

WorkHealth Check Follow Up Study

**Centre for Occupational & Environmental Health,
Monash University (MonCOEH)**

Authors:

Dr Helen Kelsall, MonCOEH
Dr Roslin Botlero, MonCOEH
Dr Mohammadreza Mohebbi, MonCOEH
Prof Malcolm Sim, MonCOEH

24 September 2012
Version 2

Research report #: **0812-008-R9C**

Accompanying documents to this report

| Title | Report number |
|--|---------------|
| WorkHealth Check Follow Up Study – Summary Report | 0812-008-R9B |

A joint initiative of



TRANSPORT
ACCIDENT
COMMISSION



Table of Contents

| | |
|---|----|
| Executive Summary | 6 |
| 1 Background | 12 |
| 2 Study aims | 15 |
| 2.1 Relationship of Study Aims to Program Logic | 16 |
| 3 Methods | 17 |
| 3.1 Study design | 17 |
| 3.2 Study population | 17 |
| 3.3 Recruitment of study participants | 19 |
| 3.4 Study questionnaire | 20 |
| 3.4.1 12 item Short Form Health Survey version 2 (SF-12 v2) | 21 |
| 3.4.2 Work ability | 21 |
| 3.5 Linkage to pathology services | 22 |
| 3.6 Linkage to Medicare Australia | 22 |
| 3.7 Data Management | 23 |
| 3.8 Timing | 23 |
| 3.9 Statistical analysis | 24 |
| 3.10 Ethics committee approval | 25 |
| 4 Results | 26 |
| 4.1 Recruitment | 26 |
| 4.2 Participants' characteristics | 26 |
| 4.3 Visits to a doctor after referral at the WHC | 29 |
| 4.3.1 Actions following doctor's attendance | 32 |
| 4.4 Changes in lifestyle risk factors from WHC to follow up | 34 |
| 4.4.1 Inadequate fruit intake | 35 |
| 4.4.2 Inadequate vegetable intake | 36 |
| 4.4.3 Physical inactivity | 37 |
| 4.4.4 Risky alcohol intake | 38 |
| 4.4.5 Smoking | 42 |

| | | |
|-----|---|----|
| 4.5 | High waist circumference | 45 |
| 4.6 | Self-assessment of health | 46 |
| 4.7 | Reported actions by participants in relation to their WHC | 46 |
| 4.8 | General health and well-being and impact on work | 55 |
| 5 | Discussion | 62 |
| 6 | References | 70 |
| 7 | Appendices | 72 |
| 7.1 | Follow up of your health since your WorkHealth check. Study Questionnaire | 72 |

List of tables

| | |
|---|----|
| Table 1 Summary of recommended actions and time periods for follow up for workers with risk factors to be communicated by Service Providers at end of their WHC (February 2011) | 14 |
| Table 2 Definitions for variables..... | 25 |
| Table 3 Demographic, occupational and risk score characteristics of WHC participants during the study period who consented to be contacted for follow up research compared with those who did not consent | 27 |
| Table 4 Demographic and employment characteristics of study participants and non-participants | 28 |
| Table 5 Doctor visit times for those referred to see their doctor within 24 hours of a WHC..... | 29 |
| Table 6 Doctor visit' times for those referred to see their doctor within one month of a WHC | 30 |
| Table 7 Participant's reasons for not visiting their doctor | 31 |
| Table 8 Proportion of referred WHC participants at medium or high risk of type 2 diabetes or CVD who sought doctor's advice and received diagnostic testing, referral, treatment and diagnosis..... | 33 |
| Table 9 Reporting of inadequate fruit intake at their WHC and at follow up | 35 |
| Table 10 Proportion of study participants who reported inadequate vegetable intake at their WHC and at follow up..... | 36 |
| Table 11 Reporting of inadequate physical activity level at their WHC and at follow up..... | 37 |
| Table 12 Reporting of risky alcohol intake at their WHC and at follow up | 38 |
| Table 13 Current alcohol consumption at follow up of study participants..... | 39 |
| Table 14 Actions in relation to reducing alcohol consumption since the WHC | 40 |
| Table 15 Reasons for reducing alcohol consumption since their WHC..... | 41 |
| Table 16 Reporting of current smoking status at their WHC and at follow up | 42 |
| Table 17 Actions in relation to smoking reduction or cessation since the WHC..... | 43 |
| Table 18 Motivations for trying to give up, cut down or change to a lower tar or nicotine brand | 44 |
| Table 19 Proportion with a high waist circumference at their WHC and at follow up | 45 |
| Table 20 Self-assessment of health at the WHC and at follow up (N=1,302) | 46 |
| Table 21 Reporting of advice at WHC, taking of corresponding actions and improved risk factor levels at follow up..... | 48 |
| Table 22 Action/s taken as a result of their WHC by participants with high or medium AUSDRISK or CVD risk scores..... | 50 |

| | |
|--|----|
| Table 23 Proportion of participants with lifestyle risk factors at follow up and at WHC by AUSDRISK and CVD risk scores | 52 |
| Table 24 Mean lifestyle risk factor levels at follow up and at their WHC in participants with AUSDRISK and CVD risk scores | 54 |
| Table 25 Current self-reported physical and mental health and wellbeing, physical role limitations, vitality, and work ability by AUSDRISK and CVD risk scores at WHC | 55 |
| Table 26 Self-reported physical and mental health and wellbeing, physical role limitations, vitality, and work ability by reported medical conditions..... | 56 |
| Table 27 Impact on work because of reported health condition and reported lodgement of worker's compensation claim in past 2 years in participants with the health condition | 57 |
| Table 28 Participants' views on WHCs and awareness of health and workplace support..... | 60 |
| Table 29 Proportion of participants reporting new health promotion programs/activities at their workplaces since the WHC | 61 |

Executive Summary

WorkHealth is a WorkSafe Victoria program which commenced in 2008¹ to support Victorian workplaces to promote worker health and wellbeing, reduce the workplace impacts of type 2 diabetes and cardiovascular disease (CVD) and create healthy and safe workplaces. This report of a follow up study of people who had a WorkHealth check has been prepared as part of the WorkHealth Research and Evaluation Program conducted by the Monash University School of Public Health & Preventive Medicine and Institute for Safety Compensation and Recovery Research.

WorkHealth checks (WHCs) are free, confidential and voluntary health checks for individual workers undertaken in the workplace by trained providers. Workers receive feedback on lifestyle and health risk factors, may receive advice to follow up with their doctor regarding their risk of developing type 2 diabetes or CVD, and may be advised that they are eligible for a personalised health intervention program including the WorkHealth Coach or Life! Taking Action on Diabetes programs. Their workplace may also have initiated other health promoting changes since the WHC, assisted through a WorkHealth grant for the development of workplace health promotion programs.

The overall aim of this follow up study was to investigate the change in lifestyle factors since the WHC, motivating factors for change, follow up with their doctor and the time period, and other outcomes resulting from referral of WHC participants considered to be at increased risk of type 2 diabetes or CVD such as pathology testing, referral to medical specialists and to the WorkHealth Coach program and lifestyle programs, and to investigate the influence of diabetes and CVD related health conditions on work factors.

The study was designed to investigate these aims at two follow up periods after the WHC; about 11-12 months and about 24-27 months, to investigate persistence of any changes. The study population comprised people who had risk factors at their WHC for which the Service Provider would have referred them to a doctor for further advice, or for which they were eligible for a health intervention program. The risk factors were a medium or high AUSDRISK score (Australian Diabetes Risk Assessment score) or CVD risk score based on several risk factors, or high isolated blood pressure, cholesterol or blood glucose.

A total of 5396 eligible WHC participants who had given their consent at the time of their WHC to be followed up for future research were mailed a package comprising a self-administered questionnaire, plain language information sheet, consent form and tape measure to measure their waist circumference. Those who participated were eligible to take part in a lottery for 50 shopping vouchers. A total of 1306 people consented to be in the study, which was a participation rate of 24.0%. Study participants were more likely to be older, white collar workers, female, from rural regions, Australian born, or to have had their WHC in the 2011 sample period compared with non-participants, although the differences (apart from the time period) were not substantial.

Almost half (48%) of the participants in the follow up study reported visiting their doctor after their WHC for further advice and/or tests about their WHC results. This increased to 60.0% when workers reported being advised to visit a doctor after their WHC. The urgency of the referral or risk factor also affected the likelihood of a worker visiting their doctor after their WHC; with all urgent 24 hour referrals attending within one month, and around 20% of one-month referrals attending within one month and 50% within six months, while about 45% did not attend at all. The main reasons given for not visiting their doctor were that they were not advised to; did not remember being asked to; or they preferred to see their doctor when they felt they needed to. These results indicate that the messages given by the Service Providers at the time of their WHC to visit their doctor for follow up of their WHC results within certain periods of time were not strong enough in more than 80% of cases.

Further possible outcomes of a visit to their doctor were pathology testing, referral to a medical specialist, treatment or a new diagnosis and these outcomes were about 20-50% more common in people assessed to be at higher risk of type 2 diabetes or CVD at the time of their WHC, than participants without medium or high risk of type 2 diabetes or CVD, but the numbers without medium or high risk are small and the results need to be interpreted with some caution.

In relation to lifestyle programs, 8.3% of WHC participants assessed to be at medium or high risk of type 2 diabetes and therefore eligible to be referred to a lifestyle diabetes education program, reported participating in these programs. Of the total study population,

5.0% reported being advised to participate in a type 2 diabetes prevention program and just over half of these participated. A total of 8.7% of the study group since the WorkHealth Coach program had started reported being advised about participating and one-third of these (n=21) reported participating in the program. The small number of people meant that further analysis as a subgroup could not be undertaken. These findings could have implications for communication of messages at the WHC, for example in considering ways for Service Providers (SPs) to more clearly communicate the referral to visit a doctor, the reason/s and the time frame, or the referral to structured lifestyle, diabetes prevention and WorkHealth Coach programs and the benefits therein.

The study showed that two lifestyle risk factors were less common since the WHC for the study group as a whole, while other risk factors had stayed the same or become more common. The total proportion with an inadequate daily fruit intake had decreased by about 17% since their WHC, while the proportion with inadequate daily vegetable intake had remained about the same. This difference between changes in fruit and vegetable intake could be influenced by the greater availability and strong emphasis on 'fruit boxes' in workplaces as a result of WorkHealth and the fact that vegetables are mainly consumed outside the workplace. The study showed that smoking rates decreased by about 25%. There were a variety of motivations reported for people in trying to give up, cut down or change to a lower tar cigarette brand. The main reasons included:

- it was affecting the health of those around them (48.8%),
- family/friend/s asked them to quit (37.5%),
- it cost too much, they wanted to get fit (37.5%),
- doctors' advice (30.7%), and
- WHC advice (17.0%).

The impact of the WHC on reported smoking cessation/reduction may have been influenced by external environmental factors such as media campaigns or smoking restrictions in the workplace environment, but such a major shift in smoking habits is a very important reduction for a major public health risk factor and major contributor to absenteeism in a population based program. While it is possible that people under reported their smoking at their WHC and over reported smoking cessation at follow up, it is also possible that the process of raising smoking as a risk factor at their WHC and being

referred to their doctor about other risk factors was sufficient to prompt the participants to take up the issue of smoking cessation. This may be particularly important for groups of workers who may not regularly interact with the health care system.

The study showed that results remained similar for physical activity, and had slightly increased for risky alcohol intake and waist circumference. There were no obvious explanations for the increase in proportion with a high waist circumference or risky alcohol intake at follow up from the responses of participants. The changes in risk factors between WHC and follow up varied by subgroups of demographic factors, for middle year's age groups and people born in countries other than Australia were more likely to cease smoking and increase fruit intake. The increase in fruit intake was greater in the 24-27 month group than the 11-12 month group. Although these are different groups of people this finding is suggestive that there is some maintenance over time. In contrast the increase in smoking cessation in the 11-12 month group compared with the 24-27 month group indicates that smoking cessation takes longer to implement for participants.

When changes in lifestyle risk factors were examined in those who reported being given advice at their WHC and taking corresponding actions relevant to that advice, consistent improvement across several risk factors at follow up was found; e.g. about 28% reduced alcohol intake, 43% increased physical activity, and 71% stopped/reduced smoking. These findings of substantial improvements in all lifestyle risk factors where the participant has been sufficiently motivated to take action have very important implications for WorkHealth, the program logic and future impact in the workplace.

A wide variety of programs and activities were reported to have occurred at workplaces since the WHCs. The most popular ones were:

- medical checks, e.g. flu vaccinations, skin checks (65.1%),
- promotion of exercise at work (49.4%),
- information/posters on healthy lifestyle behaviours (38.7%),
- greater emphasis on safety (35.5%),
- fruit baskets (34.4%),
- increased availability of healthy food (29.8%),
- wellbeing activities, e.g. massage, yoga (25.3%), health promotion programs (23.2%),

- banned smoking at extended areas in/around the workplace (21.4%).

Unfortunately, the WorkHealth Coach program started after most of the follow up study participants had already had their WHC, so only 61 people were offered that program and only about a third of them took it up. These small numbers mean that the follow up study was not able to investigate the impact of that program and this would require a dedicated study of WorkHealth Coach participants.

There was a small improvement in self-reported health between the WHC and the follow up for the participants in the study. This may be due to a wide range of factors, including the documented improvements in lifestyle risk factors examined in this study.

Overall, nearly 90% of participants strongly agreed or agreed that WHCs had made workers more aware of their health, and the majority of participants strongly agreed or agreed that their workplace supports health promotion (77.5%), that their workplace supports injured workers (72.0%), and that their workplace supports Occupational Health and Safety (85.8%). Participant responses to these statements were more positive where they had reported that they had a Workplace OHS Committee and this was particularly important in relation to the workplace support for OHS statement.

Although the participation rate was lower than anticipated, the differences between participants and non-participants were not substantial. Also workers who consented to be contacted about participation in research were reasonably representative overall of the broader group of workers having WHCs. It is proposed that further analysis, such as multiple regression analysis, be conducted to assess what factors (e.g. age, gender, occupation, city/rural, risk factor level) increased or decreased the likelihood of taking action/s in relation to their WHC or what sociodemographic, behavioural, occupational and health intervention factors were associated with improvements in lifestyle risk factor levels since their WHC, adjusting for possible confounding factors including age and gender.

In assessment of lifestyle risk factors, this study was able to assess maintenance of lifestyle factors from baseline but couldn't measure further improvement of lifestyle factors or of maintenance of improvement in lifestyle factors over time without a second follow up. This study supplied tape measures and a protocol for participants to self-measure waist

circumference at follow up, but it was not possible to measure blood pressure, a key risk factor in relation to CVD, in the absence of a face-to-face interview.

With the study suggesting that improvements in lifestyle risk factor levels may not always have been sufficient to pass the established WHC cut-offs, WorkHealth could consider:

- A longitudinal follow up of this established cohort with a further survey in the future to ascertain longer term outcomes, and consider linkage with the Victorian Compensation Research Database.
- Undertaking a follow up study of WorkHealth Coach participants to investigate the impact on lifestyle risk factors of that program
- Enhancing messages with respect to smoking cessation to build on impact and effectiveness with respect to smoking cessation.
- Reconsidering/developing more effective messages with respect to taking action to increase daily vegetable intake, physical activity levels, weight loss, reduced waist circumference, and reduced alcohol consumption.
- A clearer integrated, individualised, standardised WHC record for the participant to retain regarding referral and other aspects of advice to further increase the program's impact. A computerised printout at the WHC could be considered.

Referral to visit a doctor for follow up advice for people with risk factors is an important aspect of the WHC. To our knowledge nothing is known about the doctor's response to people attending from their WHC. WorkHealth could consider:

- Ascertaining doctors' responses to people attending for follow up from their WHC and any issues around communication and presentation of material that might further enhance communication between the worker and their doctor.

An addendum to this report will provide further information on follow up through pathology and Medicare linkage data.

1 Background

WorkHealth is a WorkSafe Victoria program which commenced in 2008¹ to support Victorian workplaces to promote worker health and wellbeing, reduce the workplace impacts of type 2 diabetes and cardiovascular disease (CVD) and create healthy and safe workplaces.

WorkHealth checks (WHCs), one of the WorkHealth program components, involve free, confidential and voluntary health checks undertaken in the workplace by trained providers. At WHCs, the participating workers receive feedback on lifestyle and health risk factors and may receive advice to follow up with their doctor regarding their risk of developing type 2 diabetes or CVD. They may also be advised that they are eligible for a follow-up program, such as the WorkHealth Coach or Life! Taking Action on Diabetes programs.

The Australian Institute of Health and Welfare reported in 2010 that, despite major gains in the fight against CVD over the past 40 years, in terms of prevalence, mortality, morbidity, burden of disease and expenditure, CVD continues to have a major effect on the health of Australians.⁴ CVD is the second largest contributor to the burden of disease in Australia, after cancer. Combining both the burden from the extent of its disability and from premature death, CVD was projected to account for 16.0% of the overall disease burden in Australia in 2010. Based on a conservative estimate, diabetes is projected to be the sixth leading cause of burden of disease and injury in Australia in 2010, responsible for nearly 6.6% of the total disease burden. This estimate did not include the contribution of diabetes to coronary heart disease and stroke.⁴ Given the heavy disease burden imposed by CVD and diabetes, the majority (85-90%) of cases of which is type 2 diabetes, their prevention is a major public health priority.

In addition to their impact in the broader community, CVD, type 2 diabetes and other chronic conditions have individual, workplace and employment impacts. A very important consequence of chronic conditions can be their impact on employment prospects and participation in the workforce. The annual loss in workforce participation from chronic disease in Australia has been estimated to be around 537,000 person-years in full-time employment and approximately 47,000 person years in part-time employment⁵. The

overall loss to the workforce associated with eight chronic diseases (coronary heart disease, stroke, diabetes, arthritis, asthma, chronic obstructive pulmonary disease (COPD), depression, osteoporosis and depression) amounted to around half a million person-years.⁵

The WHC is an integral part of the WorkHealth program that provides information and advice to participating workers of their risk of type 2 diabetes and CVD and gives advice on ways to reduce their risk. At the WHC, the worker is provided with information about their WHC and brief lifestyle advice to encourage them to take action to improve or maintain their health, as well as recommended action based on their individual risk factors and composite risk scores. They may also be referred to a doctor for follow up regarding their risk factors for type 2 diabetes or CVD and advised whether they were eligible to participate in the WorkHealth Coach program, i.e. those assessed at being medium or high risk of type 2 diabetes or medium or high risk of CVD. These workers can consent to be contacted by a qualified health coach. These advised actions and time periods are summarised in Table 1.

Table 1 Summary of recommended actions and time periods for follow up for workers with risk factors to be communicated by Service Providers at end of their WHC (February 2011)

| Recommended action | Relevant groups | Time period |
|--|---|--|
| Lifestyle advice | All workers receive individualised lifestyle advice and information based on their WHC in relation to: healthy eating, physical activity, alcohol intake smoking cessation, and type 2 diabetes and CVD risk assessments. | No specific time period or dependent on risk factors see below |
| Community based support and lifestyle programs* | Tobacco smoker Workers whose alcohol consumption is greater than the NHMRC Australian Alcohol Guidelines† | No specific time period |
| WorkHealth Coach & Lifestyle Program (LP) enrolment‡ | Workers at medium or high risk of type 2 diabetes or CVD are encouraged to opt-in to the TSS & a Health Coach will contact them to discuss & enrol them into a LP of their choice. Lifestyle Programs: Workers at medium risk of type 2 diabetes (AUSDRISK Score 6-11)¶ WorkHealth Coach program Workers at high risk of type 2 diabetes (AUSDRISK Score ≥ 12) Victorian Government's Life! Taking action on Diabetes telephone health coaching program Victorian Government's Life! Taking action on Diabetes group based program run by Diabetes Australia-Vic Lifestyle programs accredited under the Commonwealth Government Type 2 Diabetes Prevention Program such as 'Reset your Life' program (for workers aged 40-49 years)¶ Workers at medium or high risk of CVD (CVD Risk Score > 10%) WorkHealth Coach Program | Workers are invited to enrol at the end of their WHC |
| Check at future GP visit | If blood pressure 120-139/80-89 mmHg | In one year |
| Talk to your GP at next routine visit | Total cholesterol > 5.5 – 7.0 mmol/L Waist circumference male > 102 cm Waist circumference female > 88 cm Tobacco Smoker | No specific time period |
| Visit your GP for further testing and advice | Cardiovascular risk score ≥ 10% over 5 years | Within 3 months |
| Visit your GP within 1 month for further testing and advice | Total cholesterol > 7.0 mmol/L Blood pressure ≥ 140/90 mmHg Random blood glucose ≥ 6.5 mmol/L AUSDRISK ≥ 12 Cardiovascular risk score > 15% over 5 years | Within a month |
| Seek urgent medical attention (within 24 hours where practical) and restrict physical activity | Systolic blood pressure ≥ 180 mmHg Diastolic blood pressure ≥ 110 mmHg Random blood glucose ≥ 15 mmol/L | Within 24 hours where practical |

* In addition to the SP providing advice around alcohol consumption and the 'You and alcohol' tip sheet, workers may have been advised about community based programs to contact such as the Australian Drug Foundation, Direct line or Counselling Online, their local community health centre, or to see their GP. In addition to smokers being advised about smoking cessation and the 'You and smoking' tip sheet, they may have been advised about programs such as the Quit Victoria website, Quit line, to contact their community health centre or talk to their pharmacist or GP.

† Orientated to achieving levels of alcohol consumption at or below guideline levels, and opportunities for further support in the community to reduce alcohol consumption may also have been recommended;

‡ The WorkHealth Coach program commenced 1/3/2011. During the follow-up call, the WorkHealth Coach reviews the worker's risk factors, level of risk, prevention benefits, identifies lifestyle program/s the worker is eligible for and facilitates enrolment into their choice of program.

¶ Some programs have changed over time. Life! Online for workers at medium risk of diabetes is no longer run. The 'Reset your Life' program for workers at high risk of diabetes finished on 1 Nov 2011.

As the WHCs involve testing at only one point in time, it is not known what further actions have been taken by workers who undertook a WHC in relation to advice given during the WHC or what testing, treatment, referral, or diagnostic outcomes have occurred as a result of referral to their doctor. These follow up actions and any subsequent changes in lifestyle risk factors and risk scores have important implications for the workers and their workplace, for the health system in terms of health benefits, resources and costs, and for the WorkHealth program in terms of its effectiveness and strategic program targeting.

2 Study aims

The overall aim of this follow up study of WHC participants was to contribute to the evaluation of the WorkHealth program by investigating the degree of change in lifestyle factors and other outcomes resulting from referral of WHC participants considered to be at increased risk of type 2 diabetes or CVD and to investigate influences on work factors. The study was designed to investigate these aims at two different follow up periods after the WHC, about 11-12 months and about 24-27 months, so as to test sustainability of any changes.

The study aimed to answer the following research questions that incorporate relevant short and medium term impacts from the WorkHealth program logic, including those of relevance to the workplace:

1. What proportion of referred WHC participants took action(s) in relation to any identified risk factors during the WHC (such as visiting a doctor within the recommended period of periods thereafter, visiting other health professionals, making a change in lifestyle factors or participating in lifestyle programs); and what factors (e.g. age, gender, occupation, city/rural, risk factor level) increased or decreased the likelihood of taking this/these action(s)?
2. What proportion of WHC participants who were identified as being at medium or high risk of type 2 diabetes or CVD have undergone improvements in lifestyle and physical risk factor levels from baseline; and what socio-demographic, behavioural, occupational and health intervention factors were associated with such improvements?

3. What proportion of referred WHC participants at medium or high risk of type 2 diabetes or CVD who sought GP advice received diagnostic testing, referral, treatment and diagnosis; and did this differ by risk level?
4. Do health services utilisation, specified pathology test results or use of appropriate medications for type 2 diabetes and CVD including oral hypoglycaemic agents, insulin, testing for diabetes, lipid lowering medications and antihypertensive medications, differ in referred WHC participants at medium or high risk of type 2 diabetes or CVD or with elevated individual risk factor levels?
5. Do work-related factors and factors that impact on the workplace, including self-reported absence, self-reported claims, work ability, and perception of workplace culture differ in referred WHC participants with diabetes or CVD or who are at medium or high risk of developing these conditions?

2.1 Relationship of Study Aims to Program Logic

The impacts in the Program Logic model⁶ that the study aims relate to are set out below:

- Increased identification of workers at medium to high risk of type 2 diabetes and CVD, and
- Whether WHC participants have:
 - increased their physical activity and healthy eating, decreased smoking and decreased high risk alcohol consumption.
 - increased participation in workplace health promotion programs, funded lifestyle programs (for eligible participants), and other relevant health promotion programs.
 - accessed professional services, such as medical and allied health services or other services directed at addressing their risk factors, for workers at medium to high risk of type 2 diabetes and CVD.
 - increased professional management, such as by medical and allied health services, for workers with medium to high risk of type 2 diabetes and CVD.
 - maintained any increased physical activity, healthy eating, decrease in smoking and high risk alcohol consumption.
- Whether significant improvements were achieved in:
 - biomedical/other risk factors of the working population in overweight and obesity, blood pressure, cholesterol, blood glucose.

- lifestyle risk factors of WHC participants in smoking, healthy eating, alcohol consumption, physical activity.
- Whether diabetes, CVD or other chronic illnesses have impact on the workplace in terms of:
 - self-reported sickness absence^{5, 10}
 - self-reported workers' compensation claims,
 - work ability¹¹
- Perception of workplace culture and the workers perceptions about work and their workplace since their WHC

3 Methods

3.1 Study design

This is a follow up study of WHC participants at two different time periods after their WHC. Follow up data were collected by a self-administered questionnaire and data linkage to pathology providers and Medicare Australia was undertaken.

Two groups of people who had participated in a WHC check and who had given written consent to be approached to take part in further study of WorkHealth were approached to take part in this follow up study.

The selected sample included a proportion of 'early' and 'recent' consenters, which was based on when they had their WHC. The 'early' group comprised all eligible people participating in WHCs over a four-month time period (1 March to 30 June, 2010), which was about 20-23 months prior to the commencement of this study. The 'recent' group comprised all eligible people who participated in a WHC during the period of 1 June to 31 July, 2011, which was about 7-8 months before the commencement of this study.

The study population included all those who, within the two relevant time periods, had given signed consent at the time of their WHC to be contacted for further research in the future and for whom a valid address was available. They also needed to meet at least one of the following clinical criteria.

- AUSDRISK score ≥ 12 as high risk of type 2 diabetes
- AUSDRISK score 6-11 as medium risk of type 2 diabetes
- Random blood glucose level ≥ 6.5 mmol/L
- CVD risk score $> 15\%$ as high risk CVD over 5 years
- CVD risk score 10-15% as medium risk CVD over 5 years
- Blood pressure $\geq 140/90$ mmHg
- Total cholesterol > 7.0 mmol/L
- Systolic blood pressure ≥ 180 mmHg
- Diastolic blood pressure ≥ 110 mmHg
- Random blood glucose level ≥ 15 mmol/L

The study aimed to recruit 1400 participants, based on a sample size calculation, as this was the number calculated to be necessary to estimate a 20% change in prevalence of lifestyle factors with a precision of $\pm 25\%$ around that estimate ($\alpha=5\%$, power = 80%), i.e. within the range from 15 to 25%. This sample size was also calculated to be sufficient for the doctor referral rate estimates.

Initially the group randomly selected to be approached to take part in the study comprised 3000 participants on the assumption of an estimated 50% response rate. However, during the recruitment period, the response rate following the first mail-out and subsequent reminder postcard was about 15%, which was considerably lower than anticipated. Therefore, the remaining eligible population of 2,396 who had their WHCs during the specified time periods were added to the sample, making a grand total of 5396 people to be approached. To reach the required sample size of 1400 study participants, this would require an overall participation rate of about 26%.

Therefore to increase the response rate from 15.0% to the required level of 26.0%, a lottery draw of 50 shopping vouchers was introduced which included all of the existing study participants, as well as the non-responders from the initial sample, who were advised of the lottery draw in a further invitation to participate.

To be selected to be approached to take part in the follow-up study, the following steps were taken and the numbers in each step are shown for both the 'early' and 'recent' consentor groups.

Year 2010 sample (early consenters):

102053 had a WHC during the period of March to June, 2010



5403 consented to be contacted for further research



3579 had hard copies of consent form available



3515 had a signature on the consent form and a valid address



2716 met at least one of the clinical inclusion criteria

Year 2011 sample (recent consenters):

28338 had a WHC during the period of June to July, 2011



3823 consented to be contacted for further research



3615 had hard copies of consent forms



3599 had a signature on the consent form and a valid address



2680 met at least one of the clinical inclusion criteria

Therefore, the total of 5396 eligible participants approached to take part in the follow up study comprised about half in each of the 'early' and 'recent' groups.

3.3 Recruitment of study participants

A mailout package which consisted of (i) a personally addressed letter of invitation to participate; (ii) an explanatory statement; (iii) a study questionnaire and (iv) a consent form were mailed to eligible workers, followed by a reminder postcard and a second mailout package two weeks later to non-responders.

3.4 Study questionnaire

The study involved a self-administered questionnaire which asked information about:

- Socio-demographic characteristics including age, gender, education, marital status, country of birth etc.
- Self-reported lifestyle factors (fruit and vegetable consumption, alcohol consumption, smoking, physical activity)
- Recall of advice given at the WHC related to lifestyle changes or recommended follow up by a doctor
- Actions in relation to their WHCs:
 - initiation of lifestyle changes including specific actions in relation to smoking⁹ and alcohol⁹
 - sought advice from a doctor or other non-medical health professional, either as a routine visit or specifically as a follow up to the WHC
 - took part in a specific community lifestyle program, e.g. Weight Watchers
 - took part in a WorkHealth funded lifestyle program
 - took part in a workplace health promotion program
 - used complementary therapy e.g. weight loss products
 - Reasons for not taking any action
- Outcomes of referral to doctor:
 - further diagnostic testing, e.g. blood tests, heart tests, including ECG
 - referral to an allied health professional, dietician, diabetes educator etc
 - referral to a medical specialist such as a cardiologist, endocrinologist, etc
 - treatment including before the WHC and since the WHC for diabetes
 - self-reported baseline doctor diagnosed conditions related to diabetes and CVD e.g. type 2 diabetes, heart attack, stroke, bypass operation, high blood pressure, high cholesterol before or since WHC
- Workplace impact of chronic illness
 - self-reported sickness absence^{5, 10}
 - self-reported workers' compensation claims,
 - work ability¹¹
- Perception of workplace culture and how they feel about work and their workplace since their WHC
- Self-measured weight, height, and waist and hip circumference^{12, 13}
- General physical and mental health and well-being measured using the Short Form-12 v2 (SF-12v2)¹⁴

3.4.1 12 item Short Form Health Survey version 2 (SF-12 v2)

General physical and mental health and wellbeing was measured using the 12 item *Short Form Health Survey version 2 (SF-12 v2)* which is a validated version of the longer SF-36. The SF-12 has two summary scales, the *Physical Component Summary (PCS) scale* and the *Mental Component Summary (MCS) scale* that relate to the four weeks prior to the completion of the questionnaire. Both summary scales use the same items but different weightings. The higher the score, the better the physical or mental health status¹⁴ The SF-12 is scored using US norm-based scoring methods with separate regression weightings for the physical and mental scales, and a constant for both measures, obtained from the general United States (US) population.¹⁴ Such scoring transforms PCS-12 and MCS-12 values to have an average of 50.0 and a standard deviation of 10.0 in the US general population.¹⁴ Norm based transformation was applied in this study.

The SF-12v2 provides scores for eight dimensions of health, based on reporting over the previous month, including *role physical* (2 questions on role limitations because of physical health problems), *vitality* (1 question on vitality (energy/fatigue) and *general health* (1 question on general health perceptions). The general health item from the SF-12v2 is also the first question in the WHC questionnaire, so it can be used for comparison purposes over time. It was decided to include the full SF-12v2 in the follow up questionnaire and not just the first question, as the subscales referred to above can be used to help assess impact on the worker's ability to work effectively. Although the SF-12v2 has been reported in use in Australian surveys, including populations with chronic diseases, norms for the Australian population have not been developed as they have previously for the SF-12.¹⁵

3.4.2 Work ability

In order to increase work participation and the working life among older workers the concept of *work ability* has been developed since the 1980s, built on a balance between a person's resources and work demands.¹⁶ *Work ability* is a complex issue, and is also related to education, knowledge, skill, experience, motivation and health status.¹¹ *Work ability* has been assessed in various ways. One of the most commonly used measures, the *work ability index (WAI)*, a summary measure of seven items, which takes into consideration job demands, sick leave, health and mental status and resources.¹⁷ Whilst

the *WAI* is a fairly lengthy questionnaire, variations of the *WAI* have been used to assess self-rated *work ability* including use of the single item *WAI* question. This single-item question measures people's reported current *work ability* compared with their *work ability* at its best ever for that person, and was used in this study.

3.5 Linkage to pathology services

Participants were asked to provide consent for their identifying information to be sent to major pathology providers to provide the researchers with the results of specified relevant pathology tests that were undertaken since their WHC.

Data linkage was agreed to be undertaken with the four major pathology providers in Victoria: HealthScope Pathology, Melbourne Pathology, Dorevitch Pathology and St John of God Pathology.

The requested test results included glucose related tests (fasting blood glucose, glucose tolerance test, HbA1c), biochemistry tests (including serum creatinine and eGFR), Hb level and serum lipids (Total cholesterol, LDL, HDL, TG). Other information requested was the date of the test, test results, the time the test was taken, whether the test was fasting (Yes, No, Unknown), the specialty of the doctor who ordered the test, and the location of the test (GP/outpatient or Inpatient/Emergency Department).

The pathology services provided the researchers with:

- Reference ranges for the pathology tests that have been requested over the period of the study,
- A brief description of the testing methods used by the laboratories.

It will be important to consider the differences in the reference ranges between laboratories and apply the most appropriate way of comparing and reporting the pathology data.

3.6 Linkage to Medicare Australia

Consent was sought from study participants to link their data collected in this study with Medicare Australia to obtain Medicare Benefits Schedule (MBS) and Pharmaceutical Benefits Scheme (PBS) data in order to identify medical treatment/s and pharmaceutical items used. This will be used in future analyses relevant to the chronic diseases under

study, e.g. new prescriptions of medications for type 2 diabetes and cardiovascular disease.

Information obtained from Medicare will assist in categorising participants with respect to their diabetic and cardiovascular disease status and in defining and comparing evaluation of WHC groups with respect to outcomes resulting from the doctor referral process.

Medicare and PBS claims data are held for the last five years and data have been requested from 1 January 2008 to 19 June 2012, the end of this study period. The data since 1 January 2008 to the WHCs will establish baseline data for any relevant chronic diseases which were present prior to the WHC being undertaken. Linkage variables that are required by Medicare include date of birth, full name, address, Medicare Number and reference number, which were obtained on the consent form.

3.7 Data Management

Data management processes were implemented to ensure confidentiality of collected data and the secure transfer of pathology and Medicare data to the researchers. All data are stored in a secure, restricted-access area in the Department of Epidemiology and Preventive Medicine (DEPM) at Monash University. Consent forms and contact details of participants are stored securely and separately from the questionnaires. The paper documents are kept in locked cabinets and electronic data are being stored on the DEPM file-server, which is password-protected. Access to hard-copy and electronic data are restricted to only those research staff working on the project. To ensure the confidentiality of the information, the collected pathology data will have all identifying information removed once validity checks have been undertaken and will be held in storage using code numbers.

Records of the study, including consent forms, will be stored for a period of at least seven years after the publication of results in accordance with provisions of the ethics committee approval. Only grouped results are being presented in this final report, so that no individual's information can be identified.

3.8 Timing

Data collection from participants took place over the period of February to June 2012.

Recruitment and data collection was delayed considerably due to the need to increase the size of the population to be approached, additional Ethics Committee approval, and an

additional mailout over 6 weeks. Linkage with pathology services is in process and data have been returned from three pathology services. It is anticipated linkage with Medicare will take place in late September/October 2012 and is dependent on Medicare's workload. A three month window period is required by Medicare between the end of the study (19 June 2012) and linkage, so that MBS and PBS claims lodged by study participants will have the necessary time to be processed through the system.

There was insufficient time to undertake the pathology and Medicare linkages prior to the submission of this study report due to delays in study participant recruitment. Therefore, it has been agreed that these linkages and analyses will be undertaken later and reported in an addendum to this report.

3.9 Statistical analysis

Descriptive statistics were used to summarise the raw data. Data are presented as proportions (95% confidence intervals), means (SD, standard deviations) or medians (IQR, interquartile ranges). All statistical analyses were performed using STATA IC, version 11.

Definitions for variables are summarised in Table 2.

Table 2 Definitions for variables

| Risk factor | Definitions at WHC |
|------------------------------------|--|
| Inadequate fruit intake | Less than (<) two pieces/serves of fruit/day. |
| Inadequate vegetable intake | < five serves of vegetables/day |
| Inadequate physical activity level | < five 30 minute exercise sessions a week (WHC) < 150 minutes per week (follow up study) |
| Risky alcohol intake | > 2 drinks/day for alcohol related disease over a lifetime > 4 drinks/single occasion for alcohol related injury |
| High waist circumference | Waist circumference >102cm for males and > 88cm for females |
| Elevated blood pressure | Systolic blood pressure greater than or equal to (\geq) 140mmHg or diastolic blood pressure \geq 90mmHg |
| High blood glucose | Random blood glucose \geq 6.5–14.9 mmol/L |
| Very high blood glucose | Random blood glucose \geq 15.0 mmol/L |
| High risk cholesterol | Random blood cholesterol > 7.0 mmol/L |
| High risk type 2 diabetes | Australian Diabetes Risk Assessment (AUSDRISK) score \geq 12 |
| Medium risk type 2 diabetes | AUSDRISK score 6-11 |
| High risk CVD over 5 years | CVD risk score > 15% |
| Medium risk CVD over 5 years | CVD risk score 10-15% |
| Occupation | Categorised according to the 2006 ANZSCO classification. The 10 major ANZSCO group levels were combined to form four groups as outlined below: <i>White collar</i> – Managers, professional workers <i>Other white collar</i> – Community and personal service workers, clerical and administrative workers, sales workers & service workers <i>Blue collar</i> - Technicians and trades workers, machinery operators and drivers, and labourers <i>Unpaid workers</i> |

3.10 Ethics committee approval

The study was approved by the Monash University Human Research Ethics Committee (CF11/2764 – 20110001636). Permission letters for the pathology linkage were provided by Melbourne Pathology, HealthScope Pathology, Dorevitch Pathology, and St John of God Pathology. Medicare External Research Evaluation Committee also approved the study Consent form to provide Medicare and PBS claims history to the researchers.

4 Results

4.1 Recruitment

Of the 5396 WHC participants who were mailed a questionnaire, 5345 were considered eligible to participate, as 2 were found to be deceased and 49 were lost to contact. Of these, 1306 (24.4%) participated, 187 (3.5%) refused, and 3852 (72.1%) did not respond. Participation was slightly higher in the group that had had their WHC more recently (26.0% vs 22.9%).

4.2 Participants' characteristics

It is important to estimate how representative the participants are compared with the non-participants in this study and the overall WHC participants. This is assessed in two ways, firstly comparing the WHC participants who agreed to be contacted for follow up research and those who didn't, and secondly by comparing participants and non-participants in the follow up study.

Table 3 compares the sociodemographic, occupational and risk score characteristics of the people in the two relevant time periods who undertook WHCs and who consented to be contacted for follow up research and those who did not consent to be contacted. People were much more likely to consent to be contacted about research if they had their WHC in the more recent 2011 study sample period. On the characteristics examined, there were only small differences in factors such as white collar workers, Australian-born participants, participants with a high AUSDRISK score, or those who lived in rural regions, who were slightly more likely to consent to be contacted for research. Therefore, it can be concluded that consenters to be contacted for future research were similar to those who didn't consent to be contacted.

Table 3 Demographic, occupational and risk score characteristics of WHC participants during the study period who consented to be contacted for follow up research compared with those who did not consent

| | Consenters N=9,543 n (%) | Non-consenters N= 122,857 n (%) |
|-------------------------------------|--------------------------------|---------------------------------------|
| Age | | |
| <=24 | 911 (9.6) | 13,290 (10.8) |
| 25-34 | 2,432 (25.5) | 35,148 (28.6) |
| 35-44 | 2,371 (24.8) | 30,616 (24.9) |
| 45-54 | 2,386 (25.0) | 28,083 (22.9) |
| 55-64 | 1,283 (13.4) | 14,147 (11.5) |
| >=65 | 160 (1.7) | 1,564 (1.3) |
| Occupation | | |
| White collar workers | 4,621 (48.4) | 56,501 (46.0) |
| Other white collar workers | 3,134 (32.8) | 38,722 (31.5) |
| Blue collar workers | 1,753 (18.4) | 27,073 (22.0) |
| Unpaid workers* | 35 (0.4) | 555 (0.4) |
| Gender | | |
| Male | 4,774 (50.0) | 63,059 (51.3) |
| Female | 4,769 (50.0) | 59,793 (48.7) |
| Country of birth | | |
| Australia | 7,175 (75.2) | 86,813 (70.7) |
| Other | 2,368 (24.8) | 36,036 (29.3) |
| Region | | |
| Metro | 7,415 (77.7) | 98,303 (80.0) |
| Rural | 2,128 (22.3) | 24,554 (20.0) |
| Duration of follow up period | | |
| Longer (24-27 months) | 5,415 (56.7) | 96,638 (78.7) |
| Shorter (11-12 months) | 4,128 (43.3) | 26,219 (21.3) |
| AUSTRISK score | | |
| Medium | 3,755 (39.4) | 52,013 (42.3) |
| High | 2,438 (25.6) | 27,101 (22.1) |
| CVD risk score | | |
| Medium | 468 (12.7) | 5,356 (12.7) |
| High | 168 (4.6) | 1,826 (4.3) |

*Unpaid workers is a non-specific category that included people who had undergone WHCs but were non-classifiable into the Australian and New Zealand Standard Classification of Occupations (ANZSCO) used by service providers at the time of their WHC, and may have included unpaid workers and others.

Table 4 compares the sociodemographic, occupational and risk score characteristics of the 1,306 follow up study participants with the 4039 non-participants. Those who participated in the study were more likely to be older, to be white collar workers, female, from rural regions, Australian born, or to have had their WHC in the more recent sample period compared with those who did not participate.

Table 4 Demographic and employment characteristics of study participants and non-participants

| | Participants N=1,306 n (%) | Non-participants N=4,039 n (%) |
|-------------------------------------|----------------------------------|--------------------------------------|
| Age | | |
| <=24 | 26 (2.0) | 285 (7.1) |
| 25-34 | 132 (10.1) | 896 (22.2) |
| 35-44 | 262 (20.1) | 1,138 (28.2) |
| 45-54 | 475 (36.4) | 1,121 (27.7) |
| 55-64 | 354 (27.1) | 540 (13.4) |
| >=65 | 57 (4.4) | 59 (1.5) |
| Occupation* | | |
| White collar workers | 725 (55.5) | 1,886 (46.7) |
| Other white collar workers | 432 (33.1) | 1,243 (30.8) |
| Blue collar workers | 146 (11.2) | 901 (22.3) |
| Unpaid workers | 3 (0.2) | 9 (0.2) |
| Gender | | |
| Male | 629 (48.2) | 2,373 (58.7) |
| Female | 677 (51.8) | 1,666 (41.2) |
| Country of birth | | |
| Australia | 984 (75.3) | 2,902 (71.8) |
| Other | 322 (24.7) | 1,137 (28.1) |
| Region | | |
| Metropolitan | 970 (74.3) | 3,269 (80.9) |
| Rural | 336 (25.7) | 770 (19.1) |
| Duration of follow up period | | |
| Longer (24-27 months) | 609 (46.6) | 2,055 (50.9) |
| Shorter (11-12 months) | 697 (53.4) | 1,984 (49.1) |
| AUSTRISK score | | |
| Medium | 692 (53.0) | 2,053 (50.8) |
| High | 423 (32.4) | 1,312 (32.5) |
| CVD risk score† | | |
| Medium | 100 (11.7) | 211 (12.8) |
| High | 35 (4.1) | 84 (5.1) |

*Unpaid workers is a non-specific category that included people who had undergone WHCs but were non-classifiable into the ANZSCO used by service providers at the time of their WHC, and may have included unpaid workers and others.

†CVD risk score was calculated on 853 study participants and 1,652 non-participants.

Very small numbers of unpaid workers participated in the study (n=3) and they are excluded from the rest of the analyses.

The results presented in the following sections relate to several aspects of the impact of the WHCs, such as follow up with a doctor, follow up within the recommended time periods, actions taken and changes in lifestyle risk factors since the WHC.

4.3 Visits to a doctor after referral at the WHC

627 (48.0%) participants reported visiting a doctor since the WHC for further advice about, and/or tests for, their WHC results, while 678 (51.9%) reported that they did not visit a doctor. Of those who gave a purpose for visiting a doctor since their WHC, about 25% discussed their WHC results with their doctor at a special visit because of their WHC results, while about 75% did this at a routine visit or a visit for something else.

Table 5 shows that only three of the 10 study participants who were referred to see their doctor within 24 hours reported that they visited their doctor within this period, but all did this within 1 month of their WHC.

Table 5 Doctor visit times for those referred to see their doctor within 24 hours of a WHC

| Risk factor | Referred within 24 hours n | Time period in which reported visiting a doctor | | | |
|--|-------------------------------|---|---------------------------------------|--------------------------------------|-------------------------|
| | | Within 24 hours n (%) | > 24 hours but within 1 week n (%) | > 1 week but within 1 month n (%) | Did not attend n (%) |
| Total | 10 | 3 (30.0) | 4 (40.0) | 3 (30.0) | - |
| Systolic blood pressure ≥ 180 mmHg | 4 | 0 (0.0) | 2 (50.0) | 2 (50.0) | - |
| Diastolic blood pressure ≥ 110 mmHg | 7 | 3 (42.9) | 3 (42.9) | 1 (14.3) | - |
| Random blood glucose ≥ 15 mmol/L | 0 | - | - | - | - |

Table 6 shows the proportion of participants who had been referred to see their doctor in more than a 24 hour period but within one month of WHCs by different time periods of their actual visit. Only 18.0% of people reported seeing a doctor within the recommended period while a further 34.0% reported seeing a doctor after the one month recommended period, but within six months of their WHC. Almost half reported that they did not attend a

doctor at any time. The highest proportions visiting their doctor within the recommended period were for an elevated CVD risk score, high blood pressure and high total cholesterol, with the lowest proportion for a high random blood glucose, although the differences were not marked.

Table 6 Doctor visit' times for those referred to see their doctor within one month of a WHC

| | Referred within 1 month | Time period within which reported visiting a doctor | | | | | |
|--|-------------------------|---|------------------------------|-------------------------------|-----------------------------|----------|----------------|
| | | Within 1 month | >1 month but within 3 months | >3 months but within 6 months | >6 months but within 1 year | >1 year | Did not attend |
| Risk factor | n | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| Total | 899* | 162 (18.0) | 170 (18.9) | 82 (9.1) | 54 (6.0) | 25 (2.8) | 406 (45.2) |
| AUSDRISK ≥ 12 | 418 | 85 (20.3) | 89 (21.3) | 39 (9.3) | 29 (6.9) | 13 (3.1) | 163 (39.1) |
| CVD risk score > 15% | 29 | 7 (24.1) | 4 (13.8) | 3 (10.3) | 3 (10.3) | 1 (3.4) | 11 (38.1) |
| Blood pressure $\geq 140/90$ mmHg | 401 | 100 (25.0) | 80 (20.0) | 35 (8.7) | 24 (6.0) | 13 (3.2) | 149 (38.1) |
| Random blood glucose ≥ 6.5– 14.9 mmol/L | 389 | 73 (18.8) | 68 (17.5) | 32 (8.2) | 19 (4.9) | 11 (2.8) | 186 (47.8) |
| Total cholesterol > 7.0 mmol/L | 102 | 25 (24.5) | 24 (23.5) | 11 (10.8) | 4 (3.9) | 2 (2.0) | 36 (35.3) |

* excludes those who had been referred within 24 hours period since WHCs. Groups are not mutually exclusive.

246 people, not already referred to their doctor for the factors included in tables 5 and 6, were advised to see their doctor at their next visit within one year, as their blood pressure was found to be between 120-139 mm Hg systolic or 80-89 mmHg diastolic. Of these, 27.6% reported seeing a doctor within one year, 2.4% more than one year, while 70.0% did not report attending a doctor at all.

If participants did not visit their doctor despite having a factor at their WHC which should prompt referral they were asked the reason/s for this. Table 7 shows that the main reasons for not visiting their doctor in at least 50% of cases were that they were not advised to or they did not remember being asked to visit their doctor at their WHC or that they see their doctor when they need to, not because of the WHC.

Table 7 Participant's reasons for not visiting their doctor

| Reason for not visiting doctor | Did not visit a doctor n=678 n (%) [*] |
|---|---|
| Was not advised to visit doctor | 328 (48.4) |
| I see my doctor when I need to | 257 (37.9) |
| Don't remember being asked to visit doctor | 138 (20.3) |
| Did not think it was important | 49 (7.2) |
| Didn't have time, too busy | 27 (3.9) |
| Did not think WHC suggested risk of diabetes was serious | 22 (3.2) |
| Worried about costs of visit/tests | 14 (2.1) |
| Afraid of serious medical problem | 4 (0.6) |
| Did not think WHC suggested risk of heart disease was serious | 2 (0.3) |
| Too sick | 1 (0.1) |
| Other [†] | 59 (8.7) |

^{*} Percentages add up to more than 100% because participants could nominate more than one reason

[†] Other reasons included visiting as part of their regular normal visit to their GP, perceived themselves as healthy, no reason to visit.

4.3.1 Actions following doctor's attendance

For those who did consult their doctor, Table 8 describes follow up of their WHC results in terms of:

- blood tests, heart tests or other tests that participants were referred for after they discussed their WHC results with their doctor,
- referral to a medical specialist or non-medical health professional as a result of their WHC,
- a new diagnosis since their WCH, in that a doctor has told them that they have diabetes, angina, heart attack, stroke, hypertension, abnormal heart rhythm or high cholesterol since their WHC,
- or receipt of treatment for any of these conditions.

The first two columns of the table show that all follow up testing, referral and treatment outcomes since the WHC were more common in those with medium or high AUSDRISK or CVD risk scores than those without these risk scores, other than referral to a non-medical health professional.

The right hand columns show that follow up testing, referral and treatment outcomes since their WHC were more common in participants with high AUSDRISK scores than those with medium AUSDRISK scores, other than referral to a non-medical health professional. A greater proportion of participants with high CVD risk scores were also more likely to have pathology testing, to be referred to a medical specialist, or to receive a new diagnosis, and a similar proportion received treatment.

Table 8 Proportion of referred WHC participants at medium or high risk of type 2 diabetes or CVD who sought doctor's advice and received diagnostic testing, referral, treatment and diagnosis

| | Study population with medium or high AUSDRISK and/or CVD risk score at WHC | Study population without medium or high AUSDRISK and CVD risk score at WHC | CVD risk score estimated as | | AUSDRISK score estimated as | |
|--|--|--|-----------------------------|----------------------|-----------------------------|----------------------|
| | n=1128 | n=178 | High risk n=35 | Medium risk n=100 | High risk n=423 | Medium risk n=692 |
| | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| Total no of cases with pathology testing, n=445 | 393 (34.8) | 52 (29.2) | 15 (42.9) | 40 (40.0) | 180 (42.6) | 210 (30.4) |
| Blood tests, n=305 | 269 (23.9) | 36 (20.2) | 12 (34.3) | 33 (33.0) | 139 (32.8) | 129 (18.6) |
| Heart tests,* n=57 | 54 (4.8) | 3 (1.7) | 3 (8.5) | 8 (8.0) | 31 (7.3) | 22 (3.2) |
| Other tests,† n=83 | 78 (6.9) | 5 (2.8) | 2 (5.7) | 8 (8.0) | 35 (8.2) | 42 (6.0) |
| Referral to a medical specialist | 38 (3.4) | 5 (2.8) | 4 (11.4) | 3 (3.0) | 17 (4.0) | 18 (2.6) |
| Referral to a non-medical health professional | 53 (4.7) | 10 (5.6) | 3 (8.6) | 9 (9.0) | 31 (7.3) | 17 (2.4) |
| Received a new diagnosis since WHC‡ | 78 (6.9) | 8 (4.5) | 8 (22.9) | 8 (8.0) | 39 (9.2) | 37 (5.3) |
| Received treatment¶ | 148 (13.1) | 16 (9.0) | 9 (42.9) | 21 (42.0) | 78 (39.0) | 68 (28.6) |

* Heart tests include ECG (electrocardiogram), 24 hour heart monitor, heart exercise (stress) test, heart ultrasound.

† Other tests include PSA, LFT, thyroid function tests, vitamin D levels, iron level etc.

‡ A new diagnosis includes diabetes, angina, heart attack, stroke, hypertension, abnormal heart rhythm and high cholesterol.

¶ Received treatment includes starting medicines for diabetes, hypertension, angina, or high cholesterol, or having a bypass operation, balloon angioplasty or stent for heart disease. The denominator included those people who reported that they received treatment or not, and is less than the number in each corresponding risk category.

4.4 Changes in lifestyle risk factors from WHC to follow up

The following tables (9 to 11 and 15) compare the proportion of study participants who had inadequate lifestyle risk factors at their WHC and at follow up, broken down by several different possible predictors.

4.4.1 Inadequate fruit intake

Table 9 shows that the total proportion of the study population which had an inadequate fruit intake was about 15% lower at follow up than at the WHC. This reduction from the WHC to follow up was consistent across all subgroups, but was most marked in those born in countries other than Australia and those with a shorter duration of follow up.

Table 9 Reporting of inadequate fruit intake at their WHC and at follow up

| | Inadequate fruit intake* | |
|------------------------------|---------------------------|------------------------|
| | WHC baseline [†] | Follow up [†] |
| | n=1,289 n (%) | n=1,289 n (%) |
| Total | 508 (39.4) | 422 (32.7) |
| Age | | |
| <=24 | 9 (34.6) | 6 (23.1) |
| 25-34 | 65 (50.0) | 60 (46.2) |
| 35-44 | 115 (44.4) | 95 (36.7) |
| 45-54 | 181 (38.6) | 141 (30.1) |
| 55-64 | 121 (34.6) | 104 (29.8) |
| >=65 | 17 (30.3) | 16 (28.6) |
| Gender | | |
| Male | 283 (46.0) | 236 (38.4) |
| Female | 225 (33.4) | 186 (27.6) |
| Country of birth | | |
| Australia | 389 (40.1) | 334 (34.4) |
| Other | 119 (37.3) | 88 (27.6) |
| Occupation | | |
| White collar workers | 292 (40.8) | 247 (34.5) |
| Other white collar workers | 154 (35.9) | 125 (29.1) |
| Blue collar workers | 62 (44.0) | 50 (35.5) |
| Region | | |
| Metro | 377 (39.4) | 317 (33.1) |
| Rural | 131 (39.5) | 105 (31.6) |
| Duration of follow up period | | |
| 24-27 months | 223 (37.1) | 204 (33.9) |
| 11-12 months | 285 (41.4) | 218 (31.7) |

*Inadequate fruit intake was defined as <2 pieces/serves of fruit/day.

[†] Analysis was limited to participants for whom data on fruit intake was available at WHC and follow up.

4.4.2 Inadequate vegetable intake

Table 10 shows that a similar proportion of the study population had an inadequate vegetable intake at follow up compared with that at the WHC. Those in the metropolitan region, those who were born in countries other than Australia, and those who had had a longer period since their WHC had a slightly lower proportion of people with an inadequate vegetable intake at follow up, but these reductions were not as pronounced as for the reductions in inadequate fruit intake.

Table 10 Proportion of study participants who reported inadequate vegetable intake at their WHC and at follow up

| | Inadequate vegetable intake* | |
|------------------------------|--|---|
| | WHC baseline n=1299 [†] n (%) | Follow up n=1299 [†] n (%) |
| Total | 1105 (85.1) | 1,101 (84.8) |
| Age | | |
| <=24 | 22 (84.6) | 22 (84.6) |
| 25-34 | 117 (88.6) | 114 (86.4) |
| 35-44 | 228 (87.7) | 229 (88.1) |
| 45-54 | 402 (85.4) | 393 (83.4) |
| 55-64 | 290 (82.1) | 296 (83.8) |
| >=65 | 46 (80.7) | 47 (82.5) |
| Gender | | |
| Male | 579 (92.9) | 578 (92.8) |
| Female | 526 (77.8) | 523 (77.4) |
| Country of birth | | |
| Australia | 816 (83.4) | 828 (84.7) |
| Other | 289 (90.0) | 273 (85.0) |
| Occupation | | |
| White collar workers | 627 (86.7) | 605 (83.7) |
| Other white collar workers | 348 (80.9) | 361 (84.0) |
| Blue collar workers | 128 (89.5) | 132 (92.3) |
| Region | | |
| Metro | 863 (89.3) | 826 (85.5) |
| Rural | 242 (72.7) | 275 (82.6) |
| Duration of follow up period | | |
| 24-27 months | 540 (89.0) | 505 (83.2) |
| 11-12 months | 565 (81.6) | 596 (86.1) |

*Inadequate vegetable intake was defined as less than five serves of vegetables/day.

[†] Analysis was limited to participants for whom data on vegetable intake was available at WHC and follow up.

4.4.3 Physical inactivity

Table 11 shows that a similar proportion of the study population reported inadequate physical activity at follow up and at their WHC baseline overall. This pattern was consistent across almost all subgroups; however the groups in which the greatest change in the proportion of reported inadequate physical activity at follow up were those born in countries other than Australia.

Table 11 Reporting of inadequate physical activity level at their WHC and at follow up

| | Inadequate physical activity level | |
|------------------------------|--|---|
| | WHC baseline n=1139 [†] n (%) | Follow up n=1139 [†] n (%) |
| Total | 622 (54.6) | 626 (54.9) |
| Age | | |
| <=24 | 10 (41.7) | 5 (20.8) |
| 25-34 | 69 (60.0) | 72 (62.6) |
| 35-44 | 144 (62.3) | 131 (56.7) |
| 45-54 | 211 (51.2) | 216 (52.4) |
| 55-64 | 157 (51.3) | 170 (55.6) |
| >=65 | 31 (60.8) | 32 (62.7) |
| Gender | | |
| Male | 293 (54.0) | 293 (54.0) |
| Female | 329 (55.2) | 333 (55.9) |
| Country of birth | | |
| Australia | 466 (54.2) | 453 (52.7) |
| Other | 156 (55.7) | 173 (61.8) |
| Occupation | | |
| White collar workers | 337 (52.5) | 356 (55.4) |
| Other white collar workers | 221 (58.5) | 209 (55.3) |
| Blue collar workers | 63 (54.3) | 60 (51.7) |
| Region | | |
| Metro | 462 (54.5) | 467 (55.1) |
| Rural | 160 (54.8) | 159 (54.4) |
| Duration of follow up period | | |
| 24-27 months | 286 (53.9) | 281 (52.9) |
| 11-12 months | 336 (55.3) | 345 (56.7) |

* Inadequate physical activity level was defined as less than 150 minutes exercise per week.

[†] Analysis was limited to study participants for whom data on physical activity was available at WHC and follow up. Data was missing on inadequate physical activity level at WHC on 145 and at follow up on 167 participants.

[‡] Proportion of total participants reporting inadequate physical activity levels at WHC.

4.4.4 Risky alcohol intake

Table 12 shows that a greater proportion of the total study population reported risky alcohol intake at follow up than at the WHC. This increase was consistent across all subgroups, but was more marked in the older age groups.

Table 12 Reporting of risky alcohol intake at their WHC and at follow up

| | Risky alcohol intake* | |
|------------------------------|------------------------------|------------------------------|
| | WHC baseline | Follow up |
| | n=1020 [†] n (%) | n=1020 [†] n (%) |
| Total | 389 (38.1) | 476 (46.6) |
| Age | | |
| <=24 | 12 (60.0) | 13 (65.0) |
| 25-34 | 52 (53.6) | 59 (60.8) |
| 35-44 | 80 (38.8) | 109 (52.9) |
| 45-54 | 136 (36.4) | 166 (44.4) |
| 55-64 | 99 (35.2) | 111 (39.5) |
| >=65 | 10 (23.8) | 18 (42.9) |
| Gender | | |
| Male | 251 (47.9) | 300 (57.2) |
| Female | 138 (27.8) | 176 (35.5) |
| Country of birth | | |
| Australia | 306 (39.1) | 367 (46.9) |
| Other | 83 (34.9) | 109 (45.8) |
| Occupation | | |
| White collar workers | 218 (37.0) | 279 (47.4) |
| Other white collar workers | 108 (33.7) | 129 (40.3) |
| Blue collar workers | 63 (58.3) | 67 (62.0) |
| Region | | |
| Metro | 288 (38.2) | 356 (47.2) |
| Rural | 101 (37.9) | 120 (45.1) |
| Duration of follow up period | | |
| 24-27 months | 186 (38.5) | 228 (47.2) |
| 11-12 months | 203 (37.8) | 248 (46.2) |

* Risky alcohol intake was defined as > 2 drinks/day.

[†] Analysis was limited to study participants for whom data on risky alcohol intake was available at WHC and follow up.

Table 13 shows that 38.0% of study participants who drank alcohol and provided information on how many drinks they had per day when they were drinking, reported that they drank more than the recommended 2 standard drinks per day. Nearly one-third of study participants drank alcohol on one to three days a week and a quarter of participants drank alcohol more frequently. As this level of information was not collected at the WHC, no assessment of change since the WHC can be made.

Table 13 Current alcohol consumption at follow up of study participants

| Alcohol consumption at follow up | n=1306 n (%) |
|---|-------------------------|
| Number of drinks per typical day when are drinking,[‡] n=1149 | |
| ≤ 2 standard drinks per day | 637 (62.0) |
| > 2 standard drinks per day | 391 (38.0) |
| Frequency of having an alcoholic drink* | |
| 6-7 days a week | 136 (10.5) |
| 4-5 days a week | 190 (14.7) |
| 1-3 days a week | 411 (31.8) |
| 2-3 days a month | 191 (14.8) |
| Less often than 2-3 days a month | 207 (16.0) |
| Don't drink alcohol | 157 (12.1) |
| Five or more drinks on one occasion [†] , n=1149 | |
| Never | 508 (44.3) |
| Less than once a month | 347 (30.3) |
| Monthly | 131 (11.4) |
| Weekly | 135 (11.8) |
| Daily or almost daily | 25 (2.2) |

* Missing data for 14 participants.

[†] In excess of current NHMRC guidelines. Participants who reported not drinking alcohol at follow up are excluded. Data was missing for 3 participants.

[‡] Participants who don't drink alcohol at follow up are excluded. Data was missing for 121 participants.

Table 14 shows the actions in relation to alcohol consumption in participants who were defined as having risky and low risk drinking over a lifetime at their WHC. Those who reported at their WHC that they drank more than 2 drinks/day were more likely to report taking actions to reduce the amount or frequency of alcohol consumed, and less likely to report taking none of the specified options in relation to lowering alcohol consumption. Less than 1% in each group reported that they stopped drinking.

Table 14 Actions in relation to reducing alcohol consumption since the WHC

| Action in relation to reducing alcohol consumption* | n=1046 [†] | |
|---|----------------------------|----------------------------|
| | ≤2 drinks/day, N=637 | >2 drinks/day, N=391 |
| | n (%) | n (%) |
| Reduced amount of alcohol drunk at one time | 59 (9.2) | 78 (19.9) |
| Reduced the number of times of drinking | 97 (15.2) | 93 (23.8) |
| Switched to drinking more low-alcohol drinks | 22 (3.4) | 21 (5.4) |
| Stopped drinking alcohol | 5 (0.8) | 2 (0.5) |
| None of the above | 487 (76.4) | 252 (64.5) |

* Actions reported in those who reported the number of drinks they consumed at the WHC.

[†] Data was missing in 260 participants for the number of drinks.

Table 15 shows the reasons given for reducing alcohol consumption in those who reported taking action in relation to decreasing their alcohol consumption since their WHC. The most common reasons were health reasons (43.0%) followed by lifestyle reasons (13.4%) or social reasons (8.7%). Less common reasons were doctor's advice, WHC advice or WorkHealth Coach, although very small numbers had enrolled in the Coaching program during the time periods included in the study.

Table 15 Reasons for reducing alcohol consumption since their WHC

| Motivation | n=320* n (%) |
|--|-------------------------------|
| Health reasons (e.g. weight, diabetes, avoid hangover) | 137 (42.8) |
| Lifestyle reasons (e.g. work/study commitments, less opportunity, young family) | 43 (13.4) |
| Social reasons (e.g. believe in moderation, concerned about violence, avoid getting drunk) | 28 (8.7) |
| Taste/enjoyment (e.g. prefer low alcohol beer, don't get drunk) | 14 (4.4) |
| Drink driving regulations | 13 (4.1) |
| Adult/parent/partner pressure | 13 (4.1) |
| Doctor's advice | 12 (3.8) |
| Financial reasons | 11 (3.4) |
| WorkHealth check advice | 8 (2.5) |
| Pregnant and/or breastfeeding | 4 (1.3) |
| WorkHealth Coach | 2 (0.6) |
| Workplace health promotion program | 2 (0.6) |
| Peer pressure | 1 (0.3) |
| Other [†] | 32 (10.0) |

*Motivations reported in those who reported taking action in relation to decreasing their alcohol consumption since the WHC. Missing data for 6 participants.

† Other includes increasing fitness, part of exercise regime, not interested in drinking anymore.

4.4.5 Smoking

Table 16 shows that the proportion of the total study population that reported being a current smoker was about 25% lower at follow up than at the WHC, and this was consistent across all demographic and occupational groups. There appeared to be a greater reduction in smoking rates in the 'early' follow up period compared with the 'recent' follow up period and in blue collar workers compared with white collar workers.

Table 16 Reporting of current smoking status at their WHC and at follow up

| | Current smoker* | |
|------------------------------|--|---|
| | WHC baseline n=1303 [†] n (%) | Follow up n=1303 [†] n (%) |
| Total | 121 (9.3) | 90 (6.9) |
| Age | | |
| <=24 | 5 (19.2) | 4 (15.4) |
| 25-34 | 24 (18.2) | 19 (14.4) |
| 35-44 | 27 (10.3) | 20 (7.7) |
| 45-54 | 49 (10.3) | 34 (7.2) |
| 55-64 | 12 (3.4) | 10 (2.8) |
| >=65 | 4 (7.0) | 3 (5.3) |
| Gender | | |
| Male | 63 (10.1) | 46 (7.3) |
| Female | 58 (8.6) | 44 (6.5) |
| Country of birth | | |
| Australia | 88 (9.0) | 68 (6.9) |
| Other | 33 (10.3) | 22 (6.8) |
| Occupation | | |
| White collar workers | 51 (7.0) | 39 (5.4) |
| Other white collar workers | 42 (9.7) | 31 (7.2) |
| Blue collar workers | 28 (19.4) | 20 (13.9) |
| Region | | |
| Metro | 92 (9.5) | 65 (6.7) |
| Rural | 29 (8.7) | 25 (7.5) |
| Duration of follow up period | | |
| 24-27 months | 59 (9.7) | 37 (6.1) |
| 11-12 months | 62 (8.9) | 53 (7.6) |

* Current smoker at WHC was defined as a positive response to smoke tobacco/cigarettes and at follow up as positive response to currently smoke.

[†] Analysis was limited to study participants for whom data on smoking was available at WHC and follow up.

Table 17 shows the actions that people who reported they were smokers at the WHC took in relation to smoking cessation since their WHC. The most common actions were that they tried to give up smoking but unsuccessfully, they reduced the amount they smoked in a day, they had given up smoking successfully (for more than a month), or that they had not done any of the actions set out in the questionnaire.

Table 17 Actions in relation to smoking reduction or cessation since the WHC

| Action in relation to smoking reduction or cessation since the WHC | Smokers at WHC N=121 n (%) |
|--|----------------------------------|
| Tried to give up unsuccessfully | 35 (28.9) |
| Reduced the amount of tobacco you smoke in a day | 34 (28.1) |
| Given up smoking (for more than a month) | 26 (21.5) |
| Tried to reduce the amount of tobacco smoked in a day, but were unsuccessful | 16 (13.2) |
| Used a nicotine replacement therapy, e.g. nicotine gum, patches or Zyban | 14 (11.5) |
| Have given up before the WHC* | 12 (9.9) |
| Changed to a brand with lower tar or nicotine content | 11 (9.1) |
| Tried to change to a brand with lower tar or nicotine content, but were unsuccessful | 2 (1.6) |
| None of these | 21 (17.3) |

* These 12 people had nominated themselves as a smoker at WHC and are retained as smokers at WHC.

Table 18 shows the most common motivations for current smokers at follow up in trying to give up, cut down or change brand were that they were worried it was affecting the health of those around them, their family/friend/s asked them to quit, cost, wanting to get fit, doctor's advice, and WHC advice. Other motivations relate to the public health campaigns that have been implemented. A small number of current smokers at follow up directly reported WorkHealth Coach or workplace related programs as the motivator.

Table 18 Motivations for trying to give up, cut down or change to a lower tar or nicotine brand

| Motivation | Current smokers at follow up n=88 n (%) |
|-------------------------------------|---|
| Affecting health of those around me | 43 (48.8) |
| Family/friend/s asked me to quit | 33 (37.5) |
| Cost too much | 33 (37.5) |
| Wanted to get fit | 27 (30.7) |
| Doctor advice | 18 (20.5) |
| WHC advice | 15 (17.0) |
| Government advertisements | 11 (12.5) |
| Health warning | 10 (11.4) |
| Restriction in public areas | 10 (11.3) |
| Restriction in workplace | 6 (6.8) |
| WorkHealth Coach program | 4 (4.6) |
| QUIT line | 4 (4.5) |
| Workplace health promotion program | 3 (3.4) |
| Pregnant | 3 (3.4) |
| Tobacco information line | 1 (1.1) |

* Percentages add up to more than 100% because participants could nominate more than one action.

4.5 High waist circumference

Table 19 shows that the proportion of the study population that had a high waist circumference was greater by about 10% at follow up than at the WHC and this degree of increase was consistent across all demographic and occupational groups and both follow up periods. The increase was most marked in the 65 years or older age group, but the number was small.

Table 19 Proportion with a high waist circumference at their WHC and at follow up

| High risk waist circumference* | | |
|--------------------------------|--|---|
| | WHC Baseline n=1271 [†] n (%) | Follow up n=1271 [†] n (%) |
| Total | 451 (35.5) | 496 (39.0) |
| Age | | |
| <=24 | 3 (13.0) | 5 (21.7) |
| 25-34 | 36 (27.7) | 42 (32.3) |
| 35-44 | 92 (36.4) | 102 (40.3) |
| 45-54 | 166 (35.7) | 178 (38.3) |
| 55-64 | 135 (39.0) | 144 (41.6) |
| >=65 | 19 (35.2) | 25 (46.3) |
| Gender | | |
| Male | 190 (31.0) | 207 (33.8) |
| Female | 261 (39.7) | 289 (43.9) |
| Country of birth | | |
| Australia | 363 (38.1) | 394 (41.3) |
| Other | 88 (27.7) | 102 (32.1) |
| Occupation | | |
| White collar workers | 244 (34.4) | 272 (38.3) |
| Other white collar workers | 169 (40.4) | 180 (43.1) |
| Blue collar workers | 38 (26.9) | 43 (30.5) |
| Region | | |
| Metro | 316 (33.4) | 351 (37.1) |
| Rural | 135 (41.4) | 145 (44.5) |
| Duration of follow up period | | |
| 24-27 months | 214 (36.3) | 233 (39.6) |
| 11-12 months | 237 (34.7) | 263 (38.5) |

* Waist circumference was measured by service provider at WHC and self-measured according to a protocol at follow up. High risk waist circumference was defined as male > 102 cm and female > 88 cm.

[†] Analysis was limited to participants for whom waist circumference measurements were available at WHC and follow up.

4.6 Self-assessment of health

Table 20 shows the proportion who reported their health as *excellent*, *very good*, *good*, *fair/poor* at the WHC and at follow up. The most noticeable shift was towards a higher self-assessment of health, with small increases in the *excellent* and *very good* categories and small decreases in the *good* and *fair/poor* categories. At an individual a similar pattern of improvement was noted. For example, among participants who reported *good* health at WHC, about 40% of them reported *excellent* or *very good* health at follow up, while less than 10% reported *fair* or *poor* health at follow up.

Table 20 Self-assessment of health at the WHC and at follow up (N=1,302)

| Self-assessment of health | At WHC | At follow up |
|---------------------------|------------|--------------|
| | n (%) | n (%) |
| Excellent | 156 (12.0) | 183 (14.1) |
| Very Good | 576 (44.2) | 610 (46.9) |
| Good | 477(36.6) | 426 (32.7) |
| Fair/ poor | 93 (7.1) | 83 (6.4) |

4.7 Reported actions by participants in relation to their WHC

Table 21 shows the proportion of participants who reported being advised at their WHC to take lifestyle related actions and who reported taking actions and the proportion of these with improved risk factor levels at follow up.

Table 21 shows that around one-third of the participants who reported being given advice in relation to fruit and/or vegetable intake improved their fruit intake and vegetable intake. Nearly 50% of those given advice reported that they took action in relation to starting to exercise regularly, and 43.3% of these people improved their physical activity levels. More than one quarter (27.8%) of the participants who reported being given advice in relation to alcohol intake reduced their alcohol intake. Over 70% of participants who reported being given advice and taking corresponding action in relation to smoking reported they reduced or stopped smoking. The proportion who reduced or stopped smoking was similar whether

their action related to a self-initiative or organised program (which could have been used in combination).

For those who had been given advice to lose weight at their WHC, 44.8% of those who had taken their own action and 27.5% of participants using a weight loss program had reduced self-measured waist circumference at follow up. Overall, the greatest improvement was seen for smoking and physical activity compared with the other risk factors.

Whilst about 60% of people who reported being given advice to visit their doctor at the WHC, reported visiting their doctor, a much smaller number (n=22) also reported visiting a health professional other than a doctor to discuss their WHC results.

Table 21 also shows that 61 (8.7%) of the 697 study participants reported being given advice about participating in / being contacted by the WorkHealth Coach program since its introduction on 1 March 2011 and only about one-third of these people reported consenting to be contacted by or participating in sessions with a WorkHealth Coach.

Table 21 Reporting of advice at WHC, taking of corresponding actions and improved risk factor levels at follow up

| Advice at WorkHealth check | % of participants reported given advice n=1306 n (%)* | Actions taken | % participants who reported actions who were given advice n (%)* | % participants with improved risk factor levels who reported having taken corresponding action n (%)* |
|--|---|--|---|--|
| Lifestyle factors | | | | |
| Increase fruit and/or vegetable intake | 461 (35.3) | No corresponding action in questionnaire | - | 167 (36.5) (fruit) [∞] |
| | | No corresponding action in questionnaire | - | 170 (36.9) (vegetables) [∞] |
| Increase physical activity levels | 529 (40.5) | Started to exercise regularly | 203 (47.3) [∞] | 88 (43.3) |
| Reduce alcohol intake | 168 (12.9) | No corresponding action in questionnaire | - | 44 (27.8) [∞] |
| Stop/reduce smoking | 98 (7.5) | Tried to stop smoking by self | 52 (53.0) | 37 (71.1) |
| | | Used a stop smoking program | 16 (16.3) | 12 (75.0) |
| Lose weight | 460 (35.2) | Tried to lose weight by self | 347 (75.4) | 151 (44.8) |
| | | Participated in a weight loss program | 42 (9.1) | 11 (27.5) |
| Seek medical/health advice | | | | |
| Visit your doctor for testing/advice [†] | 491 (37.6) | Visited doctor to discuss WHC results | 294 (59.9) | - |
| Lifestyle programs | | | | |
| Contacted by/participate in WH Coach [‡] , n=697 | 61 (8.7) | Consented to be contacted by/participated in WH Coach sessions | 21 (34.4) | - |
| Participate in a type 2 diabetes prevention program [¶] | 65 (5.0) | Participated type 2 diabetes prevention program | 35 (53.9) | - |

* Denominator for proportion of participants who reported actions having being reported being given advice at their WHC, and proportion with improved risk factor levels who took corresponding action change across each line in the table,

[†] Reported being advised to visit their doctor in any period 24 hours to 1 year

[‡] Eligible if had WHC after WorkHealth (WH) Coach program introduced on 1 March 2011.

[¶] Type 2 diabetes prevention programs have changed over the WHC program but included 'Reset your Life' and Life! Taking action on Diabetes telephone health Coaching program and group based program.

^{||} Proportion with reduced waist circumference.

[∞]Data was missing on 3 participants for fruit, 1 participant for vegetable intake, 100 participants for physical activity and 10 for alcohol intake at follow up.

Table 22 shows that participants with a high AUSDRISK score or a high CVD risk score were, for the majority of actions, more likely to report taking various actions in relation to risk factors than participants with a medium AUSDRISK score or a medium CVD risk score respectively, and less likely to report taking no action at all. The number of participants with a high CVD risk score is small, and some participants with a medium or high CVD risk score did not take part in programs or the numbers are small so for these programs the results need to be treated with caution.

In both high and medium AUSDRISK and CVD risk groups, a greater proportion tried to stop smoking or to lose weight as a self-initiative than to use a stop smoking program such as QUIT or to participate in a weight loss program, such as Weight Watchers.

In relation to lifestyle programs, 8.3% of WHC participants assessed to be at medium or high risk of type 2 diabetes and therefore eligible to be referred to a lifestyle diabetes education program, reported participating in these programs.

Table 22 Action/s taken as a result of their WHC by participants with high or medium AUSDRISK or CVD risk scores

| | Visited doctor | Participated Work Health Coach program [†] | Participated diabetes education program | Smoking cessation | | Started regular exercise | Waist circumference | | Other lifestyle changes [∞] | No action |
|-------------------------------------|--------------------|---|---|--------------------|--------------------|--------------------------|---------------------|--------------------|--------------------------------------|--------------------|
| | | | | By self | Used a program | | By self | Used a program | | |
| Risk score | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] | n (%) [*] |
| AUSDRISK score high, n=423 | 157 (37.1) | 26/220 (11.8) | 32 (7.5) | 23 (5.4) | 2 (0.4) | 151 (35.7) | 228 (53.9) | 19 (4.5) | 46 (10.9) | 66 (15.6) |
| AUSDRISK score medium, n=692 | 154 (22.2) | 40/371 (10.8) | 6 (0.8) | 28 (4.0) | 12 (1.7) | 178 (25.7) | 218 (31.5) | 28 (4.1) | 111 (16.0) | 206 (29.8) |
| CVD risk score high, n=35 | 17 (48.6) | 0/19 (0) | 0 (0) | 4 (11.4) | 1 (2.9) | 6 (17.1) | 17 (48.6) | 0 (0) | 6 (17.1) | 4 (11.4) |
| CVD risk score medium, n=100 | 42 (42.0) | 7/45 (15.5) | 7 (7.0) | 5 (5.0) | 0 (0) | 27 (27.0) | 34 (34.0) | 1 (1.0) | 5 (5.0) | 23 (23.0) |

^{*} Percentages add up to more than 100% because participants could nominate more than one action.

[†] Eligible for inclusion if they had their WHC after WorkHealth Coach program introduced on 1 March 2011.

[∞] Other lifestyle changes include mostly dietary changes and reduced/stopped alcohol intake.

Table 23 shows the proportion of participants with lifestyle risk factors at follow up and at their WHC by AUSDRISK and CVD risk scores. Overall there was decrease in proportions of participants with inadequate fruit intake and smoking at follow up than at WHC for all the medium-high AUSDRISK and CVD risk groups. The proportions of participants with inadequate vegetable intake and physical inactivity were similar both at follow up and at WHC for all AUSDRISK and CVD risk groups. For risky alcohol intake, the proportion of participants with medium-high AUSRISK and CVD risk scores was higher at follow up than at WHC. The pattern of change was inconsistent for high risk waist circumference in the medium-high AUSDRISK and CVD risk groups.

.

Table 23 Proportion of participants with lifestyle risk factors at follow up and at WHC by AUSDRISK and CVD risk scores

| Outcome changes Risk scores | Inadequate fruit intake* | | Inadequate vegetable intake* | | Inadequate physical activity* | | Risky alcohol intake* | | Smoking* | | High risk waist circumference* | |
|-------------------------------------|--------------------------|------------|------------------------------|------------|-------------------------------|------------|-----------------------|------------|-----------|-----------|--------------------------------|------------|
| | WHC | Follow up | WHC | Follow up | WHC | Follow up | WHC | Follow up | WHC | Follow up | WHC | Follow up |
| | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| AUSDRISK score high, n=423 | 182 (43.7) | 146 (35.0) | 371 (88.3) | 380 (90.5) | 233 (70.6) | 230 (69.7) | 125 (38.3) | 154 (47.2) | 47 (11.1) | 36 (8.5) | 286 (69.2) | 284 (68.8) |
| AUSDRISK score medium, n=692 | 264 (38.6) | 224 (32.7) | 567 (82.4) | 565 (82.1) | 327 (51.8) | 328 (52.0) | 196 (36.0) | 249 (45.7) | 63 (9.1) | 41 (5.9) | 145 (21.3) | 175 (25.7) |
| CVD risk score high, n=35 | 10 (28.6) | 8 (22.9) | 31 (88.6) | 32 (91.4) | 16 (55.2) | 15 (51.7) | 14 (43.7) | 21 (65.6) | 9 (25.7) | 6 (17.1) | 15 (46.9) | 20 (62.5) |
| CVD risk score medium, n=100 | 51 (51.5) | 37 (37.4) | 83 (83.8) | 85 (85.9) | 43 (54.4) | 42 (53.20) | 30 (38.0) | 35 (44.3) | 5 (5.0) | 2 (2.0) | 43 (43.4) | 44 (44.4) |

* Analysis was limited to participants for whom data on inadequate or risky lifestyle factor levels at WHC and follow up was available. Data was missing on fruit intake for 1 CVD risk medium, 8 AUSDRISK medium and 6 AUSDRISK high participants; on vegetable intake for 1 CVD risk medium, 4 AUSDRISK medium and 3 AUSDRISK high participants; for physical activity on 11 CVD risk medium, 6 CVD risk high, 61 AUSDRISK medium and 93 AUSDRISK high participants; on alcohol intake for 11 CVD risk medium, 3 CVD risk high, 147 AUSDRISK medium and 87 AUSDRISK high participants; on smoking for 2 AUSDRISK medium and 1 AUSDRISK high participants; on waist circumference for 1 CVD risk medium, 3 CVD risk high, 11 for AUSDRISK medium and 10 AUSDRISK high participants.

Table 24 shows the levels of each of the lifestyle risk factors at follow up and at WHC for the AUSDRISK high and medium risk groups and the CVD high and medium risk groups. This shows similar levels of daily fruit intake and daily vegetable intake at the WHC and at follow up. Levels of physical activity were reduced in the high AUSDRISK and high CVD risk groups, while they were increased in the medium CVD risk score group and were similar in the medium AUSDRISK group. For alcohol consumption there was a slight increase in the number of drinks per day for all groups, while average waist circumference was similar at follow up in all risk groups.

Table 24 Mean lifestyle risk factor levels at follow up and at their WHC in participants with AUSDRISK and CVD risk scores

| Outcome changes | Daily fruit intake, pieces* | | Daily vegetable intake, pieces/serves* | | Physical activity, minutes/week* | | Alcohol intake, drinks/day* | | Waist circumference,* cms | |
|-------------------------------------|-----------------------------|-----------|--|-----------|----------------------------------|---------------|-----------------------------|-----------|---------------------------|--------------|
| | WHC | Follow up | WHC | Follow up | WHC | Follow up | WHC | Follow up | WHC | Follow up |
| Risk scores | mean (SD) | mean (SD) | mean (SD) | mean (SD) | mean (SD) | mean (SD) | mean (SD) | mean (SD) | mean (SD) | mean (SD) |
| AUSDRISK score high, n=423 | 1.8 (1.0) | 2.1 (1.2) | 2.7 (1.4) | 2.8 (1.3) | 153.8 (179.5) | 134.5 (107.3) | 2.6 (1.7) | 2.8 (2.2) | 103.0 (11.7) | 102.9 (12.0) |
| AUSDRISK score medium, n=692 | 1.9 (1.1) | 2.1 (1.1) | 3.1 (1.4) | 3.2 (1.4) | 185.5 (141.2) | 186.5 (139.2) | 2.4 (1.8) | 2.8 (2.1) | 87.8 (10.1) | 89.5 (10.8) |
| CVD risk score high, n=35 | 2.3 (1.4) | 2.4 (1.5) | 2.7 (1.4) | 2.7 (1.3) | 204.0 (172.1) | 209.2 (157.8) | 2.8 (1.7) | 3.1 (1.7) | 101.8 (10.1) | 103.3 (10.6) |
| CVD risk score medium, n=100 | 1.7 (1.0) | 2.1 (1.2) | 2.9 (1.6) | 2.9 (1.4) | 219.1 (82.0) | 159.0 (111.6) | 2.5 (1.2) | 2.8 (1.9) | 98.1 (12.7) | 98.3 (12.2) |

* Mean level of lifestyle risk factor levels at WHC and follow up is limited to study participants for whom data on the risk factor was available both at WHC and follow up.

4.8 General health and well-being and impact on work

Table 25 shows the relationship between physical and mental health and well-being and work ability by AUSDRISK and CVD risk score. The physical component score was a little better in those without high medium of high risk AUSDRISK and CVD scores than those with these scores. In addition, those at high risk on each score tended to have a lower physical score than those at medium risk. In contrast, the mental health component score and the role limitation score showed little variation among the different AUSDRISK and CVD risk groups. The vitality score was considerably poorer for the high CVD risk score group than all the other score subgroups, which showed no variation. All SF-12 sub-scores were above the average for the US general population of 50.0, except for the vitality score in the high CVD group (47.7), indicating better health and wellbeing than expected in the general community. The work ability index was poorer in those with a medium or high AUSDRISK or CVD risk score compared with the rest of the study group and the scores were poorer in the high risk groups compared with those at medium risk.

Table 25 Current self-reported physical and mental health and wellbeing, physical role limitations, vitality, and work ability by AUSDRISK and CVD risk scores at WHC

| Health status | Medium or high AUSDRISK and/or CVD risk score at WHC [†] n=1056 | Without medium or high AUSDRISK and CVD risk score at WHC [‡] n=168 | CVD risk score estimated as | | AUSDRISK score estimated as | |
|--|---|---|---------------------------------|------------------------------------|---------------------------------|-------------------------------------|
| | | | High risk n=29 | Medium risk [¶] , n=92 | High risk [€] n=386 | Medium risk [§] , n=657 |
| Physical and mental health and wellbeing | Median (IQR)* | Median (IQR)* | Median (IQR)* | Median (IQR) | Median (IQR)* | Median (IQR) |
| SF-12v2 Physical Component Summary | 54.8 (7.2) | 56.1 (4.4) | 52.4 (10.8) | 54.4 (7.2) | 53.7 (8.2) | 55.8 (6.2) |
| SF-12v2 Mental Component Summary | 53.0 (11.1) | 52.5 (12.0) | 53.5 (11.6) | 54.6 (9.8) | 53.6 (10.8) | 52.6 (11.3) |
| SF-12v2 Role Limitation | 57.2 (4.6) | 57.2 (0) | 57.2 (9.2) | 57.2 (4.6) | 57.2 (4.6) | 57.2 (4.6) |
| Physical score | 57.8 (10.1) | 57.8 (10.1) | 47.7 (10.1) | 57.8 (10.1) | 57.8 (10.1) | 57.8 (10.1) |
| SF-12v2 Vitality score | 57.8 (10.1) | 57.8 (10.1) | 47.7 (10.1) | 57.8 (10.1) | 57.8 (10.1) | 57.8 (10.1) |
| Work ability | n=1056 | n=168 | n=29 | n=92 | n=386 | n=657 |
| | n (%) | n (%) | n (%) | n (%) | n (%) | n (%) |
| Work ability index (score: ≥ 9) | 865 (81.9) | 150 (89.3) | 23 (79.3) | 76 (82.6) | 313 (81.1) | 541 (82.3) |

* Norm based method was used to calculate the median and interquartile range (IQR) of SF12v2 score, standardised against US general population. Missing data [†] PCS=40, MCS=40, RLP=17, VT=6; [‡] PCS=3, MCS=3, RLP=1; [¶] PCS=19, MCS=19, RLP=11, VT= 3; ^{||} PCS=21, MCS=21, RLP=6, VT=3; [§] PCS=6, MCS=6, RLP=2; [€] PCS=1, MCS=1, RLP=1.

* Work ability is based on the single item of the Work Ability Index concerned with current work ability compared with one's work ability at its best,¹⁸ with a possible score of '0' completely unable to work to '10' one's work ability at its best.

Table 26 shows that the median *Role Limitation Physical, Vitality, and composite MCS and PCS* scores are similar across all health condition groups, but the MCS is the one which scores worst across all subgroups.

Based on the distribution of the work ability scores in the study population, we used a cut-off score of ≥ 9 to categorise participants as having high work ability. Table 26 shows that more than 80% of people who reported that they have diabetes, a heart condition, stroke or high blood pressure, or the total study population were categorised as having high work ability. This index was a little higher than for the scores for those with health problems other than diabetes, heart condition, stroke or high blood pressure.

Table 26 Self-reported physical and mental health and wellbeing, physical role limitations, vitality, and work ability by reported medical conditions

| | Diabetes n=100 | Heart condition, stroke, or high blood pressure n=221 | Health problems other than diabetes, heart condition, stroke, or high blood pressure n=496 | Total study population n=1298 |
|---|----------------------|--|---|-------------------------------------|
| General physical and mental health and wellbeing | Median (IQR)* | Median (IQR) | Median (IQR) | Median (IQR) |
| SF-12v2 Physical Component Summary | 54.9 (10.4) | 54.8 (7.6) | 54.8 (9.7) | 54.9 (7.1) |
| SF-12v2 Mental Component Summary | 51.9 (15.4) | 51.9 (13.2) | 51.7 (14.7) | 52.8 (11.3) |
| SF-12v2 Role Limitation Physical score | 57.1 (4.6) | 57.1 (4.6) | 57.1 (9.2) | 57.1 (4.6) |
| SF-12v2 Vitality score | 57.8 (10.0) | 57.8 (10.0) | 57.8 (10.0) | 57.8 (10.0) |
| Work ability | n=100 | n=331 | n=496 | n=1306 |
| | n (%) | n (%) | n (%) | n (%) |
| Work ability index (score: ≥ 9) | 81 (81.0) | 269 (81.3) | 383 (77.2) | 1070 (81.9) |

* Norm based method was used to calculate the median and interquartile range (IQR) of the Short Form 12 Health Survey v2 (SF12v2) score, and the scores are standardised against the US general population.

* Current work ability is based on the single item of the Work Ability Index concerned with current work ability compared with one's work ability at its best, with a possible score of '0' completely unable to work to '10' one's work ability at its best.¹⁸

Table 27 shows the proportion of participants with health conditions who reported any difficulties with employment, specific examples of which were listed in the questionnaire. Very few participants, 5% or fewer, reported that they had difficulties with employment because of their diabetes, heart condition, stroke, or high blood pressure. This compared favourably with the 15.0% of participants with health problems other than diabetes, heart condition, stroke, or high blood pressure since their WHC who reported that they had any of the listed difficulties with employment. This difference was considerably more marked in relation to absenteeism, whereby only about 5% of those with diabetes or CVD related conditions reported that they had stayed away from work in the past six months compared with 37.0% for those with other health problems. The numbers of workers' compensation claims lodged in people with health conditions were small and need to be treated with caution, but the proportions are similar for those with diabetes, CVD related conditions or other health conditions.

Table 27 Impact on work because of reported health condition and reported lodgement of worker's compensation claim in past 2 years in participants with the health condition

| Impact on work because of the reported health condition | Diabetes n=100 | Heart condition, stroke, or high blood pressure n=331 | Health problems other than diabetes, heart condition, stroke, or high blood pressure since WHC n=496 |
|---|-------------------|--|---|
| | n (%)* | n (%)* | n (%)* |
| Restricted in type of job you could do | 1 (1.0) | 4 (1.2) | 24 (4.8) |
| Restricted in number of hours you can work | 1 (1.0) | 3 (0.9) | 17 (3.4) |
| Difficulty finding suitable work | 3 (3.0) | 3(0.9) | 4(0.8) |
| Needing time off work | 2 (2.0) | 5(1.5) | 60(12.1) |
| Permanently unable to work | 0 (0) | 1(0.3) | 1(0.2) |
| None of the above | 95 (95.0) | 322 (97.3) | 420 (84.6) |
| Off work for more than half a day in past 6 months [†] | 5/118 (4.2) | 18/333 (5.4) | 181 (36.9) |
| Lodgement of worker's compensation claim in past 2 years in participants with the health condition | n=99 | n=330 | n=495 |
| | n (%) | n (%) | n (%) |
| | 4 (4.0) | 10 (3.0) | 16 (3.2) |

*Percentages may total more than 100% because participants could mark more than one option. Impact relates to reported difficulties or absence because of the specific health condition/s or other health problems.

[†] Based on a separate question to the difficulties with employment above and the denominator changed slightly.

Nearly 80% (984/1279) of participants reported having a Health and Safety Representative at their workplace, compared to 9.5% (122) who did not and 13.5% who didn't know. A workplace Health and Safety Committee was reported by 52.2% (668/1278), compared to 24.5% (314) who did not report a committee and 23.1% (296) who were unsure. 35.2% (439/1248) participants reported that there have been new health promotion programs/activities since their WHC, while 46.3% (578) claimed that there have not been any such activities and 18.5% (231) did not know.

Table 28 shows that almost 90% of participants strongly agreed or agreed that WHCs had made workers more aware of their health and 84% or more strongly agreed or agreed with this statement regardless of whether their workplace had a workplace OHS Committee.

The majority of participants strongly agreed or agreed that their workplace supports health promotion (77.5%), that their workplace supports injured workers (72.0%), and that their workplace supports Occupational Health and Safety (85.8%).

Participants were more likely to have strongly agreed that WHCs have made workers more aware of their health (31.1% vs 20.0%), that their workplace supported health promotion at the workplace (29.8% vs 18.1%), and that their workplace supports OHS (45.5% vs 23.5%), and to have agreed or strongly agreed that their workplace supported injured workers (23.7% vs 17.8%) if their workplace had an OHS Committee compared with those that reported it did not.

Table 28 Participants' views on WHCs and awareness of health and workplace support

| Statement on health awareness and workplace support | | Participant response to | | | | |
|--|------------|----------------------------|-------------------|-------------------------------------|----------------|-------------------------|
| | | Strongly disagree n (%) | Disagree n (%) | Neither agree nor disagree n (%) | Agree n (%) | Strongly agree n (%) |
| WHCs have made workers more aware of their health | | | | | | |
| | Total | 8 (0.6) | 14 (1.1) | 121 (9.3) | 794 (61.1) | 362 (27.9) |
| Workplace OHS Committee | Yes | 1 (0.1) | 8 (1.2) | 54 (8.1) | 397 (59.4) | 208 (31.1) |
| | No | 6 (1.9) | 5 (1.6) | 38 (12.1) | 195 (62.1) | 69 (22.0) |
| | Don't know | 1 (0.3) | 1 (0.3) | 24 (8.1) | 192 (64.8) | 78 (26.3) |
| My workplace supports health promotion at the workplace | | | | | | |
| | Total | 16 (1.2) | 74 (5.7) | 200 (15.5) | 677 (52.6) | 320 (24.9) |
| Workplace OHS Committee | Yes | 4 (0.6) | 38 (5.7) | 77 (11.5) | 350 (52.4) | 199 (29.8) |
| | No | 10 (3.2) | 17 (5.4) | 61 (19.4) | 169 (53.8) | 57 (18.1) |
| | Don't know | 2 (0.7) | 19 (6.4) | 59 (19.9) | 154 (52.0) | 62 (20.9) |
| My workplace supports injured workers | | | | | | |
| | Total | 16 (1.2) | 41 (3.2) | 303 (23.5) | 658 (51.1) | 269 (20.9) |
| Workplace OHS Committee | Yes | 7 (1.0) | 20 (3.0) | 121 (18.1) | 362 (54.2) | 158 (23.7) |
| | No | 7 (2.2) | 11 (3.5) | 86 (27.4) | 154 (49.0) | 56 (17.8) |
| | Don't know | 2 (0.7) | 10 (3.4) | 93 (31.4) | 137 (46.3) | 54 (18.2) |
| My workplace supports Occupational Health and Safety | | | | | | |
| | Total | 14 (1.1) | 41 (3.2) | 127 (9.9) | 644 (50.0) | 461 (35.8) |
| Workplace OHS Committee | Yes | 1 (0.1) | 11 (1.6) | 38 (5.7) | 314 (47.0) | 304 (45.5) |
| | No | 11 (3.5) | 20 (6.3) | 40 (12.7) | 169 (53.8) | 74 (23.5) |
| | Don't know | 2 (0.7) | 10 (3.4) | 46 (15.5) | 157 (53.0) | 81 (27.3) |

Table 29 shows that there was a variety of programs and activities that had occurred at workplaces since the WHCs, with many of these reported by 20% or more of those who responded to the question. The most common were medical checks (65.1%), promotion of exercise at work (49.4%), health lifestyle posters and information and other forms of general health and wellbeing programs and health promotion (38.7%), greater emphasis on safety (35.5%), fruit baskets (34.4%) and healthy food availability (29.8%), banning of smoking at extended areas (21.4%), a specific QUIT smoking program offered (12.7%), and gym memberships (14.8%).

Table 29 Proportion of participants reporting new health promotion programs/activities at their workplaces since the WHC

| Workplace health promotion program/activity | Total n=439 n (%)* |
|--|--------------------------|
| Medical checks, e.g. flu vaccinations, skin checks | 286 (65.1) |
| Exercise at work promoted, e.g. challenges/group walks/sports/fun runs | 217 (49.4) |
| Information/posters on healthy lifestyle behaviours | 170 (38.7) |
| Greater emphasis on safety | 156 (35.5) |
| Fruit baskets | 151 (34.4) |
| Increased availability of healthy food | 131 (29.8) |
| Wellbeing activities, e.g. massage, yoga, pilates | 111 (25.3) |
| Participation in health programs promoted | 102 (23.2) |
| Banned smoking at extended areas in/around workplace | 94 (21.4) |
| Workplace seminars by a health professional | 90 (20.5) |
| Health and wellbeing program introduced/revised | 88 (20.0) |
| Gym memberships | 65 (14.8) |
| QUIT program offered | 56 (12.7) |
| Changed physical layout of the workplace | 38 (8.6) |
| Other | 26 (5.9) |
| Work mates/colleagues more likely to stop/reduce smoking | 22 (5.0) |

*The percentage in each column may total greater than 100% because participants were able to report more than one program/activity

Other programs / activities included weight loss challenge, lunch clubs, hygiene programs, gym staff.

5 Discussion

This follow up study of 1,306 WHC participants at two time periods from their WHC has identified some important findings in relation to the impact of WorkHealth at an individual level, which complements the findings of the other three projects in the WorkHealth research and evaluation program.

An important feature of the WHC program is referral to a doctor for follow up assessment and advice in relation to lifestyle risk factors, but this study found that less than 20% of WHC participants visited their doctor within the recommended time frame and almost 50% didn't visit their doctor at all. Therefore, a substantial proportion of WHC participants who were meant to be referred for follow-up based on clinical criteria did not follow through with advice to visit their doctor. This incomplete follow through after the WHC may have reduced further opportunity for preventive advice or further medical assessment and management of workers who were confirmed to have type 2 diabetes or CVD, and impacted on the WorkHealth program aim of reducing workplace impacts of type 2 diabetes and CVD.

The main reasons were that they were not advised to, or they did not remember being asked to visit their doctor at their WHC, or that they see their doctor when they need to, not because of the WHC. These findings indicate that in many cases the messages from the Service Providers to consult their doctor within a specific timeframe are not being effectively received by a substantial proportion of the WHC participants. This has important implications for the way to best communicate messages at the time of the WHC.

The follow up study found that the only two lifestyle risk factors which had substantially improved were daily fruit consumption and cigarette smoking, while daily vegetable intake and physical activity had not changed and risky alcohol intake and waist circumference had worsened. The differences varied by subgroups of participants. For example, in relation to fruit intake, there was greater improvement in the 35-44 (18.0%) and 45-54 (22.0%) year old age groups than in the 25-34 (7.6%) year old age group, and in participants born in countries other than Australia (26.0%) than in those Australian born (14.2%). The improvement in fruit intake in the 11-12 month group was 23.4% and although the improvement (8.6%) was less in the 24-27 month group it was at a

reasonable level. Although these are different groups of people this finding suggests that there is likely to be some maintenance of improvement in fruit intake over time. In regards to smoking, we observed a similar pattern in relation to age and country of birth with a greater improvement in the 35-44 (25.2%) and 45-54 (30.1%) year old age groups than in the 25-34 (20.8%) year olds, and in participants born in countries other than Australia (34.0%) than in those Australian born (23.3%). In contrast to fruit intake, the improvement in smoking cessation in the 11-12 month group (1.3%) was lower than that in the 24-27 month group (3.6%) suggesting that the time period required for people to implement smoking cessation is greater. The increase in risky alcohol intake was similar (about 22.0%) in 11-12 month and 24-27 month groups as was the increase in waist circumference for the 11-12 month (11.0%) and 24-27 month (9.1%) groups. Inadequate vegetable intake and inadequate physical activity were increased at 11-12 months and decreased in the earlier group and no further conclusions can be drawn for these risk factors.

The improvement in fruit intake compared with no improvement in vegetable intake, may reflect an impact from the strong emphasis on 'fruit boxes' within the WorkHealth program and the fact that fruit consumption, rather than vegetable consumption, occurs at workplaces. These findings indicate WorkHealth impacts at both individual and workplace levels, achieving impacts as described in the Program Logic.⁶

In contrast to the mixed result for changes in lifestyle factors across the whole study population, we found substantial and consistent improvement across all lifestyle risk factors at follow up for those who reported being given advice at their WHC and taking corresponding actions relevant to that advice.

These findings have important implications for the future direction of WorkHealth, as they clearly show that just identifying excess risks is likely to lead to smaller and inconsistent improvements and that strong and consistent improvement can be achieved where there is follow up and action by the WHC participants.

The proportion of WHC participants who were identified as being at medium or high risk of type 2 diabetes or CVD who undertook actions varied by the type of action, but participants who were at high risk of type 2 diabetes or CVD were more likely to take

action than those at medium risk, and less likely to report taking no action at all. Therefore, this suggests that the level of risk is an important factor in workers taking action to mitigate that risk.

In terms of taking action to reduce lifestyle risk factors, participants were more likely to take self-initiated actions than to use a structured/formal program for risks such as weight loss and cigarette smoking. As expected, for referred WHC participants who sought a doctor's advice, a greater proportion of those assessed as being at medium or high risk of type 2 diabetes or CVD received follow up testing including blood tests or heart tests, referral to a medical specialist and received a new diagnosis and/or treatment for diabetes, heart disease or high cholesterol since their WHC than people who did not have medium or high AUSDRISK and CVD risk scores. However, the increase in these outcomes was not as great as expected, with many of the people not of medium or high risk also having these outcomes.

In this study we asked further questions than at the WHC in relation to two important lifestyle risk factors, smoking and alcohol consumption. At follow up, only 6.9% were current smokers, which is considerably less than the national smoking rates of around 20% aged 15 years and over reporting being current smokers in 2007–08.² A consistent finding across several analyses was a reduction in the proportion of people who smoked, and reduction in the number of cigarettes they smoked. There were a variety of motivations for people in trying to give up, the main ones being that it was affecting the health of those around them, family/friend/s asked them to quit, it cost too much, they wanted to get fit, doctor's advice, and WHC advice. Smoking cessation/reduction was reported by the greatest proportion of people in those who said they had been advised to at the WHC and had reported taking action in relation to it. Therefore, while smoking reduction across the community is multifactorial, the WHC and actions arising from it have played an important role in the large observed reduction in smoking in this follow up study.

This finding of a major reduction in a major public health risk factor is an important outcome for WorkHealth, as smoking is a major contributor to sickness absence. As the smoking information was self-reported, it is possible that people under reported their smoking at WHC and over reported smoking cessation at follow up, although this is unlikely to fully explain the findings. It is possible that in the process of raising smoking as

a risk factor at their WHC and the person being referred to their doctor about other risk factors it has been sufficient to prompt the participants to take up the issue of smoking cessation. This is potentially important, as many WHC participants may not regularly engage with the health care system and so the WHC has given them an opportunity to do so and access relevant actions to stop or reduce their smoking.

In relation to alcohol consumption, 38.0% of participants who drank alcohol reported drinking more than the recommended 2 standard drinks per day.³ With respect to the other NHMRC alcohol guideline in relation to drinking no more than four drinks on any occasion,³ 30.0% that they did this less than once a month, whilst 11.8% and 2.2% reported that they did on a weekly and daily basis respectively. These findings indicate that almost one half of the participants were outside the NHMRC Guidelines. The latter aspect of risky alcohol intake was not assessed in the WHC questionnaire specifically, but guidelines were available for advice through the WHC Service Provider manual.¹ The proportion of study participants who reported being given advice in relation to reducing alcohol was greater than that who reported being given advice in relation to smoking, but the proportion with risky alcohol intake at follow up was greater than that at the WHC. People who reported at their WHC that they drank more than 2 drinks/day when they were drinking were more likely to report actions to reduce drinking. The most common motivations for reducing alcohol intake were health reasons, lifestyle reasons and social reasons. There is no obvious explanation for the finding of increased alcohol consumption at follow-up, but the fact that the WHC has not resulted in improvements in this risk factor may reflect that this risk factor is not as prominent as a target for interventions in the WHC program.

The great majority of people reported that they did not have any difficulties with employment because of their diabetes, heart condition, stroke, or high blood pressure. In total only 2.4% of participants reported that they had lodged a workers' compensation claim in the past 2 years, and all claims were reported to be accepted. The number of claims lodged in people with health conditions was small and need to be treated with caution, but the proportions were similar across health condition groups. No claims were reported to be due to diabetes or heart condition, stroke or high blood pressure. These findings suggest that these chronic conditions are not playing a major role in the workplace factors examined in the short period of follow up, although these chronic conditions tend to

deteriorate and develop complications over time, so that the impact is likely to be greater in the future.

A wide variety of programs and activities had occurred at workplaces since the WHCs. Overall nearly 90% of participants strongly agreed or agreed that WHCs had made workers more aware of their health, and the majority of participants strongly agreed or agreed that their workplace supports health promotion (77.5%), that their workplace supports injured workers (72.0%), and that their workplace supports Occupational Health and Safety (85.8%). Participant responses to these statements were more positive where they had reported that they had a Workplace OHS Committee and this was particularly important in relation to the workplace support for OHS statement. Therefore, these findings suggest that the profile, and possible impact, of health promotion activities is likely to be greater where there is a more prominent OHS presence in the workplace.

The measures of general physical and mental health and wellbeing, and physical role limitation and vitality were above the US general population average, which the SF-12 instrument is normalised to, in participants with diabetes, the CVD group and the high and medium AUSDRISK and CVD risk groups. These findings suggest a healthy worker effect in that workers tend to be healthier than the general population. The one exception was the vitality score in the high CVD risk group, which was below the US average. The high CVD risk group tended to have a higher proportion of testing, referral and diagnosis than those with the other conditions and it may be that this and/or their underlying condition impacted on their overall vitality. General physical wellbeing was slightly lower in the medium or high type 2 diabetes or CVD risk groups compared with those without the risk scores, and the lowest scores across all health conditions and risk groups were the general mental wellbeing scores (MCS) although these were all above average, also suggesting a healthy worker effect.

There was a small improvement in self-assessed health since their WHC, which could be contributed to by a wide range of factors, including improvements in lifestyle risk factors targeted by the WorkHealth program. This improvement may have been one explanation for the higher than average measures of general physical and mental health and wellbeing found in the study.

In terms of representativeness, workers who consented to be contacted about research regarding WorkHealth were representative overall of the broader group of workers having WHCs. Although the response rate of 24.0% in the follow up study was lower than anticipated, we were able to assess difference between participants and non-participants based on their WHC data. Participants were a little more likely to be older, to be white collar workers, female, from rural regions, Australian born, and to have had their WHC in the more recent sample period, compared with those who did not participate. That participants were more likely to come from the more recently sample period may mean that their recall of events since their WHC was relatively better than those in the more remote time period. In the group which had their WHC in the earlier time period there will have been more time available for implementing lifestyle changes, achieving improvement in risk factors, or for sustaining any improvement. The other demographic differences between participants and non-participants were not substantial and suggest that participants were reasonably representative of the eligible study population. Therefore, the findings from the follow up study are likely to be broadly applicable to the entire WHC population.

It is proposed that further analysis be undertaken, such as multiple regression analysis, to assess the relative contribution of various factors, such as age, gender, occupation, city/rural, risk factor level increased or decreased the likelihood of taking action/s in relation to their WHC. This analysis could also investigate what socio-demographic, behavioural, occupational and health intervention factors were most associated with improvements in lifestyle risk factor levels since their WHC, after adjusting for possible confounding factors including age, occupation, and gender. This type of analysis can help to identify the more important predictors of these outcomes.

In assessment of lifestyle risk factors, this study was able to assess change of lifestyle factors from their WHC only up to a maximum period of about two years. To examine longer term changes and impact of participation in lifestyle factors in line with the program logic would require a second follow up. This study supplied tape measures and a protocol for participants to self-measure waist circumference at follow up, but it was not possible to measure blood pressure, a key risk factor in relation to CVD, as this could only be done at face-to-face interview.

As only 21 study participants had enrolled in the WorkHealth Coach program, there were insufficient numbers and insufficient time of follow up to be able to assess the impact of this program on lifestyle risk factors and associated outcomes. To investigate the effectiveness of this program would require a separate follow up study targeting only those undertaking the WorkHealth Coach program.

Gains were seen in only some lifestyle factors across the whole study group, but improvements in all lifestyle factors were seen in those who reported being advised to take action and who took action after their WHC. This suggests that targeted, standardised and appropriate communication in a large scale work based program like the WHC is important to consider in overcoming the potential for variations in advice between providers. Similarly an appropriate reading level record of the WHC assessment and individualised advice may further assist communication between the WHC program and the participant and their doctor. In addition it may be important to consider the cut off levels for referral, given the scale of the WHC program. The participants at higher risk were more likely to follow up with their doctor or with a lifestyle program (except for the high risk CVD group and lifestyle programs although the numbers were small and they sought medical advice) and greater efficiency may be achieved through targeting high risk motivated people for specific follow up and aiming for a broader population shift in lowering risk factors in the medium to low risk groups.

In assessment of further improvement of lifestyle factors or of maintenance of improvement in lifestyle factors WorkHealth could:

- Consider further longitudinal follow up of this established cohort with a further survey in the future to ascertain longer term outcomes, and consider linkage with the Victorian Compensation Research Database.

With the study suggesting that improvements in lifestyle risk factor levels may not always have been sufficient to pass the established WHC cut-offs, and in considering other findings of this study WorkHealth could consider:

- Undertaking a follow up study of WorkHealth Coach participants to investigate the impact on lifestyle risk factors of that program.
- Enhancing messages with respect to smoking cessation to build on impact and effectiveness with respect to smoking cessation.

- Reconsidering/developing more effective messages with respect to taking action to increase daily vegetable intake, physical activity levels, weight loss, reduced waist circumference, and reduced alcohol consumption.
- A clearer integrated, individualised, standardised WHC record for the participant to retain regarding referral and other aspects of advice may further increase the program's impact. A computerised printout at the WHC could be considered.
- Ascertaining doctors' responses to people attending for follow up from their WHC and any issues around communication and presentation of material that might further enhance communication between the worker and their doctor.

Gains through the WorkHealth program have been recognised through this research, especially in those who took action in relation to high lifestyle risk factors, and areas for improvement identified which could impact further on the outcomes identified in the program logic. There are also several important avenues for possible future research that will build on this research and assist in further developing the program and in achieving comprehensive lifestyle risk factor reduction, reduction in type 2 diabetes and CVD, and improved overall health and productivity in the workforce.

Due to delays in recruitment, the planned data linkage with four pathology services and with Medicare Australia could not be completed within the timeframe of the study. These results will be presented as a future addendum to this report.

6 References

1. WorkHealth WorkSafe Victoria. WorkHealth Check Clinical and Operational Guidelines for Service Providers. Melbourne. February 2011.
2. ABS. Year Book Australia, 2012. Canberra: Australian Bureau of Statistics (ABS); 2012.
3. NHMRC. Australian guidelines to reduce health risks from drinking alcohol In: Council National Health and Medical Research Council, editor. Canberra: Australian Government Department of Health and Ageing; 2009.
4. Australian Institute of Health and Welfare. Australia's health 2010. Canberra: Australian Institute of Health and Welfare 2010; no. 12. Cat. no. AUS 122.
5. Australian Institute of Health and Welfare. Chronic disease and participation in work. Canberra: AIHW 2009 Cat. no. PHE 109.
6. AspexConsulting. High level program logic for the WorkHealth Program November 2010. IWorkHealth Revised Program Logic 16 December 2010.
7. Hewat N, Mc DTD, Macdonald E, et al. Pilot study of random finger prick glucose testing as a screening tool for type 2 diabetes mellitus in the emergency department. Emergency Medicine Journal 2009;26:732-3.
8. Maiman LA, Greenland P, Hildreth NG, et al. Public cholesterol screening in the previously diagnosed: misuse of resources or beneficial function? American Journal of Preventive Medicine 1994;10:20-5.
9. AIHW. 2007 National Drug Strategy Household Survey: first results. Drug Statistics Series number 20 Cat no PHE 98 [serial on the Internet]. 2008: Available from: <http://www.aihw.gov.au/publication-detail/?id=6442468084>.
10. ABS. National Health Survey Questionnaire. Canberra: Australian Bureau of Statistics 2007/8.
11. Ilmarinen J. Work ability-a comprehensive concept for occupational health research and prevention. Scandinavian Journal of Work, Environment & Health. 2009;35:1-5.
12. Welborn TA, Dhaliwal SS, Bennett SA. Waist-hip ratio is the dominant risk factor predicting cardiovascular death in Australia. Medical Journal of Australia. 2003;179:580-5.
13. Dekkers J, van Wier MF, Hendriksen IJM, et al. Accuracy of self-reported body weight, height and waist circumference in a Dutch overweight working population. BMC Medical research methodology 2008;8:69.

14. Ware JEJ, Kosinski M, Turner-Bowker DM, et al. User's manual for the SF-12v2 Health Survey with a supplement documenting SF-12 Health Survey. Lincoln, RI: Quality Metric Incorporated 2002.
15. Marosszeky N. SF-12® Health Survey (Version 1.0) for use in Australia,. Australian Health Outcomes Collaboration (AHOC), Instrument Review . 2005.
16. van den Berg TIJ, Elders LAM, de Zwart BCH, et al. The effects of work-related and individual factors on the Work Ability Index: a systematic review. *Occupational & Environmental Medicine* 2009 ;66:211-20.
17. Tuomi K, Ilmarinen J, A. J, et al. Work Ability Index. In: Finnish Institute of Occupational Health, editor. Helsinki 1998.
18. Ahlstrom L, Grimby-Ekman A, Hagberg M, et al. The work ability index and single-item question: associations with sick leave, symptoms, and health - a prospective study of women on long-term sick leave. *Scandinavian Journal of Work, Environment & Health* 2010;36:404-12.

7 Appendices

7.1 Follow up of your health since your WorkHealth check. Study Questionnaire



Follow up of your health since your WorkHealth check

Study Questionnaire

THANK YOU FOR TAKING PART IN THIS STUDY

Please read these instructions before completing the questionnaire

This page has been intentionally left blank

1. Please complete and sign the Consent Form on the front page.
 2. Please read each question and its instructions before you answer.
 3. Please answer EVERY question unless directed otherwise.
 4. For each question, please choose the answer that best applies to you, even if there is not one that suits you perfectly.
 5. Please use **BLACK OR BLUE PEN ONLY** to complete the questionnaire.
 6. When completing the questionnaire please place a cross ☐ in the box.
 7. If you make a mistake cross it out with a thick line as shown ~~☐~~ and place a cross ☐ in the correct box.

Do not circle the boxes ☐
 8. Sometimes you may be asked to write numbers in the boxes provided, please place one number in each box. For example:

| | |
|---|---|
| 1 | 5 |
|---|---|

 years
 9. All the information that you provide is kept completely confidential.
 10. If you have any queries about the study or would like some help in completing this questionnaire, you can contact the Monash University research team on 1800 062 534. This call is free from a landline phone anywhere in Australia.
-

PARTICIPANT CONSENT FORM

Follow up Study of people who had a WorkHealth check

Important information

Complete this form to consent to participation in the Follow up Study of People who had a WorkHealth check by completing the questionnaire; and to request the release of personal Medicare and Pharmaceutical Benefits Scheme (PBS) claims information, and test results relevant to the study from pathology services; or to indicate that you do not wish to participate in the Study.

Any changes to this form must be initialled by you, the signatory. Incomplete forms may result in the study not being provided with your information.

By signing this form, I acknowledge that:

- I have been fully informed and have been provided with information about this study as outlined in the Explanatory Statement. I have been given an opportunity to ask questions and understand the possibilities of disclosures of my personal information.
- I understand that participation in the Study is voluntary, that I can choose not to participate in part or all of the Study, and that I can withdraw at any time.

PARTICIPANT DETAILS

Mr ☐ Mrs ☐ Miss ☐ Ms ☐ Other

Family name:

First given name: Other given name(s):

Date of birth: / /
day month year

Permanent address:

Postal address (if different to above):

To consent to participate in the entire study, please mark all of boxes 1, 2, and 3 below. Alternatively, please mark the boxes for the parts of the study that you agree to.

1. ☐ I agree to participate in the Follow up Study of People who had a WorkHealth check by completing the postal questionnaire.

AND

2. ☐ I agree to pathology services providing my test results to Monash University for the purposes of this Study.

AND

3. ☐ I authorise the Department of Human Services to provide my Medicare and PBS claims history to the Follow up Study of People who had a WorkHealth check for the period 01/01/2008 to 31/12/2021.

My medicare card number is:
Ref no.

OR

4. ☐ None of the above; I do not wish to participate in any part of the study.

DECLARATION

I declare that the information on this form is true and correct.

(Signature) / / 20 (date)

A sample of the information that may be included in your Medicare claims history:

| Date of service | Date of Processing | Item number | Item description | Provider charge | Schedule Fee | Benefit paid | Patient out of | Bill type |
|-----------------|--------------------|-------------|----------------------|-----------------|--------------|--------------|----------------|-----------|
| 20/04/09 | 03/05/09 | 00023 | Level B consultation | \$38.30 | \$34.30 | \$34.30 | \$4.00 | Cash |
| 22/06/09 | 23/06/09 | 11700 | ECG | \$29.50 | \$29.50 | \$29.50 | | Bulk Bill |

| Scrambled ordering Provider number* | Scrambled rendering Provider number* | Date of referral | Rendering Provider postcode | Ordering Provider postcode | Hospital indicator | Provider derived major speciality | Item category |
|-------------------------------------|--------------------------------------|------------------|-----------------------------|----------------------------|--------------------|-----------------------------------|---------------|
| | 999999A | | 2300 | | N | General Practitioner | 1 |
| 999999A | 999999A | 20/04/09 | 2300 | 2302 | N | Cardiologist | 2 |

A sample of the information that may be included in your PBS claims history:

| Date of supply | Date of prescribing | PBS item | Item description | Patient category | Patient contribution | Net Benefit | Scrambled Prescriber number* |
|-------------------|---------------------|------------|----------------------|--------------------------|----------------------|-------------|------------------------------|
| 06/03/09 | 01/03/09 | 03133X | Oxazepam Tablet 30mg | Concessional Ordinary | \$5.30 | \$25.55 | 9999999 |
| 04/07/09 | 28/05/09 | 03161J | Diazepam Tablet 2mg | General Ordinary | \$30.85 | | 9999999 |
| Pharmacy postcode | Form Category | ATC Code | ATC Name | Prescriber derived major | | | |
| 2560 | Original | N05 B A 04 | Oxazepam | General Practitioner | | | |
| 2530 | Repeat | N05 B A 01 | Diazepam | Psychiatrist | | | |

* Scrambled Prescriber number refers to a unique scrambled prescriber number identifying the doctor who prescribed the prescription. Generally, each individual prescriber number will be scrambled and the identity of that prescriber will not be disclosed.

Please update your contact details as we would like to contact you for any future developments from the current study. Please use **BLOCK** letters to complete contact details on this page.

YOUR CONTACT DETAILS

Phone (home): (____) _____

Phone (mobile): _____

Email address: _____

ALTERNATIVE CONTACT DETAILS

In case you move and we lose contact, please provide the name and address of a relative or close friend at a long-term address but not living with you

Surname: _____

Given name/s: _____

Relationship: ☐ Parent ☐ Brother / sister ☐ Parent-in-law ☐ Friend ☐ Other

Street number: _____

Street name: _____

Suburb / city: _____

State: _____ Postcode: _____

Phone (home): (____) _____

Phone (mobile): _____

Email address: _____

Note: To ensure confidentiality of your information, this page will be removed by the Monash University Study team and stored separately from the rest of the questionnaire.

We appreciate that your time is valuable and thank you very much for your contribution to this important study.

Please return this questionnaire in the prepaid envelope provided.

SECTION H: YOUR HEIGHT, WEIGHT, WAIST AND HIP CIRCUMFERENCE

Please measure your height (without shoes) by standing flat against a wall with feet together. Place a hardback book (or similar) placed flat on your head so it touches the wall (ensuring the book is horizontal). Measure the distance down the wall from the book to the floor using the tape measure.

H1. How tall are you? cm OR ft inch

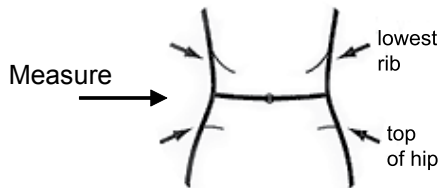
Please measure your weight using scales and your waist and hip circumferences using the tape measure supplied and follow the instructions as given below.

Please round off your measurements to the nearest whole number. Do not use decimal points.

H2. How much do you weigh in light clothing without shoes, to the nearest kg? kg

For an accurate waist measurement:

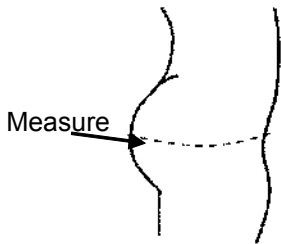
- Stand comfortably straight up, weight evenly distributed across both legs, feet 25-30 cm apart.
- Measure directly over your skin or no more than one item of light clothing.
- Have the tape measure fitting snug, but not compressing the skin.
- Take the measurement after breathing out normally.
- Measure at the halfway point between your lowest rib and the top of your hipbone. *This will be roughly in-line with your belly button.*



H3. Record your waist measurement to the nearest centimetre (cm). cm

For an accurate hip measurement:

- Stand comfortably straight up, feet together, with your muscles relaxed.
- Measure directly over your skin or no more than one item of light clothing.
- Hold the tape horizontally, have the tape measure snug, but not compressing the skin.
- Measure at the point where your buttocks extend the maximum when viewed from the side. *Any fatty skin folds from your stomach should be excluded from the measurement.*



H4. Record your hip measurement to the nearest centimetre (cm). cm

SECTION A: BACKGROUND

Please provide some information about you.

A1. Gender ☐ Male ☐ Female

A2a. Has your name changed since your WorkHealth check? ☐ Yes ☐ No

A2b. If YES, Please provide your current name: _____

A3. In which country were you born? ☐ Australia ☐ New Zealand ☐ England
☐ Italy ☐ Vietnam ☐ Scotland
☐ Greece ☐ India ☐ China
☐ Indonesia ☐ Other, please specify: _____

A4. What is your current marital status? ☐ Married ☐ De Facto ☐ Separated
(Please mark one box only)
☐ Single ☐ Divorced ☐ Widowed

A5a. Do you take care of any children (less than 18 years), dependent parents or relatives?

☐ No
☐ Yes - If YES, A5b. How many?

A6. What is the level of highest educational qualification you have completed?

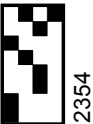
(Please mark one box only)

☐ Primary school up to Year 6 ☐ Secondary school up to Year 11 ☐ Secondary school Year 12
☐ Certificate or diploma ☐ Bachelor degree ☐ Postgraduate certificate or diploma
☐ Postgraduate degree ☐ Other education

A7. Do you speak a language other than English at home? If more than one language other than English, mark the one that is spoken most often.

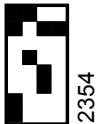
(Please mark one box only)

☐ No, English only ☐ Yes, Italian ☐ Yes, Greek
☐ Yes, Cantonese ☐ Yes, Arabic ☐ Yes, Vietnamese
☐ Yes, Mandarin ☐ Yes, Hindi ☐ Yes, Other, please specify: _____



SECTION B: YOUR WORKHEALTH CHECK

- B1. At your WorkHealth check were you advised to:
(Please mark all that apply)
- ☐ Increase your fruit and/or vegetable intake
 - ☐ Consider other healthy eating
 - ☐ Increase your physical activity levels
 - ☐ Reduce your alcohol intake
 - ☐ Stop smoking
 - ☐ Lose weight
 - ☐ Other, please specify: _____
 - ☐ Can't remember
- B2. At your WorkHealth check were you advised to:
(Please mark all that apply)
- ☐ Seek medical attention within 24 hours
 - ☐ Visit your doctor within one month for further testing and advice
 - ☐ Visit your doctor within three months for further testing and advice
 - ☐ Visit your doctor each year to check your heart disease risk
 - ☐ Participate in / be contacted by a WorkHealth coach
 - ☐ Participate in the Life! Taking action on Diabetes telephone health coaching program
 - ☐ Participate in the Life! Taking action on Diabetes group based program
 - ☐ Participate in a lifestyle program for Type 2 Diabetes Prevention such as 'Reset your Life'
 - ☐ Other, please specify: _____
 - ☐ Can't remember



SECTION G: GENERAL HEALTH and WELLBEING

This section of the questionnaire asks for your views about your health. This information will help assess how you feel and how well you are able to do your usual activities.

- G1. In general, would you say your health is:
- ☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor
- G2. The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?
- | | Yes, limited a lot | Yes, limited a little | No, not limited at all |
|---|--------------------------|--------------------------|--------------------------|
| G2a. <u>Moderate</u> activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G2b. Climbing <u>several</u> flights of stairs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- G3. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of your physical health?
- | | All of the time | Most of the time | Some of the time | A little of the time | None of the time |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| G3a. <u>Accomplished less</u> than you would like | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G3b. Were limited in the <u>kind</u> of work or other activities | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- G4. During the past 4 weeks, how much of the time have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?
- | | All of the time | Most of the time | Some of the time | A little of the time | None of the time |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| G4a. <u>Accomplished less</u> than you would like | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G4b. Did work or other activities <u>less carefully than usual</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- G5. During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)?
- | | Not at all | A little bit | Moderately | Quite a bit | Extremely |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- G6. These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling. How much of the time during the past 4 weeks...
- | | All of the time | Most of the time | Some of the time | A little of the time | None of the time |
|---|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| G6a. Have you felt calm and peaceful? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G6b. Did you have a lot of energy? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| G6c. Have you felt downhearted and depressed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
- G7. During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)?
- | | All of the time | Most of the time | Some of the time | A little of the time | None of the time |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

F21. Does your workplace have a Health and Safety Representative?

☐ Yes ☐ No ☐ Don't know

F22. Does your workplace have a Health and Safety Committee?

☐ Yes ☐ No ☐ Don't know

F23a. Have there been any **new** health promotion programs/activities at your workplace since the WorkHealth check?

☐ Yes ☐ No ☐ Don't know

If **YES**, F23b. Mark **all** that apply:

- ☐ Increased availability of healthy food
- ☐ Changed physical layout of the workplace
- ☐ Greater emphasis on safety
- ☐ QUIT program offered
- ☐ Work mates/colleagues more likely to stop or reduce smoking
- ☐ Banned smoking at extended areas in and around the workplace
- ☐ Workplace seminars given by a health professional
- ☐ Information/posters on healthy lifestyle behaviours
- ☐ Exercise at work is promoted (i.e. challenges, group walks, sports, fun run)
- ☐ Fruit baskets
- ☐ Participation in health programs is promoted
- ☐ Health and wellbeing program introduced or revised
- ☐ Gym memberships
- ☐ Medical checks such as flu vaccinations, skin checks etc.
- ☐ Wellbeing activities (massage, yoga, pilates etc.)
- ☐ Other, please specify: _____

B3. As a result of your WorkHealth check did you:

(Please mark **all** that apply)

- ☐ Visit a doctor to discuss your WorkHealth check results
- ☐ Visit a health professional other than a doctor to discuss your WorkHealth check results
- ☐ Consent to be contacted by a WorkHealth coach
- ☐ Participate in sessions with a WorkHealth coach
- ☐ Participate in the Life! Taking action on Diabetes telephone health coaching program
- ☐ Take part in the Life! Taking action on Diabetes group based program
- ☐ Take part in a health promotion program at your workplace
- ☐ Try to stop smoking by myself
- ☐ Use a stop smoking program, such as QUIT or another program
- ☐ Try to lose weight by myself
- ☐ Participate in a weight loss program, such as Weight Watchers or another program
- ☐ Start to exercise regularly
- ☐ Start other lifestyle changes, please specify: _____
- ☐ Take no action
- ☐ Can't remember

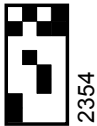
B4. If you did not do any of the above as a result of your WorkHealth check, what were the reason(s) for this?

(Please mark **all** that apply)

- ☐ I do not remember being asked to take any actions or change anything
- ☐ I did not have the time, I was too busy
- ☐ I was too sick
- ☐ I was worried about the costs of health programs
- ☐ I did not think my WorkHealth check results suggested a serious problem
- ☐ I did not think it was important
- ☐ My doctor would tell me if I needed to do anything about my health
- ☐ Other reason, please specify: _____

B5. If you did not do any of the options mentioned in Q B3., which of the following could have assisted you in taking action? (Please mark **all** that apply)

- ☐ Letter reminder ☐ SMS / phone text reminder ☐ E-mail reminder
- ☐ Phone call reminder ☐ Other, please specify: _____



SECTION C: YOUR VISIT TO YOUR DOCTOR AND YOUR HEALTH

C1a. Since your WorkHealth check, have you visited your doctor for further advice and/or tests about your WorkHealth check results?

☐ No - If **NO**, go to Q C3.

☐ Yes - If **YES**, C1b. Did you discuss your WorkHealth check results with your doctor at:

☐ A special visit because of your WorkHealth check

☐ A routine visit or a visit for something else

C2. How soon after your WorkHealth check did you **first visit your doctor** for further advice and/or tests?
(Please mark **one** box only)

☐ Within 24 hours

☐ More than 24 hours but within 1 week

☐ More than 1 week but within 1 month

☐ More than 1 month but within 3 months

☐ More than 3 months but within 6 months

☐ More than 6 months but within 1 year

☐ More than 1 year

C3. If you did not visit your doctor, please mention your reasons for this:
(Please mark **all** that apply)

☐ I do not remember being asked to visit my doctor at my WorkHealth check

☐ I was not advised to visit my doctor at my WorkHealth check

☐ I did not have the time, I was too busy

☐ I was too sick

☐ I was worried about the costs of the doctor's visit and any tests

☐ I was afraid that I would have a serious medical problem

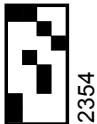
☐ WorkHealth check results suggested a risk of diabetes, but I did not think this was serious

☐ WorkHealth check results suggested a risk of heart disease, but I did not think this was serious

☐ I did not think it was important

☐ I see my doctor when I need to, not because of the WorkHealth check

☐ Other, please specify: _____



F15a. Have you lodged a worker's compensation claim in the past 2 years?

☐ No - If **NO**, go to Q F16.

☐ Yes - If **YES**, Please complete the following for each claim lodged in the past 2 years.

| | F15b. Type of injury | F15c. Date claim lodged (Month & Year) | F15d. Was the claim accepted? | F15e. Number of days off work |
|---------|----------------------|---|--|-------------------------------|
| Example | BACK INJURY | 07 / 2011 | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | 30 |
| 1. | | / | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 2. | | / | <input type="checkbox"/> Yes <input type="checkbox"/> No | |
| 3. | | / | <input type="checkbox"/> Yes <input type="checkbox"/> No | |

We would like to ask you a question about your ability to work

F16. Assume that your work ability at its best has value of 10 points. How many points would you give your current work ability? (0 means that you cannot currently work at all)

0 1 2 3 4 5 6 7 8 9 10

Completely unable to work ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Your work ability at its best

F17. Do you think WorkHealth checks have made workers more aware of their health?

☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

F18. Do you think your workplace supports health promotion at the workplace?

☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

F19. Do you think your workplace supports injured workers?

☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

F20. Do you think your workplace supports Occupational Health and Safety?

☐ Strongly disagree ☐ Disagree ☐ Neither agree nor disagree ☐ Agree ☐ Strongly agree

If you have a heart condition, stroke, or high blood pressure, please answer the following questions. If not, please go to Q F12.

- F9. Because of your heart condition, stroke, or high blood pressure, do you have any difficulties with employment such as these? (Please mark all that apply)
- ☐ Restricted in the type of job you could do
- ☐ Restricted in the number of hours that can be worked
- ☐ Difficulty finding suitable work
- ☐ Needing time off work
- ☐ Permanently unable to work
- ☐ None of the above
- F10. Have you stayed away from work for more than half a day in the past 6 months because of your heart condition, stroke, or high blood pressure? ☐ No ☐ Yes
(Include time for doctor's appointments and tests)
- F11. On how many days in the past 6 months did you stay away from work because of your heart condition, stroke, or high blood pressure? days
- F12. If you have any health problems other than diabetes, a heart condition, stroke, or high blood pressure since your WorkHealth check, do you have any difficulties with employment such as these? If no health problem, please go to Q F15.
(Please mark all that apply)
- ☐ Restricted in the type of job you could do
- ☐ Restricted in the number of hours that can be worked
- ☐ Difficulty finding suitable work
- ☐ Needing time off work
- ☐ Permanently unable to work
- ☐ None of the above
- F13. Have you stayed away from work for more than half a day in the past 6 months because health problems other than diabetes, heart condition, stroke, or high blood pressure? (Include time for doctor's appointments and tests) ☐ No ☐ Yes
- F14. On how many days in the past 6 months did you stay away from work because of health problems other than diabetes, heart condition, stroke, or high blood pressure? days

C4a. Did your doctor refer you for any tests after you discussed your WorkHealth check results?
(Please mark all that apply)

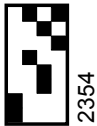
- ☐ No - If **NO**, go to Q C6.
- ☐ Blood tests
- If **YES**, C4b. In which month and year were these tests done: /
month year
- C4c. Did you have to fast (no food or drink) before the blood was taken? ☐ Yes ☐ No
- C4d. Did you have to drink a sugar drink and have blood taken 2 hours later? ☐ Yes ☐ No
- C4e. Did the test check your glucose (sugar) level? ☐ Yes ☐ No ☐ Don't know
- C4f. Did the test check your cholesterol level? ☐ Yes ☐ No ☐ Don't know
- C4g. Did you have any other blood tests? ☐ Yes ☐ No

If **YES**, please specify: _____

- ☐ ECG (electrocardiogram)
- ☐ 24 hour heart monitor
- ☐ Heart exercise (stress) test
- ☐ Heart ultrasound
- ☐ Other test/s, please specify: _____

C5a. Did your doctor advise any action or treatment after these tests?

- ☐ No - If **NO**, go to Q C6.
- ☐ Yes - If **YES**, C5b. What was the action or treatment? (Please mark all that apply)
- ☐ Start medicines for diabetes
- ☐ Start medicines for high blood pressure
- ☐ Start medicines for high cholesterol
- ☐ Start other medicines for my heart
- ☐ I needed to have a bypass operation or balloon (angioplasty) or stent for my heart
- ☐ Continue on my current medicines
- ☐ Other treatment, please specify: _____



C6. As a result of your WorkHealth check, did your doctor refer you to any of the following doctors or health professionals:

C6a. Cardiologist (heart specialist)

☐ No ☐ Yes

C6b. Endocrinologist (diabetes specialist)

☐ No ☐ Yes

C6c. Ophthalmologist (eye specialist)

☐ No ☐ Yes

C6d. Other medical specialist

☐ No ☐ Yes, please specify: _____

C6e. Diabetes educator

☐ No ☐ Yes

C6f. Dietitian / Nutritionist

☐ No ☐ Yes

C6g. Alcohol worker

☐ No ☐ Yes

C6h. Psychologist

☐ No ☐ Yes

C6i. Optician / Optometrist

☐ No ☐ Yes

C6j. Podiatrist / Chiropodist (care of feet)

☐ No ☐ Yes

C6k. Other

☐ No ☐ Yes, please specify: _____

C7a. Since your WorkHealth check has a doctor told you that you have diabetes?

☐ No - If **NO**, go to Q C9.

☐ Yes - If **YES**, C7b. Do you have:

☐ Type 1 diabetes

☐ Gestational or diabetes in pregnancy

☐ Type 2 diabetes

☐ Unsure

C8. What treatment are you receiving for your diabetes since your WorkHealth check?

☐ No treatment

☐ Diet alone

☐ Tablets

☐ Insulin

☐ Insulin and tablets

☐ Other, please specify: _____

SECTION F: YOUR CURRENT WORK

F1a. Are you currently working?

☐ No - If **NO**, go to Q F6.

☐ Yes - If **YES**, F1b. What is your job title? _____

F2. What industry do you work in? _____

F3. How many hours do you usually work in this job each week? hours

F4. Does this job involve shift work, night work or work at unusual hours (regularly starting work before 7am or after 7pm)?

☐ No - If **NO**, go to Q F6.

☐ Yes

F5. What kind of shift roster do you do? *(Please mark one box only)*

☐ Regular pattern of shifts

☐ Varied shifts with no pattern

☐ Regular hours plus on call

If you have diabetes, please answer the following questions. If not, please go to Q F9.

F6. Because of your diabetes, do you have any difficulties with employment such as these?
(Please mark all that apply)

☐ Restricted in the type of job you could do

☐ Restricted in the number of hours that can be worked

☐ Difficulty finding suitable work

☐ Needing time off work

☐ Permanently unable to work

☐ None of the above

F7. Have you stayed away from work for more than half a day in the past 6 months because of your diabetes? *(Include time for doctor's appointments and tests)* ☐ No ☐ Yes

F8. On how many days in the past 6 months did you stay away from work because of your diabetes? days

E15. How often do you have five or more drinks on one occasion?

- ☐ Never
- ☐ Less than once a month
- ☐ Monthly
- ☐ Weekly
- ☐ Daily or almost daily

E16. Since your WorkHealth check, have you: (Please mark all that apply)

- ☐ Reduced the amount of alcohol you drink at any one time
- ☐ Reduced the number of times you drink
- ☐ Switched to drinking more low-alcohol drinks than you used to
- ☐ Stopped drinking alcohol
- ☐ None of the above - go to Section F

E17. What was the main reason for doing that? (Please mark one box only)

- ☐ Health reasons (e.g. weight, diabetes, avoid hangover)
- ☐ Lifestyle reasons (e.g. work/study commitments, less opportunity, young family)
- ☐ Social reasons (e.g. believe in moderation, concerned about violence, avoid getting drunk)
- ☐ WorkHealth check advice
- ☐ WorkHealth coach
- ☐ Doctor's advice
- ☐ Workplace health promotion program
- ☐ Pregnant and/or breastfeeding
- ☐ Taste/enjoyment (e.g. prefer low alcohol beer, don't get drunk)
- ☐ Drink driving regulations
- ☐ Financial reasons
- ☐ Adult/parent/partner pressure
- ☐ Peer pressure
- ☐ Other, please specify: _____

In the following questions we would like to ask you about any heart or stroke problems you may have experienced since your WorkHealth check. Heart problems include angina, heart attack, heart bypass operation, an angioplasty or stent.

C9. Since your WorkHealth check, has a doctor diagnosed you with a heart attack?
(includes a 'coronary', 'coronary occlusion', 'coronary thrombosis', 'myocardial infarction')

- ☐ No
- ☐ Yes

C10. Since your WorkHealth check, has a doctor diagnosed you with a stroke?

- ☐ No
- ☐ Yes

C11. Since your WorkHealth check, have you had a heart bypass operation (or coronary bypass)?

- ☐ No
- ☐ Yes

C12. Since your WorkHealth check, have you had an angioplasty or stent for your heart?
(includes 'coronary angioplasty', 'coronary stent', 'balloon')

- ☐ No
- ☐ Yes

C13. Since your WorkHealth check, have you been told by a doctor that you have hypertension or high blood pressure?

- ☐ No
- ☐ Yes

C14. Since your WorkHealth check, have you been treated by a doctor for an abnormal heart rhythm?

- ☐ No
- ☐ Yes

C15. Since your WorkHealth check, have you been told by a doctor that you have high cholesterol?

- ☐ No
- ☐ Yes

SECTION D: YOUR PAST MEDICAL HISTORY

In this section we would like to ask you some questions about your **past medical history prior to your WorkHealth check**.

D1a. **Prior** to your WorkHealth check had a doctor ever told you that you had diabetes?

☐ No - If **NO**, go to Q D3.

☐ Yes - If **YES**, D1b. Did you have: ☐ Type 1 diabetes ☐ Gestational or diabetes in pregnancy

☐ Type 2 diabetes ☐ Unsure

D2. What treatment have you received for your diabetes before your WorkHealth check?

☐ No treatment

☐ Diet alone

☐ Tablets

☐ Insulin

☐ Insulin and tablets

☐ Other, please specify: _____

D3. Have either of your parents, or any of your brothers or sisters been diagnosed with diabetes (type 1 or type 2)?

☐ No ☐ Yes

D4a. **Prior** to your WorkHealth check, have you been told by a doctor that you had a **heart attack**?
(includes a 'coronary', 'coronary occlusion', 'coronary thrombosis', 'myocardial infarction')

☐ No ☐ Yes - If **YES**, D4b. In what year were you first diagnosed?

D5a. **Prior** to your WorkHealth check, have you been told by a doctor that you had a **stroke**?

☐ No ☐ Yes - If **YES**, D5b. In what year were you first diagnosed?

D6a. **Prior** to your WorkHealth check, have you had a heart **bypass operation** (or coronary bypass)?

☐ No ☐ Yes - If **YES**, D6b. In what year was the bypass operation?

D7a. **Prior** to your WorkHealth check, have you had an **angioplasty** or **stent** for your heart?
(includes a 'coronary angioplasty', 'coronary stent', 'balloon')

☐ No ☐ Yes - If **YES**, D7b. What year was the angioplasty or stent?

E12. Are you planning on giving up smoking? (Please mark **one** box only)

☐ No, I have already given up

☐ Yes, within 30 days

☐ Yes, after 30 days, but within the next 3 months

☐ Yes, but not within the next 3 months

☐ No, I am not planning to give up

E13. On average, how often do you have an alcoholic drink? (Please mark **one** box only)

☐ 6 - 7 days a week

☐ 4 - 5 days a week

☐ 1 - 3 days a week

☐ 2 - 3 days a month

☐ Less often than 2-3 days a month

☐ I don't drink alcohol - go to Section F

The picture below shows, in bold, the number of "**standard drinks**" in some typical alcohol containers



Note: Cocktails can contain as much alcohol as 5 or 6 standard drinks.

Source: alcohol.gov.au

E14. How many 'standard' drinks containing alcohol do you have on a typical day when you are drinking? drinks

E10. Which of the following motivated you to try giving up, cutting down or changing to a lower tar or nicotine brand? (Please mark all that apply)

- ☐ Health warnings on cigarette packets
- ☐ Government advertisements on TV, press or radio advertising by pharmaceutical companies for products such as nicotine gum, patches or Zyban
- ☐ WorkHealth check advice
- ☐ WorkHealth coach program
- ☐ My doctor advised me to give up
- ☐ Tobacco Information Line (i.e. phone number on cigarette packet)
- ☐ QUIT line
- ☐ Workplace health promotion program
- ☐ I wanted to get fit
- ☐ I was pregnant or planning to start a family
- ☐ I think it was affecting my health or fitness
- ☐ Family and/or friends asked me to quit
- ☐ I was worried it was affecting the health of those around me
- ☐ It was costing too much
- ☐ Smoking restrictions in public areas (e.g. restaurants, sporting venues, public transport etc.)
- ☐ Smoking restrictions in the work place
- ☐ Other

E11. Since your WorkHealth check, on average how much do you think you have cut down on your cigarette smoking? (Please mark one box only)

- ☐ Have not cut down
- ☐ By about 1 to 5 cigarettes per day
- ☐ By about 6 to 10 cigarettes per day
- ☐ By about 11 to 15 cigarettes per day
- ☐ By about 16 to 20 cigarettes per day
- ☐ By more than 20 cigarettes per day
- ☐ Have given up completely - go to Q E13.

D8a. Prior to your WorkHealth check, have you been told by a doctor that you have hypertension or high blood pressure?

- ☐ No ☐ Yes - If **YES, D8b.** In what year were you first diagnosed?

D9a. Prior to your WorkHealth check, have you previously been treated by a doctor for an abnormal heart rhythm?

- ☐ No ☐ Yes - If **YES, D9b.** In what year were you first treated?

D10a. Prior to your WorkHealth check, have you been told by a doctor that you have high cholesterol?

- ☐ No ☐ Yes - If **YES, D10b.** In what year were you first diagnosed?

For women only:

The following question is about your time of life which may be important to your health.

D11. What is your current menstrual / menopausal state? (Please mark one box only)

- ☐ Premenopausal - regular monthly menstrual period with no hot flushes
- ☐ Perimenopausal - period or menstrual bleeding in the previous 3 to 12 months but is irregular or regular menstrual periods but also has hot flushes
- ☐ Postmenopausal - no period or menstrual bleeding for at least 12 months

D12. Are you currently pregnant?

- ☐ No ☐ Yes

