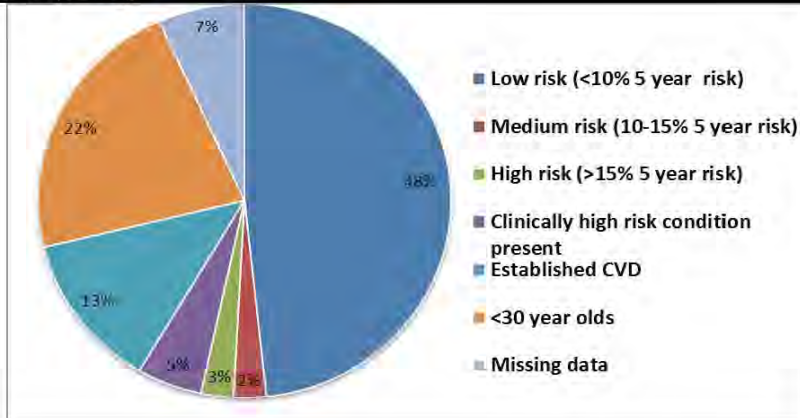- Never smoked
- Missing information

Comment:

Of those who reported to be current smokers (n=56):

- 34% had smoked for >20 years
- 38% of 11-20 years
- 29% for less than 10 years

- 16% smoke >20 cigarettes/ day
- 30% smoke 11-20 cigarettes/ day
- 34% smoke 5-10 cigarettes/day
- 20% smoke <5 cigarettes/day

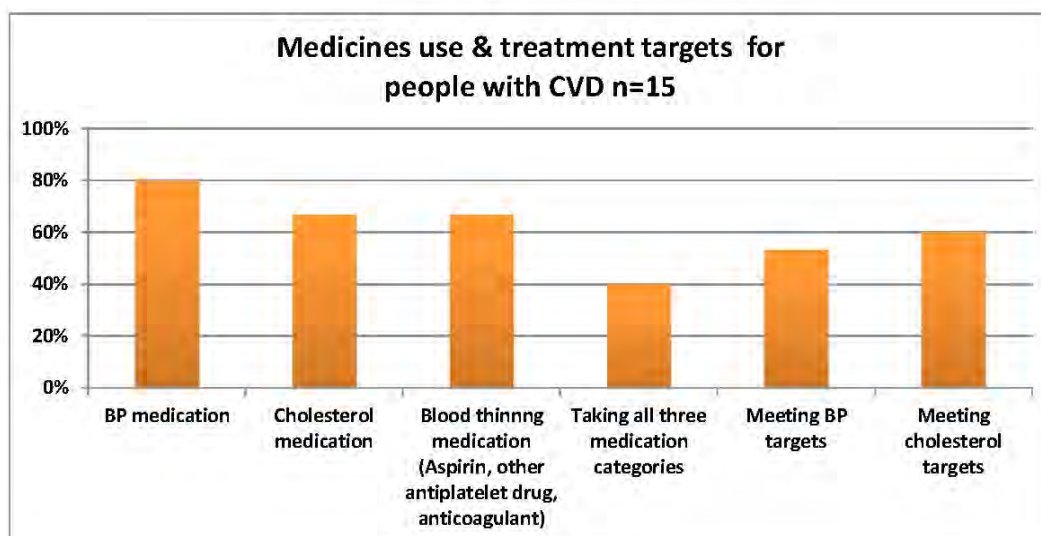### 3. Lifestyle risk factor profile (n=118)

4. CVD risk profile (n=118)

Pie chart legend:
- Low risk (<10% 5 year risk) — 48%
- Medium risk (10-15% 5 year risk) — 2%
- High risk (>15% 5 year risk) — 3%
- Clinically high risk condition present — 5%
- Established CVD — 13%
- <30 year olds — 22%
- Missing data — 7%

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5 year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.
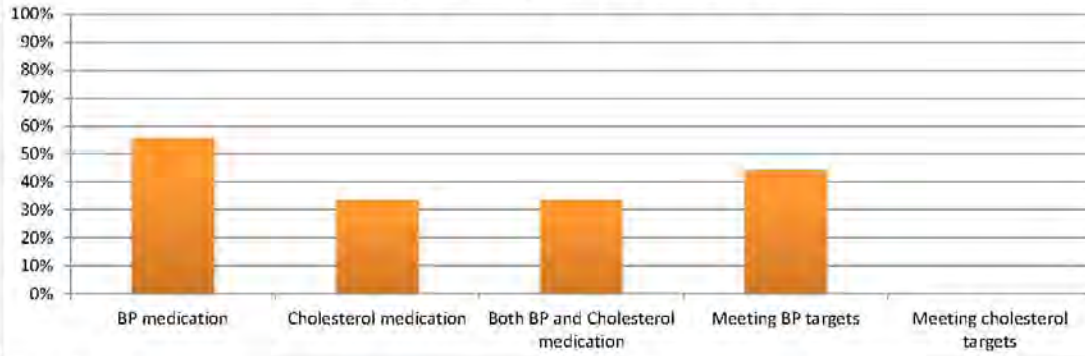
High risk conditions include any of the following:
- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=15

- BP medication — 80%
- Cholesterol medication — 67%
- Blood thinnng medication (Aspirin, other antiplatelet drug, anticoagulant) — 67%
- Taking all three medication categories — 40%
- Meeting BP targets — 53%
- Meeting cholesterol targets — 60%

Medicines use & treatment targets for people at high risk of CVD n=9

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
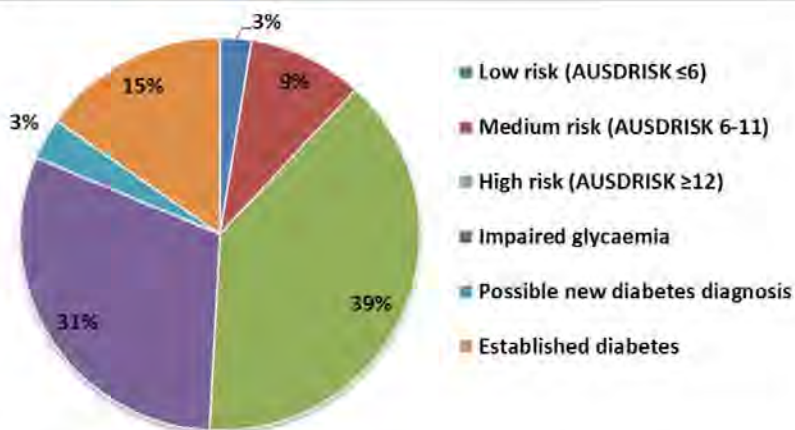
All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L
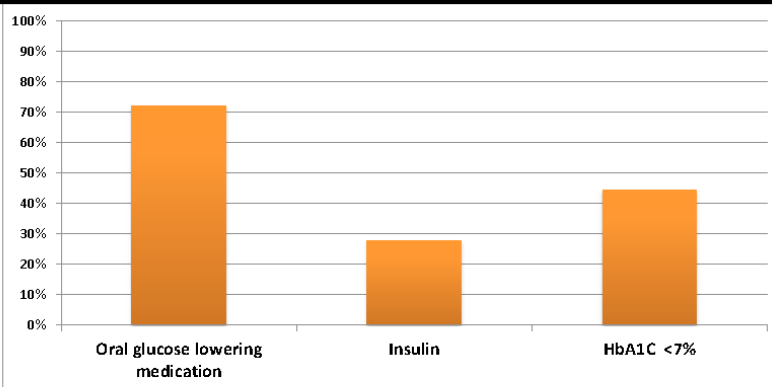
6. Diabetes risk profile (n=118)

- Low risk (AUSDRISK ≤6)
- Medium risk (AUSDRISK 6-11)
- High risk (AUSDRISK ≥12)
- Impaired glycaemia
- Possible new diabetes diagnosis
- Established diabetes

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 3.4% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting >7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.
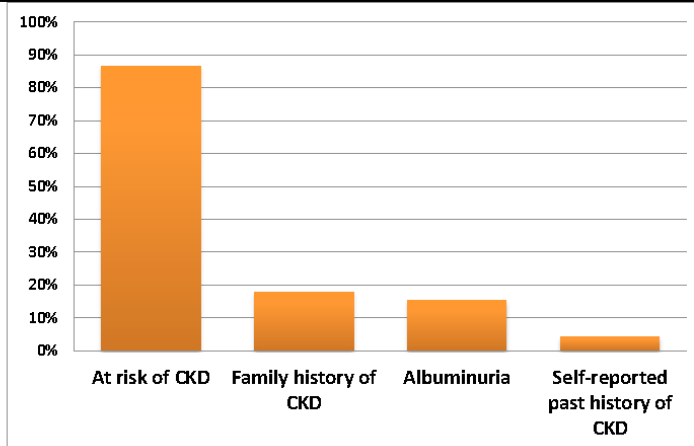
7. Management for people with diabetes (n=118)

Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always be appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=118)

Comment:
At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

15% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants
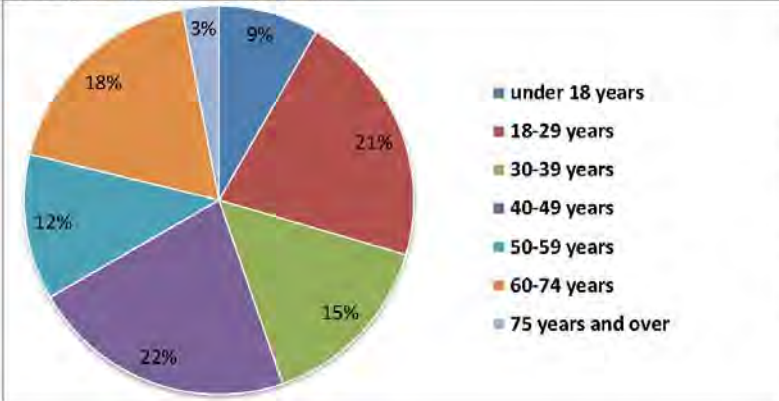
Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500

1 Deadly Step
Feedback report for event held at
Tharawal Aboriginal Corporation April 17, 2015

1. Population profile at a glance

Legend:
- under 18 years
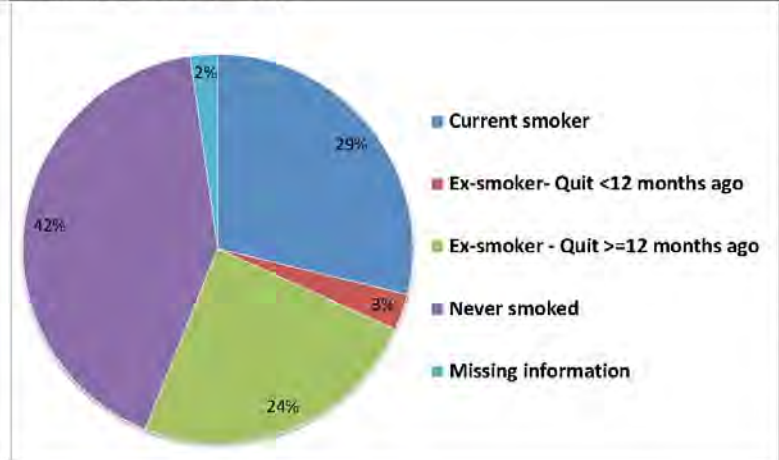- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over

Comment:
- A total of 132 screening assessments were conducted on the event day
- The average age of participants was 42.2 years
- 35.6% of participants were male, 64.4% females
- 84.1% of participants identified as an Aboriginal person
- All participants nominated Tharawal Aboriginal Corporation as their primary health care provider

2. Smoking status (n=132)

Legend:
- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
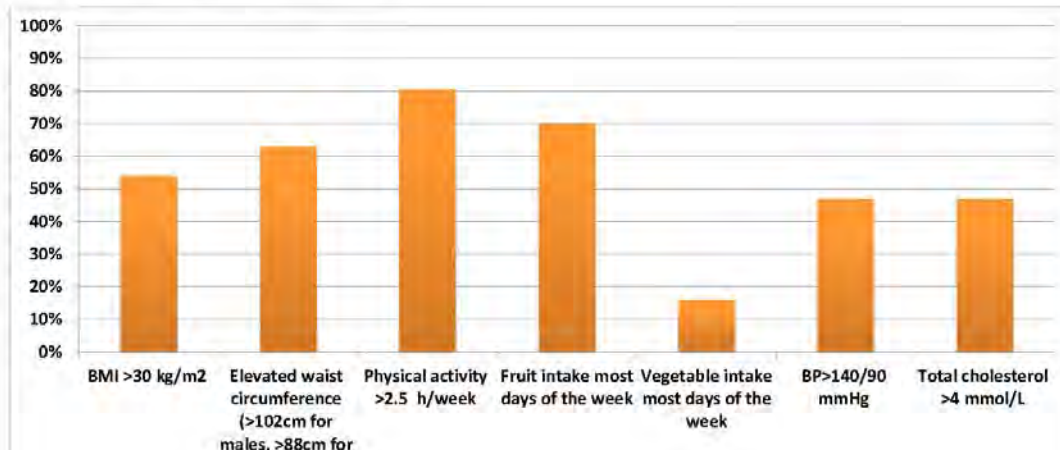- Never smoked
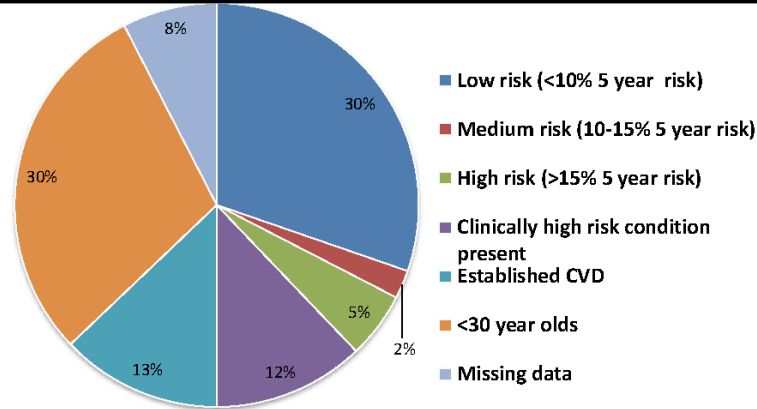- Missing information

Comment:

Of those who reported to be current smokers (n=38):

- 53% had smoked for >20 years
- 29% of 11-20 years
- 18% for less than 10 years

- 18% smoke >20 cigarettes/ day
- 42% smoke 11-20 cigarettes/ day
- 34% smoke 5-10 cigarettes/day
- 5% smoke <5 cigarettes/day

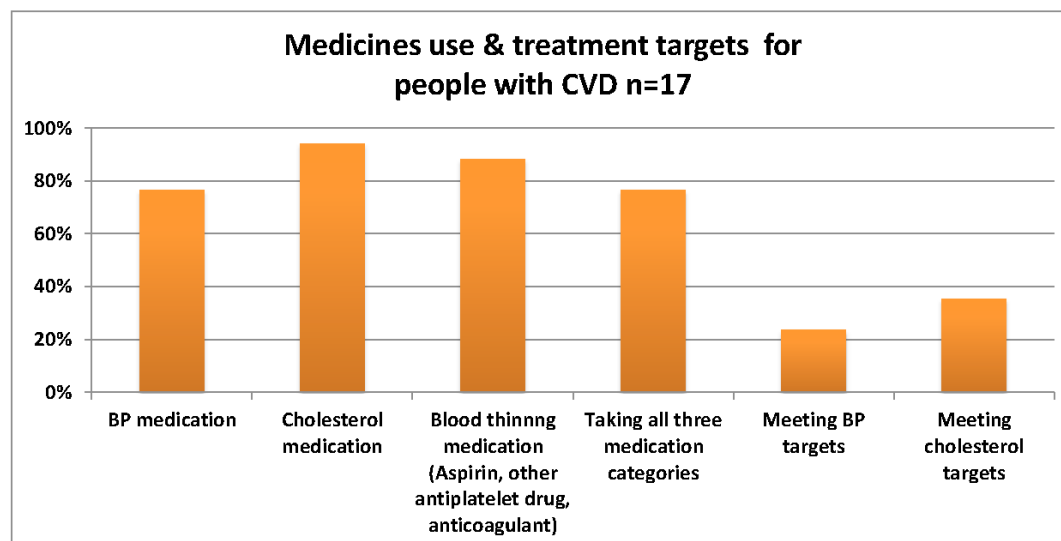### 3. Lifestyle risk factor profile (n=132)

4. CVD risk profile (n=132)

- Low risk (<10% 5 year risk) — 30%
- Medium risk (10-15% 5 year risk) — 2%
- High risk (>15% 5 year risk) — 5%
- Clinically high risk condition present — 12%
- Established CVD — 13%
- <30 year olds — 30%
- Missing data — 8%

Comment:
- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5 year risk of a CVD event and is based on the Framingham risk equation. This equation is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:
- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=17

Medicines use & treatment targets for people at high risk of CVD n=23

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
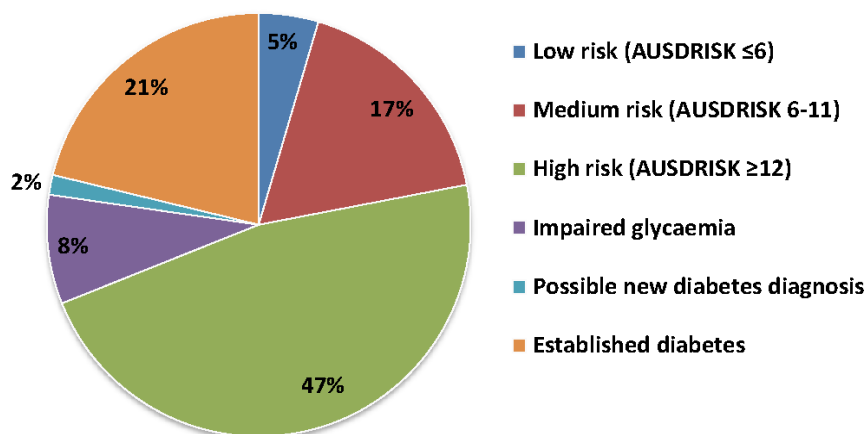
All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=132)

- Low risk (AUSDRISK ≤6)
- Medium risk (AUSDRISK 6-11)
- High risk (AUSDRISK ≥12)
- Impaired glycaemia
- Possible new diabetes diagnosis
- Established diabetes
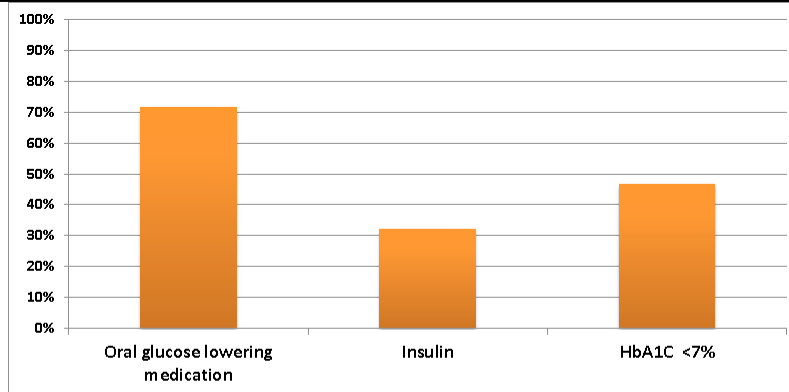
Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 10% of participants were newly identified to have either elevated glucose levels (impaired glycaemia) or diabetic range HbA1C levels ≥ 6.5% (48mmol/mol) at the event and were recommended to have follow-up with their health service provider

## 7. Management for people with diabetes (n=28)

Comment:
Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.

Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=132)
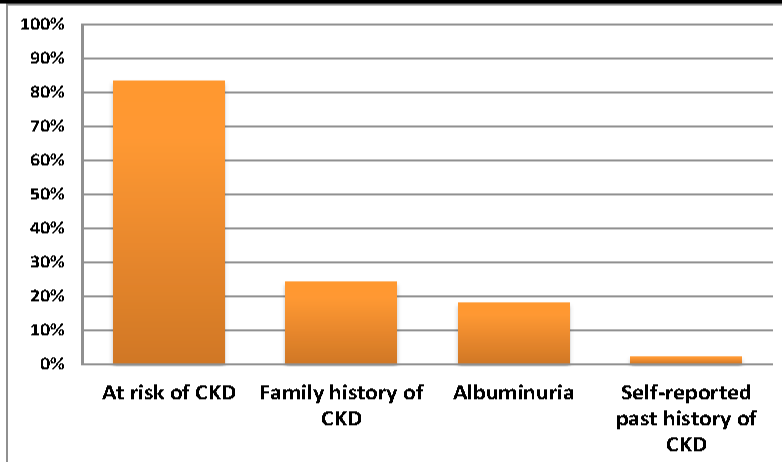
Comment:
At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

18% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as:
- ACR ≥ 2.5 mg/mmol for males
- ACR ≥ 3.5mg/mmol for females

Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

1 Deadly Step
Feedback report for event held at
Wagga March 6, 2016

ACI — THE GEORGE INSTITUTE for Global Health

1. Population profile at a glance

Legend:
- under 18 years
- 18-29 years
- 30-39 years
- 40-49 years
- 50-59 years
- 60-74 years
- 75 years and over
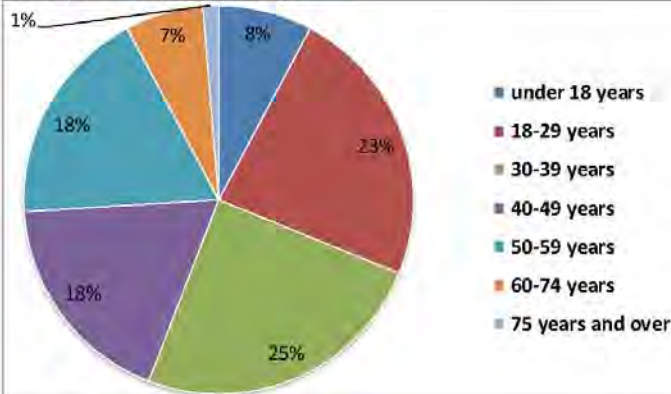
Comment:
- A total of 77 screening assessments were conducted on the event day
- The average age of participants was 39.0 years
- 28.6% of participants were male, 71.4% females
- 88% of participants identified as an Aboriginal or Torres Strait Islander person
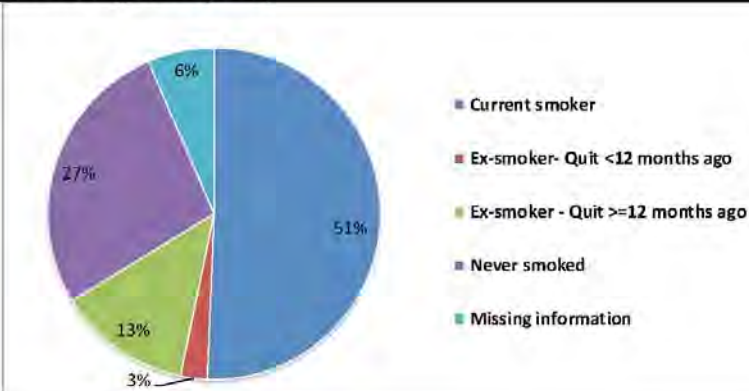- 58 participants nominated Riverina Medical & Dental Aboriginal Corporation as their primary health care provider

2. Smoking status (n=77)

Legend:
- Current smoker
- Ex-smoker- Quit <12 months ago
- Ex-smoker - Quit >=12 months ago
- Never smoked
- Missing information

Comment:

Of those who reported to be current smokers (n=39):

- 31% had smoked for >20 years
- 26% of 11-20 years
- 44% for less than 10 years

- 8% smoke >20 cigarettes/ day
- 26% smoke 11-20 cigarettes/ day
- 44% smoke 5-10 cigarettes/day
- 23% smoke <5 cigarettes/day

3. Lifestyle risk factor profile (n=77)

Bar chart categories:
- BMI >30 kg/m2
- Elevated waist circumference (>102cm for males, >88cm for females)
- Physical activity less than 2.5 hours/week
- Infrequent fruit intake
- Infrequent vegetable intake
- BP>140/90 mmHg
- Total cholesterol >4 mmol/L

4. CVD risk profile (n=77)

- Low risk (<10% 5 year risk) — 49%
- Medium risk (10-15% 5 year risk) — 1%
- High risk (>15% 5 year risk) — 1%
- Clinically high risk condition present — 5%
- Established CVD — 11%
- <30 year olds — 30%
- Missing data — 3%

Comment:

- Cardiovascular risk estimation is based on National Vascular Disease Prevention Alliance guidelines and uses age, gender, smoking status, diabetes status, total and HDL cholesterol, blood pressure to determine risk. The risk equation is presented as a 5-year risk of a CVD event and is based on the Framingham risk equation. This equati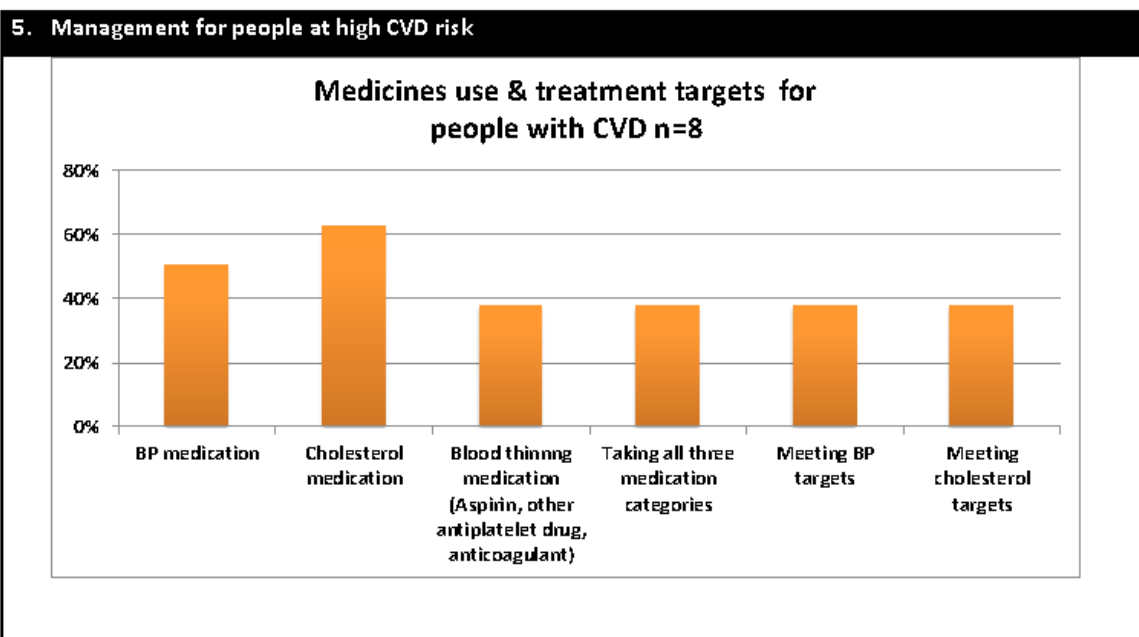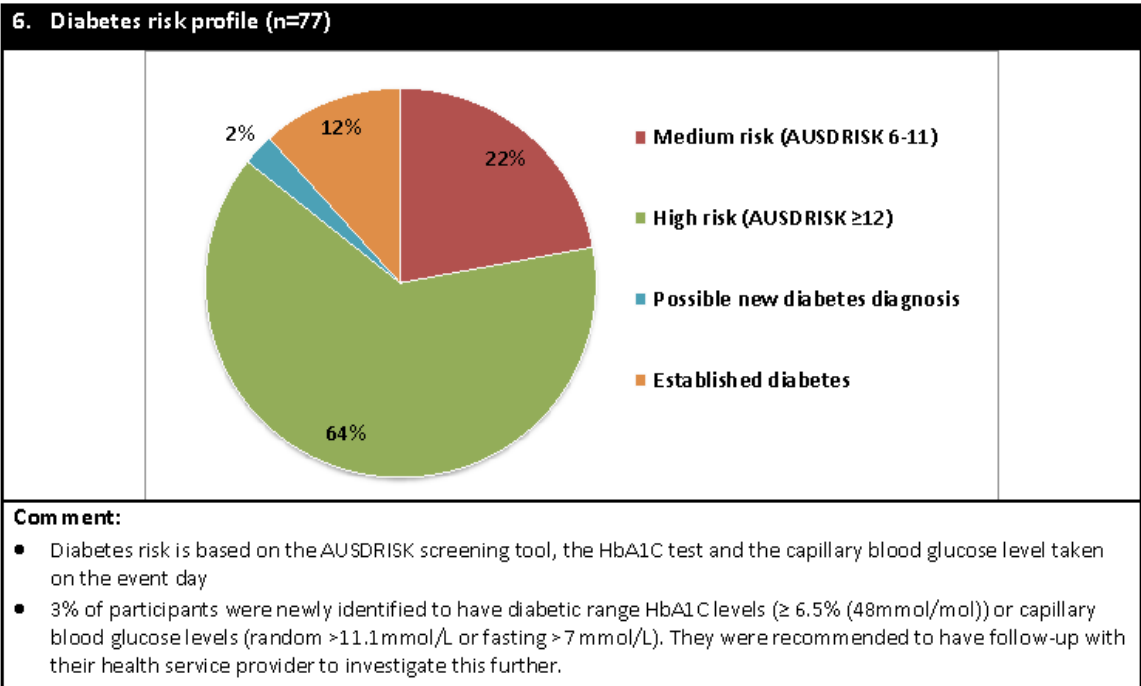on is validated for people aged 30-74 years of age. Risk has not been assessed for people aged < 30 years. Risk at age 75 has been assessed for those people aged ≥ 75 years.

High risk conditions include any of the following:

- Established CVD is defined as a self-reported diagnosis of coronary artery disease, stroke or peripheral vascular disease
- Clinically high risk conditions include those conditions that can be captured from 1 Deadly data and include: diabetes and age ≥ 60 years, BP≥ 180/110mmHg, total cholesterol > 7.5 mmol/L, Aboriginal and Torres Strait Islander people aged ≥ 75 years
- A calculated 5 year CVD risk ≥ 15%

5. Management for people at high CVD risk

Medicines use & treatment targets for people with CVD n=8

Medicines use & treatment targets for people at high risk of CVD n=5

Comment:

Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.

All people with established CVD are recommended a combination of BP lowering, cholesterol lowering and blood thinning medication unless there are contraindications.

All people at high risk of CVD are recommended a combination of BP lowering and cholesterol lowering medications unless there are contraindications.

National Vascular Disease Prevention Alliance guidelines recommend the following targets:
- BP targets are ≤ 130/80 mmHg for people with diabetes, albuminuria, or cardiovascular disease
- BP targets are ≤ 140/90 mmHg for all others
- Cholesterol targets are a total cholesterol <4mmol/L, an LDL cholesterol <2mmol/L, an HDL cholesterol ≥ 1mmol/L and a triglyceride level <2mmol/L

6. Diabetes risk profile (n=77)

- Medium risk (AUSDRISK 6-11) — 22%
- High risk (AUSDRISK ≥12) — 64%
- Possible new diabetes diagnosis — 2%
- Established diabetes — 12%

Comment:
- Diabetes risk is based on the AUSDRISK screening tool, the HbA1C test and the capillary blood glucose level taken on the event day
- 3% of participants were newly identified to have diabetic range HbA1C levels (≥ 6.5% (48mmol/mol)) or capillary blood glucose levels (random >11.1mmol/L or fasting > 7 mmol/L). They were recommended to have follow-up with their health service provider to investigate this further.

7. Management for people with diabetes (n=9)

Comment:
- Medication use is based on self-report by the participant. An information pop-up box was available with common medication names to assist in answering this question.
- Guideline targets for HbA1C generally recommend a target of 7% (53mmol/mol) for people with diabetes, however this may not always appropriate depending on clinical circumstances.

8. Chronic Kidney Disease (CKD) risk profile (n=77)
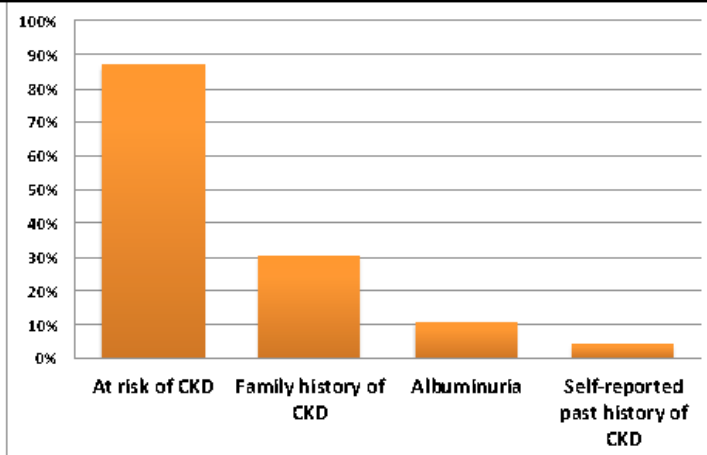
Comment:

At risk of CKD is defined as any of the following:
- Current smoker
- Self-reported diagnosis of cardiovascular disease
- Self-reported diagnosis of diabetes
- Family history of kidney disease
- Aboriginal people over the age of 30 years

10% of the population screened had an elevated urinary albumin to creatinine ratio (ACR) which is defined as an ACR ≥ 2.5 mg/mmol for males and ACR ≥ 3.5mg/mmol for females. Falsely elevated ACR levels can occur and it is recommended that repeat testing and medical review be carried out for these participants

Contact for further information:

Scott Trindall	Lachlan Wright
Project officer	Project manager
Agency for Clinical Innovation	The George Institute for Global Health
scott.trindall@health.nsw.gov.au	lwright@georgeinstitute.org.au
02 9464 4689	02 9993 4500