7th edition

Guidelines for preventive activities in general practice

The Royal Australian College of General Practitioners

Guidelines for preventive activities in general practice (7th edition)

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Introduction i

General practitioners consult with 86% of Australians each year. One of our challenges is to make the most of this opportunity to contribute to preventive health care which[1]:

- is opportunistically provided when patients present with other problems or concerns
- anticipates the preventive needs of patients by providing reminders for preventive care, and
- proactively targets high risk individuals who may be least likely to seek out such care.

Agreement should be reached between the clinician and patient about what preventive actions are to be taken. General practitioners should be aware of the potential psychosocial impact of preventive care, such as a diagnosis being made after screening and the need for adequate counselling following diagnosis. Informed consent should be obtained for any screening and for any actions taken following screening.

Screening

Screening involves asking questions of, or conducting tests on, patients 'to identify those individuals who are more likely to be helped than harmed by further tests or treatment to reduce the risk of a disease or its complications'.[2]

The World Health Organization (WHO) has produced guidelines[3,4] for the effectiveness of screening programs. We have kept these and the United Kingdom National Health Services' guidelines[2] in mind in the development of recommendations about screening and preventive care:

The condition

- should be an important health problem
- should have a recognisable latent or early symptomatic stage
- the natural history of the condition, including development from latent to declared disease, should be adequately understood

The test

- should be simple, safe, precise and validated
- should be acceptable to the target population
- the distribution of test values in the target population should be known and a suitable cut-off level defined and agreed

Treatment

- there should be an effective treatment for patients identified with evidence that early treatment leads to better outcomes
- there should be an agreed policy on who should be treated and how

Outcome

- there should be evidence of improved mortality, morbidity or quality of life as a result of screening and that the benefits of screening outweigh the harm
- the cost of case finding (including diagnosis and treatment of patients diagnosed) should be economically balanced in relation to possible expenditure on medical care as a whole

Consumers

- should be informed of the evidence so that they can make an informed choice about participation.

Screening activities in general practice are complex; they involve patients accessing care as well as general practices adopting systematic approaches to registering and recalling patients, and organising their efforts to maximise the effectiveness of each consultation in providing preventive care.[5] Effective screening requires consideration of subgroups in the population who may have a higher prevalence of a disease or risk factor, or who may have difficulty accessing services.[6]

In these guidelines, screening usually refers to early detection using questions or a test, which GPs perform when patients present either for preventive care or opportunistically when patients present for other reasons (also known as case finding). Proactive recall of patients for screening is warranted for high risk groups or for conditions where population coverage has been identified by the government as a public health priority. These include immunisation and screening for cervical, breast and colorectal cancers and diabetes. However, it may be inappropriate to recall patients for assessment of conditions that have not been identified for population screening, such as for overweight or chlamydia infections.

There are an increasing number of Medicare items for health assessments in particular population groups: preschool children, Aboriginal children and adults, refugees, the intellectually disabled, those aged 45–49 years (with a risk factor), and those aged 75 years or over. There is evidence that these assessments improve the likelihood of preventive care being received.[7] However, it is also important that such 'health checks' involve preventive interventions for which there is clear evidence of their effectiveness.

Preventive activities appropriate for age and risk status may also be provided opportunistically to patients as part of normal consultations. For example, it is appropriate to check if a particular patient has been recently screened for cancer when they present for other conditions and screen at that or a subsequent visit. It is also appropriate to assess risk factors such as smoking, physical inactivity or overweight, and offer interventions during the same or subsequent consultations if indicated.

Each preventive activity uses up some of the available time that GPs have to spend with their patients. It may also involve direct or indirect costs to the patient. Therefore it is important that each activity is based on sound research evidence of what is effective. This means that some activities are not recommended in this preventive guide because there is insufficient justification or because the cost or time outweigh the benefits, as demonstrated in carefully designed research studies. These guidelines include activities of relevance to general practice for which research has demonstrated benefit.

While the 'red book' is well accepted in Australian general practice, the implementation of recommendations still falls short in certain areas and for certain population groups. This represents a challenge for general practice. Specific implementation strategies designed to improve the coverage of preventive care are discussed throughout these guidelines. These may include:

- specific targeting of preventive interventions
- better utilisation of information technology and management systems
- better teamwork within the practice, and
- working with other health professionals and community resources external to the practice.

Equity issues

Making sure that preventive care services reach those who most need them and may be less likely to access them requires a population approach in general practice. Unless specific consideration is given to the reach of preventive care provided and efforts are targeted toward particular groups, there is the risk of increasing inequalities in health in the community. Health inequalities are differences in health status that are 'unnecessary, avoidable, unfair and unjust'[8] which may be associated with socioeconomic status (SES), gender, ethnicity or rural and remote location. These inequitable differences in health status are thought to be responsible for about 17% of the total disease burden in Australia.[9] While mortality in Australia is improving, inequities are not improving or are worsening.[10] Much of this inequitable disease burden is preventable through primary and secondary prevention, encompassing health promotion and early detection and intervention.[10] A more comprehensive approach to working in disadvantaged communities should take account of 'literacy, income, cultural values, access to services and media'.[11] This issue is discussed in more detail in the RACGP publication, *Putting prevention into practice: guidelines for the implementation of prevention in the general practice setting* (the 'green book') 2nd edition.

Socioeconomically disadvantaged communities

However socioeconomic disadvantage is defined – whether by area of residence, occupation, income, education level or race – disadvantage is associated with a higher prevalence of, and a higher mortality from, most diseases, and particularly, the major chronic diseases that form such a large part of the work of general practice.[12] Studies have shown that preventive care is targeted to some extent at 'low SES' individuals in general practice.[13] Nevertheless, these groups may make less use of preventive services,[14] despite the higher need.

Aboriginal people and Torres Strait Islanders

While Indigenous Australians are at high risk of many diseases and premature death, and are more likely to be socioeconomically disadvantaged, they are less likely to receive many aspects of preventive care. Guidelines for providing evidence based preventive care services to Aboriginal people and Torres Strait Islanders have been developed. These can be found at www.racgp.org.au/aboriginalhealthunit.

Culturally and linguistically diverse communities

This term covers many different cultures and arrival backgrounds, ranging from refugee experiences to economic migration. Refugees in particular may have a high disease burden and may come from countries where there is little in the way of preventive care.[15–17]

Rural and remote communities

The health of rural communities is determined in part by lower income levels and socioeconomic conditions, as well as the higher percentage of Aboriginal people and Torres Strait Islanders.[18] Access to services is again influenced by this mix, and rurality and low SES may compound disadvantage.[19,20] Men in rural communities have particular low use of preventive health services.[21]

ii Patient education and health literacy

Patient education and counselling contribute to behaviour change for primary prevention of disease.[22] More broadly they may also help create greater 'health literacy' – the knowledge and skills patients require to maintain their own health including use of health services. The use of behavioural techniques, especially for self monitoring is recommended, as well as the use of personal communication and written or other audiovisual materials **(A)**.[22]

Patients view the GP as a key, first contact and credible source of preventive advice. Health education messages have a large impact when delivered by the GP. When patients present with symptoms and concerns, they are more receptive to advice about how to minimise or avoid illness. Doctors can enhance their patients' understanding by taking time to explain and by using simple language (ie. avoiding medical jargon).

Factors that increase the effectiveness of patient education delivered by GPs include:

- assessing the patient's health literacy[23]
- the patient's sense of trust in their GP[24]
- face-to-face delivery[25]
- patient involvement in decision making[26–28]
- highlighting the benefits and the costs[29,30]
- strategies to help the patient remember what they have been told[31]
- tailoring the information to the patient's interest in change[32]
- strategies that address the difficulty in adherence[28,33]
- the use of decision aids.[34]

Many prevention activities involve a change in health related behaviour. As the patient plays a large role in making this happen, it is useful to facilitate more active inclusion of patients in their care. This process is an essential component of self management strategies[35,36] and has the potential to increase the patient's responsibility for their health. In addition, it:

- enhances the quality of communication[37,38]
- enhances the doctor patient consultation[26]
- can reduce the cost of aspects of care through better informed patients[27]
- increases the demand and use of appropriate referral to other health professionals and agencies,[38] and
- increases adherence to recommended prevention activities and therapeutic regimens.[38,39]

General practitioners can encourage their patients to participate in protecting their own health through better knowledge, increased skills and better access to services and programs. They can support their patients to do this, through simple counselling or more structured interventions in their practice or by referral to other health care providers.

For those whose first language is not English, a professional interpreter should be considered.

Approaches to patient education

Patients need to develop their own understanding of the problem and what can be done about it. For simple behavioural changes such as having a Pap test, patients weigh up the perceived benefits and costs.[40] These benefits and costs may include answers to the following questions:

- How big is the problem to the individual?
- What are the consequences of not doing it?
- What are the benefits?
- What are the barriers?

A recall notice should specifically address the above issues in order to be effective.

Some health education may require more complex actions over a period of time, such as changing diet, stopping smoking or increasing physical activity. The 'stages of change model'[41] identifies five basic stages of change, which are viewed as a cyclical, ongoing process during which the person has differing levels of motivation or readiness to change, and the ability to relapse or repeat a stage. Each time a stage is repeated, the person learns from the experience and gains skills to help them move to the next stage.

Stages of change model	
Pre-contemplation (not thinking about change)	**Stage during which a person does not consider the need to change** • Have not had sufficient experience with negative consequences
Contemplation (thinking of change)	**In this stage, a person considers changing a specific behaviour** • Beginning to seek relevant information • Re-evaluating behaviour • Obtaining help from others to support future attempts • Still weighing up options and isn't ready to take action
Determination (ready for change)	**The stage where a person makes a serious commitment to change** • Ready to take action in the next 30 days • Need to set goals and develop priorities in order to manage their illness
Action (changing behaviour)	**Change begins (these can be large or small changes)** • Efforts made to modify habits and environment • Increased use of behavioural processes of change (eg. stimulus control and counter conditioning)
Maintenance (maintaining change)	**Change is sustained over a period of time** • Counter conditioning and self liberation peak • Take responsibility for actions • Susceptible to relapse so remain aware of environmental and internal stimuli that may trigger problem behaviours

Motivational interviewing is dealt with in more detail in the 'green book'.

Many of the motivators and barriers to behavioural change lie outside the patient and their immediate family. Advertising, availability of resources (eg. fresh food), and social and economic forces all exert a strong influence on patients. These need to be addressed at community, state and national levels.

The complex needs and health problems of disadvantaged groups

The complex needs and health problems of disadvantaged groups and the interactions between social, psychological, environmental and physical determinants of health, mean that special effort is required for patient education to be effective. In particular, GPs need to employ a range of strategies and work in collaboration with other services.[42] To be effective in patient education for indigenous communities, GPs need an understanding of the Aboriginal view of health, culture and history and an ability to provide services within a culturally appropriate framework. This also requires GPs to collaborate with other agencies and providers to ensure the provision of high quality preventive health care for Indigenous Australians.[43]

Development of the 'red book' (7th edition)

The recommendations in these guidelines are based on current evidence based guidelines for preventive activities. Precedence has been given to those most relevant to Australian general practice. Usually this means that the recommendations are based on Australian guidelines such as those endorsed by the National Health and Medical Research Council (NHMRC). In cases where these are not available or recent, other Australian sources have been used, such as the National Heart Foundation of Australia, Canadian or USA preventive guidelines, or the results of systematic reviews. References to support these recommendations are listed. However, particular references may relate to only part of the recommendation (eg. only relating to one of the high risk groups listed) and other references in the section may have been considered in formulating the overall recommendation.

Recommendations in these guidelines are consistent with the Medicare Benefits Schedule at the time of writing. There are a range of Medicare items for health assessments in particular groups. Comprehensive annual health assessment is currently approved for those 75 years of age and over (items 700 and 702) and Aboriginal people and Torres Strait Islanders 55 years of age and over (items 704 and 706). The Aboriginal and Torres Strait Islander Adult Health Check (item 710) provides for 2 yearly health checks for those aged 15–54 years inclusive. There is a health check for patients aged 45–49 years who have a risk factor (item 717) and for patients who are refugees (items 714 and 716). Item 708 is the health check item for Aboriginal and Torres Strait Islander children. Items 718 and 719 are for health assessments in the intellectually disabled. Item 713 is for type 2 diabetes risk evaluation.

Scope and limitations of the red book

These guidelines have not included tertiary prevention or detailed information on the management of risk factors or early disease (eg. what medications to use in treating hypertension). Similarly it has not made recommendations about tertiary prevention (preventing complications in those with established disease). Also, information about prevention of infectious diseases has been limited largely to immunisation and some sexually transmitted infections. There is limited advice about travel medicine. Information on travel medicine can be obtained from the Centres for Disease Control at www.cdc.gov/travel/index.htm or WHO International Travel and Health at www.who.int/ith/.

These recommendations are based on the best available information at the time of writing. On past experience this means that the guideline will remain current for no more than 2 years. Any update information will be posted on the RACGP website. More information and guidelines can be found on the NHMRC website at www.nhmrc.gov.au/guidelines/health_guidelines.htm and the Cochrane Collaboration at www.cochrane.org.au.

iv How to use the 'red book'

These guidelines are designed to be used in a number of ways, all of which can be useful in day-to-day general practice. The 'red book' can be used as:

- a guide to who is most at risk and for whom screening or preventive care is most appropriate
- a refresher to check the latest recommendations
- a reminder to check at a glance which preventive activities are to be performed in various age groups and how often
- a check list of preventive activities used according to an individual patient's health profile
- an auditable standard for clinical practice
- a study guide – a comprehensive list of references is provided (links to further original sources are provided in the electronic version where appropriate). This allows you to gain more in-depth information on a particular topic
- a patient education tool to demonstrate to patients the evidence that exists for preventive activities.

The information in these guidelines are organised into three levels of detail.

The first level is the lifecycle chart, which highlights when preventive activities should be performed and the optimum frequency for each activity. The lifecycle chart is organised by age and clinical topic. Simply check at the column under a particular age group to see which activities should be considered for the patient. The preventive activities that are recommended for everyone within a particular age range, and for which there is sound research evidence are shaded in 'dark grey', while activities to be performed only in patients with risk factors or where the evidence is not as strong are shaded 'light grey'.

A copy of this chart can be downloaded from the RACGP website and attached to the patient record as a systematic reminder for preventive activities. You can also use it as a wall chart, or keep it handy on your desk.

The second level is more detailed and presents a summary of recommendations in addition to tables which identify which preventive care should be provided for particular groups in the population.

Each recommendation in the tables is graded according to levels of evidence and the strength of recommendation. The levels of evidence are coded by the Roman numerals I–V, while the strength of recommendation is coded by the letters A–E (*Table 1*).

The strength of recommendation is also included in the brief summary that accompanies each table, and is presented as a letter A–E in bold script and in brackets, eg. **(A)**. The level and strength may not always match up. For example, there may be Level I evidence against doing a particular procedure, therefore the strength of recommendation will be **'E'**. In some cases there is no evidence available so the column detailing level and strength of evidence will say 'no evidence'. On other topics the level of evidence may be low but the strength of recommendation is graded as high **(A)**. A good example of this is the recommendation that parents of babies and young children should avoid smoking – level of evidence is III, as there are no randomised clinical trials available on this, but the strength of recommendation is **'A'**.

Only key references used to formulate the recommendations are included in the tables. Where the evidence is available on the internet, the web link is given to enable easy access to original materials.

There is also information on how the preventive care should be implemented, for example a brief outline of the method of screening.

Finally, there is information included in implementation tables on particular disadvantaged population groups who may be at risk for not receiving preventive care and what should be done to increase their chance of preventive care.

Table 1. Coding scheme used for levels of evidence and strength of recommendations

Level of evidence	
Level	**Explanation**
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly designed randomised controlled trial
III	Evidence obtained from any of the following: • well designed pseudo randomised controlled trials (alternate allocation or some other method) • comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies, or interrupted time series with a control group • comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group
IV	Evidence obtained from case series, either post-test or pre-test and post-test
V	Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees
No evidence	After thorough searching no evidence was found regarding recommendations in general practice for the target disease or condition
Strength of recommendation	
Strength	**Explanation**
A	There is good evidence to support the recommendation
B	There is fair evidence to support the recommendation
C	There is poor evidence regarding the inclusion or exclusion of the recommendation but recommendations may be made on other grounds
D	There is fair evidence against the recommendation
E	There is good evidence against the recommendation

The levels of evidence are an adaptation of those published in the NHMRC publication, *A guide to the development implementation and evaluation of clinical practice guidelines*, 1998.

The strength of recommendation coding scheme is adapted from the US Preventive Services Task Force, *Guide to clinical preventive services*, 1996.[44]

v What's new in this 7th edition?
Highlighting significant changes

The format of this seventh edition of the red book is similar to the sixth edition and is designed to be used together with the other preventive resources such as the RACGP publications, the 'green book' and *SNAP* guidelines. There is increased information about what should be covered in health assessments or health checks for particular groups.

Key changes

Genetics

The seventh edition has updated recommendations about the genetic risk of breast, ovarian and colorectal cancers (in the cancer section) and haemochromatosis.

Age specific sections

A new section has been included which summarises preventive activities in middle age (40–64 years).

Immunisation: new vaccine information

- Oral rotavirus vaccination at 2, 4 and 6 months (note limited flexibility for catch up doses)
- Human papillomavirus vaccine (either 2 or 4 valent) is recommended for females aged 10–26 years. Both vaccines are funded for females aged 12–13 years as part of the National Immunisation Program but are not interchangeable
- Diphtheria/tetanus/pertussis (to protect the newborn from pertussis). If previous vaccination history or infection is uncertain, testing should be undertaken to determine immunity to varicella and rubella. Women receiving live viral vaccines such as measles/mumps/rubella (MMR) and varicella should be advised against falling pregnant within 28 days of vaccination
- Zoster virus live vaccine for the prevention of shingles is recommended from 50 or 60 years of age
- Vaccination recommendations for all health professionals are provided in an additional table.

Vascular disease

Hypertension and lipid guidelines have been updated to include changes to targets. It is recommended that a screening questionnaire be used to detect patients at risk of diabetes.

Psychosocial

A new recommendation has been added that clinicians ask all pregnant adult and adolescent women about interpersonal abuse and violence.

Preventive activities before pregnancy 01

Age	<2	2–3	4–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	>65

Every woman aged 15–49 years should be considered for preconception care **(C)**. Preconception care is a set of interventions that aim to identify and modify biomedical, behavioral and social risks to a woman's health or pregnancy outcome through prevention and management.[45] This should include smoking cessation **(A)**[46] and advice to consider abstinence from alcohol (especially in the early stages of pregnancy),[47] folic acid supplementation **(A)**,[48] review of immunisation status **(C)**,[49] medications **(B)**,[50] and chronic medical conditions, especially glucose control in patients with diabetes **(B)**.[51]

There is evidence to show improved birth outcomes with preconception health care in women with diabetes, phenylketonuria and nutritional deficiency,[52] as well as benefit from the use of folate supplementation and a reduction in maternal anxiety.[53] The following table lists the potential interventions recommended by expert groups in preconception care **(C)**.

What does preconception care include?

Medical issues

Reproductive life plan

Assist your patient in developing a reproductive life plan that includes whether they want to have children and if so, discuss the number, spacing and timing of children.

Reproductive history

Have there been any problems with previous pregnancies such as infant death, fetal loss, birth defects, low birth weight, preterm birth, or gestational diabetes? Are there any ongoing risks that could lead to a recurrence in any future pregnancy?

Medical history

Are there any medical conditions that may affect future pregnancies? Are chronic conditions such as diabetes, thyroid disease, hypertension, epilepsy and thrombophilias well managed?

Medication use

Review all current medications, including over-the-counter medications, vitamins and supplements.

Genetic/family history

Assess risk of chromosomal/genetic disorders, based on family history/ethnic background (eg. neural tube defects [NTD], cystic fibrosis, fragile X syndrome, Tay-Sachs disease, thalassaemia, sickle cell anaemia, and phenylketonuria).

General physical assessment

Pap test and breast examinations should be conducted before pregnancy if due or indicated respectively. Also assess body mass index (BMI), blood pressure (BP) and ask about periodontal disease.

Substance use

Ask about tobacco, alcohol and illegal drug use.

Vaccinations

Vaccinations can prevent some infections that may be contracted during pregnancy. If previous vaccination history or infection is uncertain, testing should be undertaken to determine immunity to varicella and rubella, so that vaccination can be provided to nonimmune women. Women receiving live viral vaccines such as measles/mumps/rubella (MMR) and varicella should be advised against falling pregnant within 28 days of vaccination.

- If indicated, MMR and varicella (in those without a clear history of chickenpox or nonimmune on testing) should be given at least 28 days before conception
- Influenza is recommended during pregnancy to protect against infection (if in second or third trimester during influenza season)
- Diphtheria/tetanus/pertussis (to protect the newborn from tetanus or pertussis) should be considered before conception.

Lifestyle issues

Family planning

Based on the patient's reproductive life plan, discuss fertility awareness, chance of conception and risk of infertility and fetal abnormality. For women not planning to become pregnant, discuss effective contraception and emergency contraceptive options.

Folic acid supplementation

Women should take a 0.4–0.5 mg supplement of folic acid per day for at least 1 month before pregnancy and for the first 3 months after conception. In women at high risk (ie. those with a reproductive or family history of NTD, those who have had a previous pregnancy affected by NTD, those on antiepileptics, or those who have diabetes) the dose should be increased to 5 mg/day.

Healthy weight, nutrition and exercise

Discuss weight management and caution against being over or underweight. Recommend regular moderate intensity exercise and assess risk of nutritional deficiencies (eg. vegan diet, lactose intolerant, calcium or iron, vitamin D deficiency due to lack of sun exposure).

Psychosocial health

Provide support and identify coping strategies to improve your patient's emotional health and wellbeing.

Smoking, alcohol and illegal drug cessation (as indicated)

Smoking and illegal drug use during pregnancy can have serious consequences for an unborn child and should be stopped before conception. There are no safe limits of alcohol consumption during pregnancy.

Healthy environment

Repeated exposure to hazardous toxins in the household and workplace environment can impact on fertility and increase the risk of miscarriage and birth defects. Discuss the avoidance of TORCH infections:

- **toxoplasmosis** – avoid cat litter, garden soil, and raw/undercooked meat, unpasteurised milk products, wash all fruit and vegetables
- **cytomegalovirus, parvovirus B19 (fifth disease)** – discuss the importance of frequent hand washing (and the additional risk reduction by the use of gloves when changing nappies in child and health care workers)
- **listeriosis** – avoid paté, soft cheeses (eg. feta, brie, blue vein), pre-packaged salads, deli meats, and chilled/smoked seafood. Wash all fruit and vegetables before eating
- **fish** – limit the amount of fish containing high levels of mercury.

(See www.foodstandards.gov.au/foodmatters/pregnancyandfood.cfm for information on folate, listeria and mercury)

Intervention	Technique	References
Folate supplementation	• High risk women: 5 mg/day supplementation ideally beginning at least 1 month before conception and for first trimester • Most women 0.5 mg/day supplementation ideally beginning at least 1 month before conception and for first trimester	48,54–56
Smoking cessation	Women should be informed that tobacco affects fetal growth and all women should be advised to stop smoking. Evidence exists to suggest improved cognitive ability in children of mothers who quit smoking during gestation **(III A)**. Pharmacotherapy should be considered when a pregnant woman is otherwise unable to quit, and when the likelihood and benefits of cessation outweigh the risks of pharmacotherapy and potential continued smoking	57
Alcohol and illicit drug use	Women should be informed of the potential harmful effects of alcohol to the fetus and should be advised that there are no safe limits of alcohol consumption during pregnancy. Women should be informed that illicit drug use may harm the fetus and advised to avoid use	47
Inter pregnancy interval	Worse perinatal outcomes with inter pregnancy intervals <18 months or >59 months, namely pre-term birth, low birth weight and small for gestational age	58
Chronic diseases	Optimise control of existing chronic diseases (eg. diabetes, hypertension, epilepsy). Avoid teratogenic medications	56
Preconception care resources for GPs and patients	Address risk factors using Pregnancy Lifescripts. Available at www.agpn.com.au/site/index.cfm?display=24414	

Health inequality

Less than 50% of women in Victoria and New South Wales supplement their diet with folate periconceptually. This figure is lower in:[59]

- women in lower socioeconomic groups
- indigenous women
- rural women
- younger women
- multiparous women.

Strategy

Refer to general principles as discussed in the introduction and as outlined in the 'green book'.

02 Genetic counselling and testing

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

There is insufficient evidence to recommend screening the population utilising genetic testing, except for pregnant women and neonates **(C)**. Genetic tests are appropriate for certain conditions where the individual is considered to be at high risk **(A)**.

In order to identify patients who may potentially benefit from genetic testing, the GP must ensure that a comprehensive family history is taken from all patients (including first degree or second degree relatives) **(A)** and regularly updated.

The presence of genetically determined disease may be suggested by the following:

- increased frequency and early onset of cancers in families
- unexplained intellectual disability
- birth defects
- multiple pregnancy losses or stillbirth or early death, or
- children with multiple congenital abnormalities.

Also, patients of particular ethnic backgrounds may be at higher risk and may benefit from genetic testing. General practitioners should consider referral to, or consultation with, a genetic service (general or cancer genetics) for testing, as test results are not straightforward. Testing often involves complex, ethical, social and legal issues.

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Breast and ovarian cancers			
See Chapter 9.3 *Breast cancer*			
Colon cancer			
See Chapter 9.5 *Colorectal (bowel cancer)*			
Cystic fibrosis			
High risk • Those with a family history of cystic fibrosis (CF), or whose relative carries a known CF mutation • Those whose partner is affected or is a known carrier of CF • Those whose partner is from northern European, Ashkenazi Jewish background who are consanguineous (ie. cousins married to each other) • Men with infertility suspected or due to congenital absence of the vas deferens	Refer for testing, and as required for genetic counselling	Before pregnancy or in first trimester or pre-implantation genetic diagnosis (PGD)	III B 60–62
Down syndrome			
Higher risk • Women of advanced maternal age (≥35 years of age) • Parent with a chromosomal rearrangement (eg. translocation of chromosome 21)	Maternal serum/ ultrasound screening	In first or second trimester	V C 62–64
Very high risk • Women who have had a previous Down syndrome pregnancy • Women with positive maternal serum screening/nuchal translucency ultrasound in first trimester or maternal serum screening in second trimester	Fetal diagnostic genetic testing	In first or second trimester	V C 63
Hereditary haemochromatosis			
Increased risk • Patients with liver disease of unknown cause, including patients with suspected alcoholic liver disease • All first degree relatives of patients with haemochromatosis or an altered HFE gene • Patients with conditions that could be a complication of haemochromotosis, ie. diabetes mellitus, atypical arthritis, cardiomyopathy, erectile dysfunction or chronic fatigue	Test for transferrin saturation and serum ferritin concentration. If fasting transferrin saturation >45% or ferritin is raised on more than one occasion, test by DNA typing Test all first degree relatives of carriers (homozygous for C282Y gene or compound heterozygotes) with DNA typing and iron studies Children of C282Y heterozygotes should only be tested if the other parent is also heterozygous for the C282Y mutation. Children in affected families should not be tested until 18 years of age Other first degree relatives of C282Y heterozygotes should be tested with DNA typing and iron studies	Repeat every 2–5 years	II A 62,65–67

Haemoglobinopathies and thalassaemias				
Higher risk • Patients of southern Mediterranean, African, Middle East, transcaucasus, central Asia, Indian subcontinent and southeast Asian background who are contemplating pregnancy, particularly where there is a family history of haemoglobinopathy (In some states with higher prevalence of at risk ethnic groups all pregnant women are screened by mean corpuscular volume [MCV])	MCV Haemoglobin electrophoresis	Before pregnancy	III B	68,69
Fragile X syndrome				
Higher risk Women with a personal or family history of: • a male or female with intellectual disability, developmental delay or learning disability of unknown cause • a male with autism-like characteristics • undiagnosed intellectual disability or fragile X syndrome • individuals with a previous fragile X cytogenetic test that was negative or inconclusive • a female with a history of premature menopause (<40 years of age)[70] • a male with ataxia and Parkinsonism	Karyotyping (cytogenetic studies) and DNA studies of affected boy, followed by testing mother or affected son or daughter Diagnostic test for males with ataxia, tremor or dementia who have a family history of fragile X syndrome	Before pregnancy	I A IV B IV A	71 72 73

Test	Technique	References
Family history	Ideally the following information will be collected for a full genetic assessment: • information from three generations of both maternal and paternal family line • record if alive or dead • record age of onset of disease Identify affected first or second degree male or female relatives on either side of the family	63,74
Genetic screening	Genetic screening should be undertaken after the family history has been established in detail. Genetic testing should be conducted under the supervision of a clinical geneticist, an appropriate specialist or ethically approved clinical research group, and should be supported by appropriate counselling. Fragile X syndrome and haemachromatosis may be exceptions to this	62
Breast cancer	If a woman wishes to clarify her genetic risk or that of her family, or wishes to consider risk reducing surgery, discuss referral to a specialist family cancer clinic for advice, appropriate counselling and management. Genetic testing may be appropriate No reduction in mortality from prophylactic mastectomy has been shown Oral contraceptive medication reduces risk of ovarian cancer for women with BRCA1 or BRCA2 mutations but has no effect on risk of breast cancer	75 76–81
Maternal Down syndrome screening	• First trimester: – free beta human chorionic gonadotrophin (HCG), pregnancy associated plasma protein and fetal ultrasound – nuchal translucency screen at 12 weeks • Second trimester: – serum screening – beta HCG, unconjugated oestriol, alpha-fetoprotein	63,64
Fetal diagnostic genetic testing for Down syndrome	• First trimester: – chorionic villus sampling • Second trimester: – amniocentesis	63

Terminology	Purpose
Diagnostic testing	To make or confirm a diagnosis of a specific disorder in a person who generally already has signs or symptoms of that disorder
Genetic carrier testing	To determine whether or not the person has a genetic or chromosomal abnormality that does not generally affect the person's health but increases his or her chance of having children with the disorder in question
Prenatal testing	Performed on a fetus in utero where there are 'at risk' parents, in order to inform decisions about termination of pregnancy or for therapeutic or surgical interventions

03 Preventive activities in children and young people

Health surveillance is the foundation for preventive activity in children and young people. This involves working with parents, nurses and others in the community to maintain awareness of risk and protective factors that affect family and child wellbeing.[82] The parent held child health record has been demonstrated to improve health surveillance.[83]

Health inequality

To support the assessment and early identification of health issues in Aboriginal and Torres Strait Islander children, the Child Health Check (0–14) MBS Item 708 is now available. The health status of indigenous children remains poor with disparities in health status across different regions. For example, compared with non-Indigenous Australians, Aboriginal and Torres Strait Islander children are three times more likely to die before their first birthday; five times more likely to succumb to SIDS; twice as likely to be born premature or with low birth weight; and nearly four times as likely to be hospitalised with respiratory infection. Indigenous Australian mothers are eight times more likely than non-Indigenous mothers to receive inadequate antenatal care and rates of breastfeeding are lower in indigenous than non-indigenous communities.

There is a gradient in health and life outcomes for children and young people over the entire socioeconomic spectrum. There are large numbers in the middle range of the population and it is these numbers that are used by those who argue for universal interventions. On the other hand, the magnitude of the ill health experienced by those at the bottom end of the spectrum is used by others to argue for targeted interventions.[84,85] Maternal smoking during pregnancy is more prevalent among women of low socioeconomic status (SES) and single mothers and is strongly associated with low birth weight. Mothers from lower socioeconomic backgrounds have fewer and less regular antenatal visits. Lower rates of breastfeeding and shorter duration of breastfeeding have been reported for mothers in a range of disadvantaged backgrounds, including single, low income, migrant, unemployed families, poorly educated parents and disadvantaged communities. Higher mortality rates in infancy and childhood, including deaths from hypoxia, SIDS, prematurity related disorders, accidental and nonaccidental injury are reported for low SES children and children living in disadvantaged neighbourhoods.[85]

3.1 Parenting

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Increased risk of postnatal depression • excess of adverse life events • lack of social support • past history of depression • emergency caesarean section	Assess maternal mental and physical health, parental disharmony and social support	1–8 weeks postpartum	V C 86–89
Increased risk of maltreatment and neglect • low socioeconomic status • younger mother • lack of social support • maternal history of abuse • large family • substance abuse • mental illness • child with special needs	Assess social circumstances and support, awareness of external agencies that could provide assistance	Opportunistically	V C 54,86,90

An Australian randomised control trial demonstrated that a coordinated cross agency system of parenting support, which included general practice, produced meaningful effects at the population level.[91]

3.2 Preventive counselling and advice

Preventive counselling and advice should be given at every opportunity **(C)**.

Preventive area	What advice should be given?	How often/ when?	Level of evidence and references
Accident/injury prevention	**1–24 months** Include home safety: stair guards, fire guards, smoke detectors, hot water <54°C, safe poison storage, never leave alone in water, and use of nonflammable night wear Car safety: rear facing car restraint <9 kg **2–5 years** Include water safety, swimming, car restraints, bicycle helmets	Opportunistically	II V 86, 92,93
Sun protection advice	Recommend: • babies should not be exposed to direct sunlight. Use lightweight wraps to shield their skin and only small amounts of sunscreen on the very small areas of exposed skin. (Note recommendations for high risk populations below) • sunscreen – apply broad spectrum (SPF 30) water resistant sunscreen preferably 20 minutes before going into sun and every 2 hours while in the sun (more often if swimming or sweating) • shade – avoid direct sun if possible • protective gear – use lightweight clothing with longer sleeves that covers more of the skin, a hat that protects the face, eyes and neck, and sunglasses	Opportunistically	III B 54,86
• Population at risk of vitamin D deficient rickets and hypocalcaemic convulsions: – recently immigrated infants or first generation offspring of immigrant parents from north Africa, the Middle East or Asian countries with maternal vitamin D deficiency	Babies and infants need 30 minutes per week of sunlight wearing only a nappy or 2 hours per week fully clothed without a hat.[94] (In adults the consensus is that exposure is not recommended between 10 am and 2 pm (11 am and 3 pm during daylight saving)[95]	Educate at risk groups	V C 94
Physical activity advice	Promote healthy activity universally: • at least 60 minutes (and up to several hours) of moderate to vigorous physical activity every day • activity can be achieved through active free play, structured programs or both • no more than 2 hours per day of sedentary screen time	Opportunistically	V C 96–98
Nutrition advice • Children and young people at risk of iron depletion/ deficiency: – prematurity – >600 mL/day milk after 12 months of age – Arabic background – adolescent females • At risk of iodine deficiency – the entire population	Promote healthy drinking and eating universally. Recommend: • exclusive breastfeeding to 6 months of age • low fat dairy products from 2 years of age • water rather than soft drink, cordial or fruit juice • two fruits and five vegetables daily • 'special day' foods limited to special days • find rewards for children other than food Recommend: • drink <600 mL/day milk after 12 months of age (due to obesity and iron deficiency/depletion risks for those drinking >600 mL/day) • three serves of calcium rich food per day • a diet adequate in iron and iodine for children and young people	Opportunistically	V C 96, 97,99

3.3 Growth, overweight and obesity

There is a lack of evidence for the effectiveness of interventions in clinical practice to reduce childhood obesity. Some consensus guidelines recommend that height, weight and head circumference should be measured at each visit and plotted on appropriate centile charts (head circumference until 36 months of age and body mass index [BMI] from 2 years of age).[100] There is evidence that GPs may underestimate the prevalence of paediatric overweight in their practice, and universal measurement of height, weight and calculation of BMI can identify all children at risk of overweight.[101]

There is evidence of some success in community based efforts to prevent and treat childhood obesity.[102,103]

Who is at higher risk of overweight or obesity?	What should be done?	How often?	Level of evidence and references
Average risk	Measure height and weight, calculate BMI and plot on BMI for age chart	Opportunistically, as recommended in the local child health record	V C 83,96, 104–107
High risk • Early adiposity • An overweight parent • A history of gestation affected by diabetes • Children from a Middle Eastern background[108]	• Measure and chart growth and BMI • Promote healthy eating, physical activity and limited small screen recreation	Opportunistically	V C 96

Intervention	Technique	References
Measure and chart growth. Calculate and plot BMI on BMI for age charts	Height, weight and head circumference • These should be measured at each surveillance visit and plotted on appropriate centile charts (head circumference until 36 months of age and BMI from 2 years of age) • Care needs to be taken when interpreting velocities • Ensure equipment accurate and regularly calibrated	83,96,104,105,107 109,110
Promote healthy eating and activity	• Provide dietary advice using the *Dietary guidelines for Australian children* including: – eat plenty of vegetables, legumes and fruits (two serves of fruit and five of vegetables each day) – eat plenty of cereals (including breads, rice, pasta and noodles), preferably wholegrain – include lean meat, fish, poultry and/or alternatives – include milk, yoghurt, cheese and/or alternatives – choose water as a drink; limit soft drink, fruit juice and cordial – limit snack foods – eat breakfast every day – limit portion sizes • Limit sedentary screen time <2 hours per day (includes watching TV, playing video games and use of computers) • Encourage moderate to vigorous physical activity for at least 60 minutes each day including aerobic, muscle, and bone strengthening components	96–98

3.4 Newborns

Although evidence is limited, consensus guidelines recommend newborn screening and examination **(B)**.

Who is at higher risk?	What should be done?	How often/when?	Level of evidence and references
Average risk • Normal delivery	Newborn screening for: • hypothyroidism • phenylketonuria • cystic fibrosis • galactosaemia • hearing loss	At birth	IV B 82,111
	• Physical examination	At birth	V C 82,107
	• Vitamin K • Hepatitis B vaccine	At birth	V C 82

3.5 Infants: 1–24 months of age

Child health surveillance should be conducted at 2, 4, 6, 12 and 18 months of age. Breastfeeding exclusively to 6 months of age should be promoted. Ongoing assessment of growth (see 3.3 *Growth, overweight and obesity*), hearing, vision, language, development and social skills should be undertaken in collaboration with parents **(B)**.

Who is at increased risk?	What should be done?	How often/when?	Level of evidence and references
Average risk	Promote breastfeeding	Opportunistically	III A 96,97
			III A 112
	Preventive counselling and advice regarding the risks to baby of passive smoking, injury prevention, SIDS, sun safety and nutrition	Opportunistically	
	Assessment of: hearing, vision, language development, communication and family functioning	Opportunistically	V C 82,84, 107,113

Intervention	Explanation	References
SIDS risk reduction advice	• Sleep baby: – supine from birth – with face uncovered (sleeping with feet at the base of the cot may be the best way to keep face uncovered) • Avoid passive smoking • Avoid sleeping with baby in bed if adult affected by drugs or alcohol	87,112
Breastfeeding	• Provide antenatal information and counselling about the benefits and practical aspects of breastfeeding (and risks of not breastfeeding) to all potential mothers and fathers • Encourage, support and promote exclusive breastfeeding for the first 6 months of life	96,97
Hearing surveillance	• Explore with parents. The questionnaires in the parent held record (PHR) can be used to facilitate this co-surveillance	86,107
Language, fine motor and social skills surveillance	• Explore with parents. The PHR, the 'Parents' evaluation of developmental status' (PEDS), or other tools may be used to facilitate co-surveillance of developmental issues with parents. An electronic directory to other potentially useful tools is included at reference 114	82,107
Family functioning surveillance	• Elicit concerns	
Vision assessment	• Test for strabismus using the cover test and light reflex (Hirschberg) test	82,86,107

3.6 Preschool: 2–5 years of age

Child health surveillance should be conducted at 2, 3 and 4 years of age. This should include surveillance of growth, hearing, vision and language development. Anticipate and look for emerging behavioural and emotional problems **(C)**.

Who is at higher risk?	What should be done?	How often/when?	Level of evidence and references
Average risk	• Anticipatory advice regarding: – injury prevention – sun protection advice – dental care – physical activity – nutrition	As per advice in the local child health record	III B 83,86,96, 104,105,107
	• Surveillance of: – development – emerging behavioural or emotional problems – family dysfunction		V C 84,91,107, 113,115

3.7 School age: 6–13 years of age

Preventive advice should be given to school aged children opportunistically **(C)**.

Consider social conflict or violence at home or school when difficult behaviours/emotional problems emerge. School bullying is common,[116] influences lifelong wellbeing,[117,118] and parents are often unaware that it is occurring.[119]

Who is at higher risk?	What should be done?	How often/when?	Level of evidence and references
Average risk	• Assess growth • Ask about progress at school • Anticipate and look for emerging behavioural or emotional problems	Opportunistically	V C 84,91,100,120
	• Preventive counselling and advice: – injury prevention – sun protection – dental care – physical activity – nutrition	Opportunistically	II B 54,86,93

3.8 Adolescence: 14–19 years of age

Who is at higher risk?	What should be done?	How often/when?	Level of evidence and references
Increased risk Young people with disability or a chronic condition	Reduce harm (see 'Intervention')	Opportunistically	V C 121–124
As per *the Australian Immunisation Handbook* NB. Only vaccines delivered in accord with the National Immunisation Program (NIP) Schedule are government funded	Immunise as recommended by *the Australian Immunisation Handbook* (see Chapter 6 *Communicable diseases*)		III A 49

Many young people find it difficult to access health care in general practice and once there, to raise important health issues with the doctor.[125] General practitioners often find providing optimal care for young people challenging.[125] Many young people with chronic illness or disability have difficulty negotiating the transition from tertiary paediatric care to the adult health care system.[122,123]

Intervention	Explanation	Reference
Harm minimisation	• Assess pre-adolescent and adolescent patients for potentially risky behaviours. Frequent attendees with relatively minor problems are at higher risk of mental health problems • Provide messages that encourage delay in initiation of potentially risky behaviours, and at the same time promote risk reduction strategies if adolescents choose to engage, or are already engaging in, risky behaviours • Use principles of motivational interviewing in the assessment and discussion of risky health behaviours with adolescent patients • Become familiar with resources in the community that provide harm reduction programs for substance abuse, pregnancy prevention and injury prevention • Advocate for the introduction, further development and evaluation of evidence based prevention and treatment programs that use a harm reduction philosophy in schools and communities	121

04 Preventive activities in middle age

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

The recommended specific activities for low risk patients in the 45–64 years age group are listed below. Patients should be offered these opportunistically or at 2–5 year intervals **(B)**. Planned health checks in middle aged adults have been demonstrated to improve the frequency of management of SNAP behavioural risk factors, screening for cervical and colorectal cancer, and hyperlipidaemia in general practice.[7,126,127] However, there is mixed evidence for their effectiveness. These checks may be facilitated by the involvement of practice nurses.[128–130]

Age	Recommendation	Cross reference page
45–49 years	**Assess**	
	• SNAP behavioural risk factors	32–34
	• Risk of diabetes (AUSDRISK questionnaire) and absolute CVD risk	44 + *Appendix 2 + 3*
	• Depression in increased risk groups (eg. past history, physical illness, other mental problems)	58–59
	• Risk factors for osteoporosis	
	• Skin cancer	65
	Measure	48–50
	• Weight, height (calculate BMI) and waist circumference	
	• Blood pressure	34–35
	• Fasting lipids	42–43
	• Fasting blood glucose in patients at high risk of diabetes	43
	Perform	44
	• Pap test every 2 years	
	• Mammography if family history indicates high risk	51–52 52–53
50–64 years	**Assess**	
	• SNAP behavioural risk factors	32–34
	• Risk of diabetes (AUSDRISK questionnaire) and absolute CVD risk	44 + *Appendix 2* + 3
	• Depression in increased risk groups (eg. past history, physical illness, other mental problems)	58–59
	• Risk factors for osteoporosis	
	• Skin cancer	65
	Measure	48–50
	• Weight, height (calculate BMI) and waist circumference	
	• Blood pressure	34–35
	• Fasting lipids	42–43
	• Fasting blood glucose in patients at high risk of diabetes	43
	• Urinalysis for protein	44
	Perform	46–47
	• Pap test every 2 years	
	• Colorectal cancer screening with faecal occult blood testing (FOBT) at least every 2 years	51–52
	• Mammography every 2 years	54–55
	• Vaccination for diphtheria/tetanus/acellular pertussis (dTpa). Consider influenza and pneumococcal vaccination if high risk	52–53 28

Intervention	Technique	References
Health education	Tailor health advice or education to the patient's stage of change (see VI Patient education and health literacy)	131
Practice organisation	Identify patients who have not had preventive activities. Flag medical record; recall patient to practice. Assessment and education may be delegated to other practice staff	132

Health inequality
Aboriginal and Torres Strait Islander and low SES patients have a higher risk of disease but are less likely to be offered preventive interventions.
Strategy Strategies to increase screening and effective motivational and behavioural interventions in this group are discussed in the 'green book'.

See Chapter 15 *Screening tests of unproven benefit*.

05 Preventive activities in older age

Older people are at increased risk of multiple chronic conditions, which may impair their function and quality of life. Those living alone are particularly vulnerable. Their health problems may be exacerbated by poor nutrition, lack of physical activity and lack of exposure to the sun.

Medication related problems may cause unnecessary hospital admissions or death. These may be related to patient confusion, inadequate knowledge about medicines, poor compliance, and the GP and pharmacist not having full details of all the medications the patient is taking. Risk factors for medication related problems include:

- currently taking five or more regular medications
- taking more than 12 doses of medication per day
- significant changes in medication treatment regimen during the past 3 months.

Older people may rely on the help and support of family and carers. Carers, particularly carers of people with dementia or depression, are at risk of depression, anxiety, emotional distress, loneliness and isolation, but their health care needs are often overlooked.[133–137] The carer's need for support should be assessed when the patient's health is assessed.[138] Carer support resources are helpful for carer wellbeing and may delay the need for the older person to be relocated to a residential aged care facility.[133,139–141]

5.1 Falls and physical activity

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Patients should be screened for risk factors for falls from 65 years of age **(A)**.

Advice about moderate physical activity is recommended for all older people **(A)**.

Approximately 30% of people aged 65 years or over report one or more falls in the previous 12 months.[142] For the older person, physical activity provides the usual benefits, as well as minimising some of the limitations of later life such as reduced mobility, tendency to fall, and reduced interaction with the environment.[143] Impairment of vision has been well described as a risk factor for falls.[144] Untreated cataracts have been shown to be associated with increased risk of multiple falls[145] and reduced quality of life related to social isolation and depression.[146]

Who is at higher risk of falls?	What should be done?	How often?	Level of evidence and references
Average risk • All people 65 years of age or over	Screen for risk factors*	Every 12 months	I A 147,148
Moderately high risk • Older people presenting with one or more falls, who report recurrent falls or with multiple risk factors	Screen for risk factors and involve in preventive activities*	Every 6 months	I A 142,147
* A vitamin D supplement should be recommended if inadequate sun exposure to reduce the risk of fracture[149]			

Intervention	Technique	References
Screening for falls risk	• Ask about falls and any gait or balance problems • Identify risk factors: – increased age – past history of falls – chronic medical conditions (eg. stroke or Parkinson disease) – multiple medications and specific medications (eg. long acting benzodiazepines, and psychotropic medication) – impaired balance and mobility – impaired gait – reduced muscle strength – sensory problems (eg. impaired visual acuity and depth perception and peripheral neuropathy) – dizziness – impaired cognition – depression – low levels of physical activity, low BMI and vitamin D deficiency – fear of falling – female gender There are many falls risk assessment tools. However, few tools have been tested more than once or in more than one setting. Therefore, no single tool can be recommended for implementation in all settings or for all subpopulations within each setting.[150] A quick screening tool is the 'timed up and go test' (TUGT) which involves looking for unsteadiness as the older person gets up from a chair without using his or her arms, walks a few metres and returns. The 'turn 180 degrees' test is of similar value and can be administered in any setting. However, both tests rely on clinical judgment and the value of timed cut-off values for the TUGT and number of steps for the turn 180 degrees test need to be considered • Assess home environment for hazards including stairs, slippery surfaces and floor coverings, poor lighting, bathroom, and furniture. An occupational therapist can provide specialist advice	142,147,151–154
Falls risk reduction	Prescribe or refer for a home based exercise program. Encourage participation in a community based exercise program	155,156

5.2 Visual and hearing impairment

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Visual acuity should be assessed from 65 years of age using the Snellen chart **(B)**. However, there is no evidence that screening of asymptomatic older people results in improved vision.[157]

Hearing loss is a common problem among older people and is associated with significant physical, functional and mental health consequences. Annual questioning about hearing impairment is recommended for people 65 years of age and over **(B)**.

In some Australian states there are legal requirements for annual assessment, eg. driving over 70 years of age.[158] (See *Assessing fitness to drive, commercial and private vehicle drivers: Medical standards for licensing and clinical management guidelines*. Sydney: Austroads Inc, National Road Transport Commission, 2003. Available at www.austroads.com.au/aftd/index.html).

Eye disease and visual impairment increase 3-fold with each decade of life after 40 years of age. They are often accompanied by isolation, depression and poorer social relationships, and are strongly associated with falls and hip fractures. People at greater risk of visual loss are older people, those with diabetes, and those with a family history of vision impairment. Cataracts are the most common eye disease (42% of cases of visual impairment), followed by age related macular degeneration (AMD) (30%), diabetic retinopathy and glaucoma. The leading causes of blindness in those over 65 years of age are AMD (55%), glaucoma (16%) and diabetic retinopathy (16%).[159]

Who is at higher risk of visual impairment and hearing loss?	What should be done?	How often?	Level of evidence and references
People 65 years of age and over	Screen for visual impairment Screen for hearing impairment	Every 12 months	II B III B 44,160

Intervention	Technique	References
Visual impairment screening	Use a Snellen chart to screen for visual impairment in the elderly (see also Chapter 12 *Glaucoma*)	161
Hearing impairment screening	A whispered voice out of the field of vision has a high sensitivity for hearing loss, as does a single question about hearing difficulty	162

5.3 Dementia

Clinicians should be alert to the symptoms and signs of dementia in people over 65 years of age. These may be detected opportunistically using questions addressed to the person and/or their carer **(C)**. Depression and dementia may co-exist. When a person has dementia, adequate support is required for the person, their carer and their family.[163]

Who is at higher risk of dementia?	What should be done?	How often?	Level of evidence and references
Average risk • Those without symptoms	No evidence of benefit from screening	N/A	II C 164,165
Moderate risk • A family history of Alzheimer disease • People with history of repeated head trauma • People with Down syndrome	Case finding and early intervention	N/A	III C

Intervention	Technique	References
Case finding and confirmation	Ask: 'How is your memory?' Obtain information from others who know the person Over several consultations, obtain the history from the person and family/carer and perform a comprehensive physical examination. Undertake cognitive assessment using the Mini-Mental State Examination (MMSE), General Practitioner Assessment of Cognition (GPCOG) or clock drawing test.[166] The Rowland Universal Dementia Assessment Scale (RUDAS) is a multicultural cognitive assessment scale used to detect dementia across different cultures. The MMSE is the most widely used and evaluated scale. Assess functional status; the Instrumental Activities of Daily Living (IADL) assessment tool may be used See also Chapter 10 *Psychosocial*	163 167–169
www.minimental.com/ www.dementia.unsw.edu.au www.alzheimers.org.au/content.cfm?infopageid=3955 www.abramsoncenter.org/PRI/documents/IADL.pdf		

Communicable diseases 06

General practitioners play an important role in the prevention and management of communicable diseases. This includes advice on prevention, immunisation, early detection and treatment.

Updates on communicable diseases are available from the Australian Department of Health website at www.health.gov.au/internet/main/publishing.nsf/Content/portal-Communicable%20diseases.

General practitioners (laboratories and hospitals) are required by law to notify particular infectious diseases to their local or state public health units (this law over-rides all privacy regulations). A list of notifiable infectious diseases is available from state health department websites. This role has become almost completely automated by pathology laboratories as a result of advances in information technology. The GP may still need to ensure notification has occurred on occasions where a clinical diagnosis is made, or where clinical information is required.

6.1 Immunisation

Age	<2	2–3	4–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	> 65

Immunisation is recommended for all children and adults at particular ages according to the *Australian Immunisation Handbook* **(A)**. General practitioners should advocate immunisation and counter the common misunderstandings and antivaccine campaigns.

The National Immunisation Program Schedule (NIPS) provides a schedule of recommended funded vaccines. There may be other vaccines that are not funded but are recommended in the *Australian Immunisation Handbook*. There may be variability in vaccines recommended/funded (eg. hepatitis A vaccine).

Health inequality

For immunisation to be effective there needs to be high coverage rate. Therefore GPs need to be aware of groups with lower levels of age appropriate immunisation including:[170]

- families with young parents (under 25 years of age)[171,172]
- single parent families and families with more than one child[173]
- migrant families (particularly in the first years of their arrival in Australia or if a language other than English is spoken at home)[171–175]
- families where the parents are unemployed,[170,174] on low incomes,[171,174] or have very high or very low education levels[172,173,176]
- families who move frequently[175]
- Aboriginal children in rural and urban areas.[177–179]

The National Immunisation Program Schedule (NIPS)

Age	Vaccine
Birth	• Hepatitis B* (hepB)
2 months	• Hepatitis B* (hepB) • Diphtheria, tetanus and acellular pertussis (DTPa) • Haemophilus influenzae type b (Hib)** • Inactivated poliomyelitis (IPV)*** • Pneumococcal conjugate (7vPCV) • Rotavirus (first dose must be given before 12 weeks [Rotateq] or 14 weeks [Rotarix] of age, or not at all depending on vaccine used)
4 months	• Hepatitis B* (hepB) • Diphtheria, tetanus and acellular pertussis (DTPa) • Haemophilus influenzae type b (Hib)** • Inactivated poliomyelitis (IPV)*** • Pneumococcal conjugate (7vPCV) • Rotavirus (Rotarix, second dose before 24 weeks or not at all, Rotateq second dose before 28 weeks)
6 months	• Hepatitis B* (hepB) • Diphtheria, tetanus and acellular pertussis (DTPa) • Hib (extra)**** (only if Hiberix, HibTITER, or ActHIB used at 2 and 4 months) • Inactivated poliomyelitis (IPV)*** • Pneumococcal conjugate (7vPCV) • Rotavirus (only Rotateq has third dose, to be given before 32 weeks or not at all)
12 months	• Hepatitis B* (fourth dose if Hib-hepB used at 2 and 4 months or fifth dose for those born at <32 weeks or <2000 g birth weight) • Haemophilus influenzae type b (Hib)** (may need to use monovalent Hib vaccine) • Measles, mumps and rubella (MMR) first dose • Measles, mumps rubella and varicella (MMRV) instead of MMR to give at 12 and 18 months (when available) • Meningococcal C (MenCCV) • Hepatitis A vaccine (for Aboriginal people and Torres Strait Islanders in Northern Territory, Queensland, South Australia and Western Australia only)
12–24 months	• Pneumococcal conjugate or polysaccharide** (7vPCV booster for high risk groups or 23vPPV for Aboriginal and Torres Strait Islander children, see footnote)
18 months	• Varicella (VZV) (only if no history of varicella or prior vaccination) • Hepatitis A vaccine (for Aboriginal people and Torres Strait Islanders in NT, Qld, SA and WA only) • Measles, mumps and rubella (MMR) – second dose at 18 months instead of 4 years (NIPS) • Measles, mumps rubella and varicella (MMRV) instead of separate MMR + VZV to give at 12 and 18 months (when available)
4 years	• Diphtheria, tetanus and acellular pertussis (DTPa) • Inactivated poliomyelitis (IPV)** • Measles, mumps and rubella (MMR) (second dose funded NIP) • Pneumococcal conjugate or polysaccharide† (7vPCV or 23vPPV) (booster for high risk)
10–13 years	• Hepatitis B (2 adult doses for those born pre-May 2000, or not vaccinated against hepatitis B) • Varicella (VZV) (first dose or second dose booster vaccination) • Human papillomavirus (HPV) (3 doses over 6 months, for females)
12–13 years	• Human papillomavirus (HPV) (3 doses over 6 months, for females)
15–17 years	• Diphtheria, tetanus and acellular pertussis (dTpa is the adult/adolescent vaccine)
15–49 years	• Influenza (for all Aboriginal people and Torres Strait Islanders) • Pneumococcal polysaccharide (23vPPV) (for at risk Aboriginal people and Torres Strait Islanders)
50 years and over	• Influenza (Aboriginal people and Torres Strait Islanders) • Pneumococcal polysaccharide (23vPPV) (Aboriginal people and Torres Strait Islanders)
65 years and over	• Influenza • Pneumococcal polysaccharide (23vPPV)

* 3 hepB doses after birth dose required and extra dose at 12 months if born <32 weeks or birth weight <2000 g, unless immunity proven on serology at 7 months of age

** Use PRP-OMP (Pedvax Hib or Comvax) in areas of higher risk (for Aboriginal and Torres Strait Islander children in NT, Qld, SA, WA). Use PRP-T or PRP-OMP in other children

*** IPV in IPV combination vaccines, eg. DTPa-hepB-IPV, DTPa-IPV, DTPa-IPV-Hib, DTPa-hepB-IPV-Hib (their use may create a need for one dose monovalent Hib vaccine at 12 months)

**** Third dose at 6 months if using PRP-T (ActHib, Hiberix) or HbOC (HibTITER) Hib type vaccines in Aboriginal and Torres Strait Islander children in southern states and other children (lower risk)

† Pneumococcal vaccination (in addition to 7vPCV at 2, 4 and 6 months, 23vPPV or 7vPCV booster doses are recommended and funded for:
- Aboriginal and Torres Strait Islander children up to 5 years of age in central Australia
- Booster 23vPPV at 18–24 months in NT, Qld, SA, WA
- Children under 10 years of age at risk from specified medical conditions; if unimmunised give 2 doses 7vPCV, if immunised give booster 7vPCV at 12 months and 23vPPV at 4–5 years
- Children up to the age of 10 years who, after their sixth birthday develop asplenia, HIV infection, or a haematological malignancy, or who receive a transplant, should receive 2 doses of 7vPCV 2 months apart, and a dose of 23vPPV 2 months later (refer to http://immunise.health.gov.au Australian Immunisation Handbook. 9th edn, 2008)
- When using 23vPPV revaccinate after 5 years. Depending on risk for infection a second revaccination is indicated 5 years after second 23vPPV or at 50 or 65 years, whichever is later

Notes

1. Hepatitis B vaccine should be given to all infants at birth and should not be delayed beyond 7 days after birth. Infants whose mothers are hepatitis B surface antigen positive (HbsAg+ve) should be given hepatitis B immunoglobulin (HBIG) within 12 hours of birth
2. Diphtheria tetanus (dT) should be given at 50 years of age unless a dT booster dose has been documented in the previous 10 years. Boostrix (dTpa) is preferred instead of dT to protect from pertussis
3. Vaccine cold chain: to maintain vaccine quality by keeping the temperature of vaccines within 3 degrees of 5 degrees celsius. Temperatures outside this range damage vaccines and render them less effective or useless. Accurate monitoring of refrigerator storage temperatures or use of vaccine storage refrigerators is recommended

Recommended vaccines in the Australian Immunisation Handbook not in NIPS

Soon after birth	BCG (for Aboriginal people and Torres Strait Islanders in NT, far north Queensland, some regions of SA and WA, as well as children under 5 years of age who will travel to live >3 months in endemic areas or have family with leprosy)
From 6 months	Annual influenza vaccination is recommended for any person ≥6 months of age where there is a wish to reduce the likelihood of becoming ill with influenza
From 10–26 years	• Either 2v or 4v HPV vaccination is recommended to protect against oncogenic HPV 16 and 18 infections. Vaccination has no effect on existing HPV infections but prevents new HPV 18 and 18 infections • 4vHPV (Gardasil) is recommended for females aged 14–26 years (in NIPS, age 10–13 years) • 2vHPV (Cervarix) is recommended for females aged 14–26 years (in NIPS, aged 10–13 years) and also for women aged 27–45 years, the level of benefit depending on sexual history No evidence to recommend male vaccination as yet (4vHPV licensed for use in males aged 9–15 years)
50 years	Diphtheria, tetanus and acellular pertussis (dTpa) is preferred to diphtheria and tetanus (dT) (This is recommended if no tetanus immunisation was received in the previous 10 years)
From 60 years	Zoster virus live vaccine (Zostavax) for prevention of shingles (can be given from age 50 years onward)
All health care workers	• Hepatitis B (and hepatitis A in some jurisdictions) • Annual influenza • Pertussis (dTpa) • MMR (if not immune) • Varicella (if not immune)
Men who have sex with other men	• Hepatitis A and B
Injecting drug users	

Immunisation information resources

- http://immunise.health.gov.au
- The ACIR Enquiry Line: 1800 653 809 (this number can be used to obtain information on the vaccination history of individual children from birth to seventh birthday (given since 1/1/1996)
- www.health.sa.gov.au/immunisationcalculator is a useful resource to work out what catch up immunisations are required; covers most situations in Australia. Expert advice from local public health immunisation experts may still be required
- www.ncirs.usyd.edu.au.

6.2 Sexually transmitted infections

Sexually transmitted infections (STIs) are frequently seen in general practice. Although they may be asymptomatic, they are important to detect early in order to minimise potential complications such as infertility.

Taking a sexual history

A key skill involved in the assessment and management of STIs is taking a sexual history. This should start with providing a nonjudgmental, supportive environment in which patients feel comfortable to discuss sexual matters.[180] It is important to ask open questions and to avoid terms that make assumptions about sexual behaviour or orientation (eg. by using the term 'partner'). The history should address issues such as current sexual activity, gender and number of partners, contraception (including use of condoms), immunisation status and other risk factors for blood borne viruses (eg. injecting drug use, tattooing and piercing). Any investigations should be explained and patients should be counselled before ordering tests such as those for HIV or hepatitis C.

A follow up appointment may be suggested with the partner and explicit permission is required for the GP to undertake follow up with contacts. (See contact tracing manual at www.ashm.org.au/contact-tracing/.)

In the case of a notifiable condition, the patient should be informed that case notification to public health authorities will occur. Notification should be made as prescribed by the department of health in your state or territory.

The individual's age, sexual behaviour and community STI prevalence influence the level of risk. The GP should use this information to guide their recommendations for STI screening.

6.2.1 Chlamydia

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Screening for *Chlamydia trachomatis* infection in all sexually active females under 25 years of age is recommended (because of their risk of complications), as well as possible screening for other STIs if indicated by risk assessment. There is a lack of evidence that screening and treatment of all males results in reduced population prevalence. Other STIs to consider screening high risk individuals for include gonorrhoea, HIV and syphilis.[177] The risk for gonorrhoea, HIV and syphilis is low for heterosexuals in all major cities in Australia and New Zealand.[178] The individual's age, sexual behaviour and community STI prevalence influence the level of risk. This information should be used to guide what infections to test for.

Men who have sex with other men should be screened for gonorrhoea, chlamydia, syphilis and HIV every 12 months. A significant proportion of men with STIs have no symptoms.[179] Screening for HCV should be provided if HIV positive or has a history of injecting drug use.

There is good evidence to suggest all pregnant women at risk should be screened for hepatitis B, HIV, and syphilis;[177] and chlamydia and gonorrhea if considered to be at risk.[181]

Who is at higher risk of infection and complications?	What infections/actions should be considered?	How often?	Level of evidence and references
High risk • All sexually active people aged 15–25 years, particularly female, Aboriginal or Torres Strait Islander • Those with a pattern of inconsistent or no condom usage, or with recent change in sexual partner	• Urine or genital swab for chlamydia • Consider other infections based on risk assessment such as gonorrhoea, hepatitis B, syphilis, trichomoniasis, HIV	Every 12 months* (eg. a good opportunity is at same time as Pap test)	II A 182–186
High risk men Men who have sex with other men	• Urine and rectal swab for chlamydia; urine, throat and rectal swabs for gonorrhoea • Serology for HIV, syphilis and hepatitis B serology if not vaccinated (offer hepatitis A and B vaccination)	At least every 12 months	III B 179,187,188
Sexual partners of infected women and men	Test and then treat. Post-treatment test of cure is not recommended. Repeat testing of women to check for re-infection after 3–12 months may be appropriate	Test and treat all contacts. If retesting is indicated leave a minimal interval of 6 weeks post-treatment	II A 189–191
Asymptomatic requesting 'STI check up'	Urine or genital swab for chlamydia, serology for hepatitis B, syphilis, HIV		III B 188

* This does not require patients to be recalled

Test	Technique	Site	Level of evidence and references
Nucleic acid amplification test (NAAT) most commonly by PCR	Should be (20 mL) first void urine (not mid stream) at least 1 hour after last void. This has been found to be the best performing chlamydia test in both genders. Urine samples should be kept at under 4°C. PCR endocervical or vaginal swab (patient can self collect) also possible in females (there has been no validation of this technique for anal or throat swabs)	Urine, endo-cervix or vagina	I B 178,187, 190,192 V 188
Gonorrhoea MCS	Rectal swab should be inserted 3 cm into anus and rotated		193

Implementation

Chlamydia infection is the most common, curable STI in Australia. Notification rates per 100 000 have increased from 35.4 in 1993 to 217 in 2005. Most cases are in the 15–39 years of age group (particularly in the 20–29 years group). Infection rates in Australia vary from 4–12%. Young people and Aboriginal people and Torres Strait Islanders have the highest infection rates; 12–34% in some locations. There is an increased risk of gonorrhoea, syphilis, and trichomoniasis among Aboriginal people and Torres Strait Islanders.

Screening of sexually active women under 25 years of age for chlamydia on an annual basis has been shown to half the infection and complication rates.[194,195] Male partners of infected females should be tested and treated. A USA study found that providing treatment for the heterosexual partners of those infected reduced the re-infection rate more than contact tracing **(II A)**.[196]

Untreated pregnant women infected with chlamydia have a 20–50% chance of infecting their infant at delivery.[197]

07 Prevention of chronic disease

The smoking, nutrition, alcohol and physical activity (SNAP) risk factors are common among patients attending general practice. They contribute significantly to the burden of disease, largely due to their effect on the incidence and complications of chronic diseases such as diabetes, cardiovascular disease, chronic respiratory disease, and some cancers. A detailed description of the appropriate interventions is covered in the *SNAP* guidelines.[198]

Each of these risk factors may interact with each other throughout the lifecycle. Therefore it is important not to deal with each risk factor in isolation. The 'absolute risk' approach being advocated by the National Vascular Disease Prevention Alliance addresses assessment and intervention of an individual risk factor within the context of the 'absolute risk' that the patient will have a vascular event in the next 5 years.

It is important to tailor the intervention to the patient's readiness to change[199] as well as using behavioural counselling approaches such as motivational interviewing. This is described in pages 8 and 9 of the *SNAP* guidelines. Strategies which increase the likelihood of lifestyle change include motivational interviewing and the use of patient held records (see the 'green book' for more details).[200] A common approach across these risk factors is the '5As approach'[201] which includes:

- ASK – all patients about smoking, nutrition, alcohol or physical activity
- ASSESS – readiness to change, dependence (smoking and alcohol)
- ADVISE – brief, nonjudgmental advice with patient education materials (eg. Lifescripts) and motivational interviewing
- ASSIST – by providing motivational counselling and a prescription (Lifescript or pharmacotherapy if indicated for nicotine or alcohol dependence)
- ARRANGE – referral telephone support services, group lifestyle programs or individual provider (eg. dietician or exercise physiologist) and a regular follow up visit.

Health inequality

Disadvantaged groups have significantly higher rates of smoking, alcohol use, poorer diets and lower levels of physical activity. Most disadvantaged groups have significantly higher smoking rates.[97,202,203] In 2004–2005, 50% of Aboriginal and Torres Strait Islander adults were daily or regular smokers.[204] Effective interventions in these groups vary from those where there is little current evidence (eg. Aboriginal and Torres Strait Islander populations) to those where there is both good evidence coupled with an acknowledgment that such groups present special challenges.

Aboriginal people, Torres Strait Islanders, and Pacific Islanders have higher rates of overweight and obesity, as well as a higher incidence of vascular disease.[159] Aboriginal and Torres Strait Islander communities in remote regions face significant access barriers to nutritious and affordable food.[205] Nutritious food tends to cost more in rural and remote areas; cost may also be an issue in low SES groups.

Low income groups are less likely to be offered interventions to prevent overweight[206] (see *Introduction*). Improvements in physical activity for Aboriginal and Torres Strait Islander patients may be achieved by linking health advice with locally available and appropriate community sport and recreation programs, as well as social support programs (eg. group activities).[207]

Many disadvantaged groups have higher levels of risky drinking[208–211] and the reasons for this are often complex.[212,213] For example, stigmatisation and poverty may increase the harm associated with a given level of alcohol use. Experiencing disadvantage may not lead to an increased risk of substance abuse.[209] Culture and societal 'framing' of how alcohol is perceived also have a strong impact on the use and abuse of alcohol.[214]

Risky alcohol use is also frequently associated with mental health issues[215,216] and having both may not be readily recognised and may reduce access to, and receipt of, treatment services.[217] Alcohol has tended to produce a greater burden of harms in more socially disadvantaged groups,[210] partly through the more hazardous pattern of drinking[218] and partly through the associated poverty associated with low SES.[213] Recognition and treatment is also impeded by the social stigma associated with problematic use of alcohol.[213,219]

7.1 Smoking

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Smoking status and interest in quitting smoking should be assessed for every patient over 10 years of age.[57,220] All patients who smoke, regardless of the amount they smoke, should be:[6–9]

– asked about their interest in quitting **(A)**

– assessed whether they are nicotine dependent and if so, offered appropriate pharmacotherapy* **(A)**

– advised to stop smoking **(A)**

– offered referral to a proactive telephone callback cessation service such as 'Quitline' **(A)**.

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Average risk • People over 10 years of age	5As	Opportunistically, ideally every visit	I A 57,202,220–223
Increased risk • Aboriginal people and Torres Strait Islanders	5As adapted to the cultural setting	Opportunistically, ideally every visit**	III A 221
• People with a mental illness	5As and careful use of pharmacotherapy given the significant impact of nicotine on drug metabolism†	Opportunistically, ideally every visit**	I A 202,222–225
• Pregnant women	5As and considered use of pharmacotherapy	At each antenatal visit	I A 224,226,227
• People with other drug related dependencies	5As and highlight specific disease related benefits of quitting	Opportunistically, ideally every visit**	I A 202,223,225,228
• People with smoking related disease	5As	Opportunistically, ideally every visit**	I A 57,220,223,225,226
• Parents of young babies and children	5As. If the parent is unable to quit advise to: • smoke away from children • not smoke in confined spaces with children present (eg. when driving)	Opportunistically, ideally every visit**	I A 204,220,225,227,229

Nicotine dependence:
– ask about time to first cigarette AND number of cigarettes smoked per day. High likelihood of nicotine dependence if smoking within 30 minutes of waking and smoking more than 15 per day
– explore whether the patient had withdrawal symptoms when they previously attempted to quit

** While enquiry about smoking should occur at every opportunity, be aware of patient sensitivity. Remember that nonjudgmental enquiry about smoking is associated with greater patient satisfaction[226,228]

† See effect of smoking abstinence on medications. NZ Smoking cessation guidelines, 2007. Appendix 9. Available at www.nzgg.org.nz/guidelines/dsp_guideline_popup.cfm?guidelineCatID=53&guidelineID=148

Implementation

At an individual patient level, GPs can influence smoking rates by systematically providing opportunistic advice and offering support to all attending patients who smoke.[220,227,229]

General practitioners underutilise effective treatment strategies (eg. referral to the Quitline, using pharmacotherapy, and motivational interviewing.[220,227,229] A whole-of-practice approach that includes a supportive infrastructure has a big impact on GP effectiveness in smoking cessation.[26–28] The 'green book' outlines a range of effective implementation strategies in smoking cessation.[200]

7.2 Overweight

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Body weight reflects the balance between levels of dietary intake and physical activity. Body mass index and adult waist circumference should be measured every 2 years for those patients who appear overweight **(A)**.[230–232] Body mass index on its own may be misleading, especially in older people and muscular individuals, and classifications may need to be adjusted for some ethnic groups.[233]

Who is at higher risk of developing obesity related complications?	What should be done?	How often?	Level of evidence and references
Average risk • All patients	• Assess BMI and waist circumference in all adults over 18 years of age who appear overweight • In children and adolescents use age specific BMI charts (see Chapter 3.3 *Overweight and obesity*) • Offer education on nutrition# and physical activity*	Every 2 years	I A 234
Increased risk • Aboriginal people, Torres Strait Islanders, and Pacific Islanders • Patients with existing diabetes or cardiovascular disease, stroke, gout, liver or gallbladder disease	• Assess BMI and waist circumference in all adults over 18 years of age • Offer individual education on nutrition and physical activity	Every 12 months	I A 234 III A
Identified risk • Patients who are overweight or obese	• Assess weight and waist circumference • Develop a weight management plan	Every 6 months	III B 234

For more information see the NHMRC *Dietary guidelines for Australian adults*

* For more information see the NHMRC *Physical activity guidelines*

For further information see pages 14–16 of *SNAP* guidelines and the NHMRC *Overweight and obesity: a guide for general practitioners*

Patients who are overweight or obese should be offered individual lifestyle education and skills training.[201,234,235] Restrictive dieting is not recommended for children and adolescents. A modest weight loss of 5–10% of starting body weight in adults who are overweight is sufficient to achieve some health benefits.[235] Even without weight loss, physical activity can accrue health benefits for overweight people.[236]

Assessment	Technique	References
Body mass index	BMI = body weight in kilograms divided by the square of height in metres. A BMI of ≥25 conveys increased risk	230,234
Waist circumference	An adult's waist circumference is measured half way between the inferior margin of the last rib and the crest of the ilium in the mid-axillary plane. The measurement is taken at the end of normal expiration: • ≥94 cm in males and ≥80 cm in females conveys increased risk • ≥102 cm in males and ≥88 cm in females conveys high risk	230,234

Combining measures to assess obesity and disease risk* in Australian adults[234]

Classification	BMI (kg/m^2)	Disease risk (relative to normal measures)	
		Waist circumference Men 94–102 cm Women 80–88 cm	**Waist circumference** Men >102 cm Women >88 cm
Underweight	<18.5	–	–
Healthy weight	18.5– 24.9	–	Increased
Overweight	25.0–29.9	Increased	High
Obesity	30.0–39.9	High to very high	Very high
Severe obesity	>40	Extremely high	Extremely high

* Risk of type 2 diabetes and cardiovascular disease
Based on: NHMRC *Clinical practice guidelines for the management of overweight and obesity in adults*. Canberra: Commonwealth of Australia, 2003 and the NHMRC *Overweight and obesity: A guide for general practitioners*. Canberra: Commonwealth of Australia, 2003

7.2.1 Different ethnic groups

Lower waist circumference measures should be used for those of Asian, Aboriginal or Torres Strait Islander descent:[234]

Increased risk	Men 90–100 cm	Women 80–90 cm	Goal: 5–7% weight loss
High risk	Men >100 cm	Women >90 cm	Goal: 5–7% weight loss

Strategy
Environmental, cultural, genetic and lifestyle factors all contribute to overweight and obesity. Physical inactivity and overeating are the major modifiable contributors to the problem of obesity.[235] Strategies to increase screening in Aboriginal people and Torres Strait Islanders are discussed in the 'green book' and the *National guide to a preventive health assessment in Aboriginal and Torres Strait Islander peoples*.

7.3 Nutrition

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

In adults ask how many portions of fruit and vegetables are eaten per day and advise to follow the NHMRC *Dietary guidelines for Australian adults* **(B)**.[237] Brief lifestyle advice should be given to reduce dietary fat (particularly saturated fat) and increase fruit and vegetable intake.[238]

Breastfeeding should be promoted as the most appropriate method for feeding infants and one that offers protection against infection and some chronic diseases.[97] See Chapter 3 *Children and young people*.

Who is at higher risk of developing nutrition related complications?	What should be done?	How often?	Level of evidence and references
Average risk • All patients	Ask about the number of portions of fruit and vegetables eaten per day and types of fat consumed All patients should be advised to follow the NHMRC *Dietary guidelines for Australian adults*	Every 2 years	II B 203,239
High risk • Those who are overweight or obese • Those with high cardiovascular absolute risk (>15%) • Those with a past or first degree family history of cardiovascular disease (including stroke) before 60 years of age • Those with type 2 diabetes or at high risk for diabetes	Provide lifestyle advice to reduce dietary saturated fat and increase fruit and vegetables intake (see *SNAP* guidelines) Provide self help nutrition education materials and/or refer to a dietician or group diet program	Every 6 months	II B 240–243

Intervention	Technique	References
Vitamin supplements	Vitamin supplementation is not of established value in asymptomatic individuals* (with the exception of folate in pregnancy)	244
Dietary guidelines for Australian adults	Enjoy a wide variety of foods: • eat plenty of vegetable, legumes and fruits • eat plenty of cereals (including breads, rice, pasta and noodles), preferably wholegrain • include lean meat, fish, poultry and/or alternatives • drink plenty of water And take care to: • limit saturated fat and moderate total fat intake • choose foods low in salt • limit alcohol intake • consume only moderate amounts of sugars and foods containing added sugars To lower their risk of coronary heart disease (CHD), all Australians should: • consume about 500 mg/day of combined DHA and EPA through a combination of the following: – 2–3 serves (150 g serve) of oily fish per week – fish oil capsules or liquid – food and drinks enriched with marine Ω-3 PUFA# • consume at least 2 g/day of ALA • follow government advice on fish consumption regarding local safety issues • prevent weight gain; be physically active and eat according to your energy needs • care for your food; prepare and store it safely • encourage and support breastfeeding Note: There are also dietary guidelines for children and adolescents: *Dietary guidelines for children and adolescents in Australia*, incorporating the *Infant feeding guidelines for health workers*	237
Encourage breastfeeding	Encourage and support exclusive breastfeeding for the first 6 months, then the introduction of complementary foods and continued breastfeeding thereafter. It is recommended that breastfeeding continue until 12 months of age and thereafter as long as mutually desired	237

* Prevalence of nutritional deficiency is high in certain groups (eg. alcohol dependence, the elderly living alone and in institutions)

Fish that live in cold water are rich in omega-3 polyunsaturated fatty acids (Ω-3 PUFA), particularly docosahexaenoic acid (DHA), eicosapentaenoic acid (EPA) and docosapentaenoic acid (DPA). Alpha-linolenic acid (ALA) is a plant based Ω-3 PUFA that has many health benefits but does not benefit cardiovascular health as well as marine Ω-3 PUFA

7.4 Early detection of problem drinking

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

All patients should be asked about the quantity and frequency of alcohol intake from 15 years of age **(A)**. Those with at risk patterns of alcohol consumption should be offered brief advice to reduce their intake **(A)**.

Who is at increased risk of developing alcohol related complications?	What should be done?	How often?	Level of evidence and references
Low risk			
• All patients 18 years of age and over	Ask about the quantity and frequency of alcohol intake. Be sensitive in your questioning and avoid using judgmental descriptors (eg. social drinker) Advise if drinking alcohol to drink two drinks per day or less	Every 3–4 years	II B 47,208
• Those with lower body weight (<60 kg for men, <50 kg for women) • Overweight or obese adults	Advise if drinking alcohol to drink less than two drinks per day		
Increased risk			
• Children and adolescents	Advise that not drinking is the safest option Any drinking should not exceed a maximum of two drinks per day and should be under parental supervision Interventions using brief motivational interviewing targeted at high risk use	Opportunistically	III 47 I B 245
• Older people who have a higher risk of falls and are more likely to be taking medication	Advise that there is an increased risk of potential harm from drinking	Opportunistically	III B 246–248
• Young adults, who have a higher risk of accidents and injuries		Opportunistically	III C 249
• Those with a family history of alcohol dependence		Opportunistically	III C 250–252

Who is at increased risk of developing alcohol related complications?	What should be done?	How often?	Level of evidence and references
Those who are participating or supervising risky activities (eg. driving, boating, extreme sports, diving, using illicit drugs)	Advise that not drinking is the safest option	Opportunistically	Driving I 253 Other areas III 254–257
Women who are pregnant or planning a pregnancy		Opportunistically or at each antenatal visit	I 47,258,259
Those with a physical condition made worse by alcohol such as: • pancreatitis • hepatitis/chronic liver disease • peptic ulcer, hypertension • other major organ disease	Advise that not drinking is the safest option but weigh up pros and cons for each individual Advise those with hypertension, or taking antihypertensive medication to limit alcohol intake to no more than two (for men) or one (for women) standard drinks per day	Opportunistically	I 47,260–262
Those with a mental health problem made worse by alcohol such as anxiety or depression		Opportunistically	I 263–265
Those taking medications		Opportunistically	I 266, 267

Intervention	Technique	References
Brief intervention	Brief interventions for problem drinking halve the mortality rate in this group. Brief advice in general practice has been demonstrated to have resulted in a reduction in drinking of about six standard drinks per week for men. The impact of brief advice on reduction in consumption for women is less clear. While there is no clear dose response curve for spending more time counselling patients who are drinking at risky levels, the minimum time to achieve some impact is 5–15 minutes. While some have argued that screening of itself constitutes a brief intervention, the impact of interventions of less than 5 minutes is both modest and not significant The key components of brief advice should include the 5As. The AUDIT-C tool can be used (available at www.cqaimh.org/pdf/tool_auditc.pdf)	250–252, 268–275
Pharmacotherapy	Both naltrexone and acamprosate can be used in patients with alcohol dependence. **Naltrexone:** • significant effect on the maintenance of abstinence as well as the prevention of heavy drinking • better in preventing a lapse from becoming a relapse • used as an adjunct to treatment in patients with alcohol dependence • common (and usually transient) side effects include: nausea, headache, dizziness, fatigue and insomnia • should not be used in patients with acute hepatitis (or where the liver enzymes are three times, or greater, the upper limit of normal **Acamprosate:** • supports abstinence from drinking • does not influence or moderate alcohol consumption after the initial drink • found to be more effective in preventing lapse • can be prescribed as part of a comprehensive alcohol treatment program • diarrhoea is a common side effect • should not be used in patients with significant renal impairment (creatinine >0.12 mmol/L) • not recommended for use in those aged 65 years and over	276–278

Implementation

In the Australian setting, less than one in 3 women and one in 6 men with documented alcohol dependence seek any form of treatment.[279] The barriers to identifying and treating patients with risky or problematic drinking are numerous and include: stigma associated with diagnosis, gender (females being less likely to receive treatment), shorter consultations, self perceived skills and skepticism about the benefit of treatment.[280–284] Nevertheless the number needed to treat (return on effort) using brief interventions is one in 8, ie. eight hazardous drinkers needed to be treated to produce one who will reduce drinking to low risk levels.[250,252,269,270,285]

Implementation is improved through:

- screening/routine enquiry of all patients in the target group, especially using nonconfrontational tools such as computerised screening.[286–288] Alternatively, embedding enquiry about drinking in opportunistic assessment of lifestyle or using the AUDIT-C questionnaire[275,289] (see *Appendix 1* or www.cqaimh.org/pdf/tool_auditc.pdf)
- ensuring that there is a supportive organisational practice infrastructure[286,290,291] and adequate training for clinicians[290–292] and practice nurses.[281,290,293]

7.5 Physical activity

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

All adults should be advised to participate in 30 minutes of moderate activity on most, preferably all days of the week (at least 2.5 hours per week) **(A)**. While moderate physical activity is recommended for health benefit, more vigorous exercise may confer additional cardiovascular health and cancer prevention benefits if carried out for a minimum of 30 minutes, 3–4 times a week. The amount of physical activity can be accumulated in 10 minute bouts. The amount of activity for weight loss is greater, it is recommended that at least 60 minutes of moderate intensity physical activity (eg. brisk walking) every day may be required in order to achieve measurable weight loss over a number of months.[294]

Physical activity is independent of weight as a risk factor.

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Average risk • Those already performing moderate levels of activity for 30 minutes daily at least 5 days per week	Question regarding current level of activity	Every 2 years	III B 295
Increased risk • Those not performing moderate levels of activity for 30 minutes per day at least 5 days of the week • Those at higher risk include: teenage girls, Aboriginal people or Torres Strait Islanders, those from low SES and non-English speaking backgrounds • Those with a chronic condition or other cardiovascular disease (CVD) risk factors (see Chapter 8 *Prevention of vascular and metabolic disease*) • Those at high risk of CVD or diabetes (including impaired glucose tolerance)	Question regarding current level of activity and readiness to be more active Provide brief advice and written physical activity materials Refer to an exercise or physical activity program. Programs with additional behaviour change support may be more beneficial	Every visit	IV C 296

Intervention	Technique	References
Determine level of physical activity	Question regarding current level of activity and readiness to be more active (eg. Lifescript assessment tool) Ask: 'How many times a week do you engage in 30 minutes (all together or in shorter amounts) of brisk walking or moderate physical activity that increases your heart rate or makes you breathe harder than normal? Eg. digging in the garden, dancing, golf, tennis.' And 'How many times a week do you engage in 20 minutes of vigorous physical activity that makes you sweat or puff and pant? Eg. jogging or running, tennis, swimming, bike riding, aerobics or fitness exercises' See *SNAP* guidelines	198
Moderate intensity physical activity	Physical activity associated with a moderate, noticeable increase in the depth and rate of breathing while still being able to whistle or talk comfortably	297
Brief interventions to increase levels of physical activity	Interventions in general practice shown to have short term benefit in changing behaviour related to physical activity include: • patient screening to identify current level of activity and readiness to be more active • provision of brief advice or counselling on exercise • supporting written materials, and/or • written prescription for exercise (eg. Physical Activity Lifescript) See *SNAP* guidelines	198
Physical program	Structured program over a number sessions of physical activity education and exercise. May be delivered as individual or group program	

08 Prevention of vascular and metabolic disease

Cardiovascular disease occurs in 18% of the population, with 6.9% estimated to have an associated disability.[159] The majority of deaths from CVD can be prevented by changing behavioural and physiological risk factors. Behavioural risk factors include smoking, poor nutrition, hazardous alcohol consumption and physical inactivity as outlined in Chapter 7 *Prevention of chronic disease*. In addition, depression, social isolation and lack of quality social support are risk factors for coronary heart disease.[298]

Changing the following physiological risk factors has been demonstrated to reduce vascular events including stroke and myocardial infarction:

- lowering BP in patients with hypertension or high absolute cardiovascular risk
- reducing blood levels of total cholesterol, low density lipoprotein (LDL) cholesterol, triglycerides and raising high density lipoprotein (HDL) cholesterol levels, and
- maintaining good glycaemic control in patients with diabetes.

These multiple factors contribute to the risk of vascular disease. Absolute CVD risk is the probability that an individual will develop a cardiovascular event (coronary infarct or stroke) within 5 years. Preventive actions based on estimated absolute risk are more effective and efficient than those based on individual risk factors as they acknowledge the synergistic effects of multiple risk factors combined.

Intervention	Technique	Reference
Absolute cardiovascular risk assessment	The National Vascular Disease Prevention Alliance recommends that:[299] Absolute cardiovascular risk assessment, using the Framingham Risk Equation to predict risk of a cardiovascular event over the next 5 years, should be performed for all adults aged 45–74 years who are not known to have CVD or to be at high risk of CVD (including people with diabetes under the age of 60 years). This should be re-assessed every 2 years (or more frequently if a change in treatment is considered). In adults without known CVD, a comprehensive assessment of cardiovascular risk includes consideration of the following: • age and gender • BP • serum lipids • diabetes • renal function (microalbumin ± urine protein, estimate of glomerular filtration rate) • family history of premature CVD or familial hypercholesterolaemia • evidence of atrial fibrillation (history, examination, electrocardiogram) • waist circumference and BMI • smoking, nutrition, physical activity level and alcohol intake • social history including ethnicity, SES, and mental health. See *Appendix 3* for cardiovascular risk tables; <10% is considered low risk, 10–15% medium risk, and >15% high risk. Adults with any of the following specific conditions do not require absolute cardiovascular risk assessment using the Framingham Risk Equation as they are already known to be at increased risk of CVD: • diabetes and age >60 years or microalbuminuria • moderate or severe chronic kidney disease • previous diagnosis familial hypercholesterolaemia • systolic BP ≥180 mmHg or diastolic BP ≥110 mmHg or serum total cholesterol >7.5 mmol/L. Absolute risk should be assessed from 35 years of age in Aboriginal people and Torres Strait Islanders (although this might underestimate their risk).[207]	300

Health inequality

Low socioeconomic status is associated with an increased risk of CVD.[301] Data from the National Nutrition Survey suggests that people of low SES or those living in rural locations have higher dietary saturated fat intake, although relationship with serum cholesterol levels is less clear.[302] People of low SES have a higher prevalence of diabetes.[303] This group is less likely to access the full range of clinical services including screening.

Hypertension and CVD are more common in low socioeconomic groups including Aboriginal people and Torres Strait Islanders and the unemployed.[303,304] The incidence of end stage renal disease (ESRD) among Aboriginal people and Torres Strait Islanders varies from up to 30 times the national incidence in some remote areas to around double in some urban areas.[305,306] Factors that affect rates of ESRD in Aboriginal people and Torres Strait Islanders include low birth weight, poor nutrition, infections such as scabies, smoking, other behavioural risk factors and socioeconomic disadvantage.[307–309] There is also 3-fold variation within urban areas among non-Indigenous Australians, with higher ESRD incidence in more disadvantaged areas.[310]

Preventive care is less likely to be provided to these patients.[311] There is evidence that there is a differential in statin prescribing on the basis of SES.[312]

8.1 Blood pressure

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Blood pressure should be measured in all adults from 18 years of age at least every 2 years **(A)**. The risk of CVD is continuous across a range of BPs and thus the benefit of lowering BP should be considered in all patients.[313] In patients aged 45–74 years, this should be decided according to their absolute cardiovascular risk **(B)**.

Who is at higher risk of vascular disease?	What should be done?	How often?	Level of evidence and references
Average risk • Adults 18–50 years of age (dependent on risk factors identified through absolute cardiovascular CV risk assessment)	Measure BP	Every 2 years if systolic BP (SBP) <120 mmHg and diastolic BP (DBP) <80 mmHg	I A 314
Increased risk • 10–15% absolute CV risk • Age 75+ years • High normal BP 120–139/80–89 • Age >50 years • Diabetes at <60 years • Aboriginal people, Torres Strait Islanders, South Asians and Maori and Pacific Islanders from 15 years of age	Measure BP Lifestyle risk factor counselling	Every 12 months	II A 314,315
High risk • >15% absolute CV risk • BP >180/110 or diabetes at age >60 years or microalbuminuria • Moderate or severe chronic kidney disease • Familial hypercholesterolaemia • First degree relative (ie. father, mother, sibling) who has had a vascular event or condition diagnosed <60 years of age • SBP ≥180 mmHg or DBP ≥110 mmHg • Serum total cholesterol >7.5 mmol/L	Measure BP Lifestyle risk factor counselling Pharmacotherapy to lower risk	Every 6 months	I A 313 316,317
High risk • Existing CVD (previous event, atrial fibrillation, symptomatic CVD)	Measure BP Lifestyle risk factor counselling Pharmacotherapy to lower risk	Every 6 months	313

Intervention	Technique	References
Measure BP	Measure BP on at least two separate occasions with a calibrated mercury sphygmomanometer (regularly calibrate your instrument against a mercury sphygmomanometer). At the patient's first BP assessment, measure BP on both arms. Thereafter, use the arm with the higher reading If possible, use ambulatory BP monitoring or self measurement for patients with any of the following: • unusual variation between BP readings in the clinic • suspected white coat hypertension (eg. clinic hypertension, low CV risk and absence of target organ disease) • hypertension resistant to drug treatment • suspected hypotensive episodes (eg. in elderly or diabetic patients)	313
Lifestyle	Nonpharmacological therapies such as reduction in dietary sodium intake, increased physical activity, weight loss, stress management, and reduction in alcohol intake are associated with a reduction in BP	54

Guide to follow up of adults aged 18 years and over		
Systolic (mmHg)	**Diastolic (mmHg)**	**Follow up**
<120	<80	Recheck in 2 years (or earlier as guided by patient's absolute CV risk)
120–139	80–89	Recheck in 1 year (or earlier as guided by patient's absolute CV risk)
140–159	90–99	Confirm within 2 months*
160–179	100–109	Re-assess or refer within 1 month*
≥180	≥110	Re-assess or refer within 1–7 days as necessary*
Isolated systolic hypertension		
≥140	<90	As for category for systolic BP
≥160	<70	Re-assess or refer within 1–7 days as necessary*
If systolic and diastolic categories are different, follow recommendations for shorter follow up (eg. BP 160/86 mmHg evaluate or refer within 1 month) * See NHFA *Guide to management of hypertension*, 2008 Adapted from: Heart Foundation. *Hypertension management guidelines for doctors*, 2008[313]		

8.2 Cholesterol and lipids

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Screening for hyperlipidaemia in healthy people without other CV risk factors is recommended every 5 years starting at 45 years of age (**A** for men, **C** for women). High risk patients should be screened as part of absolute CV risk assessment (**A**).

Who is at higher risk of vascular disease?	What should be done?	How often?	Level of evidence and references
Increased risk • Patients 45 years of age and over	Fasting blood lipids	Every 5 years	I A 318
Increased risk • Patients aged 45 years and over with: – absolute CV risk 10–15% over the next 5 years – smoking – hypertension – metabolic syndrome (central obesity waist ≥94 cm in men and ≥80 cm in women plus any two of: TG >1.7 mmol/L, HDL-C <1.03 mmol/L in men and <1.29 mmol/L in women, BP ≥130/85 mmHg or fasting BSL ≥5.6 mmol/L) – family history of premature CVD in first degree relatives (<60 years of age)	Fasting blood lipids Lifestyle advice	Every 2 years	I A 318
High risk • Patients with an absolute CV risk >15% over the next 5 years • Patients with the following existing diagnoses: – diabetes mellitus (type 1 and 2) or impaired glucose tolerance – cardiac disease, peripheral arterial disease or ischaemic cerebrovascular disease (including stroke) – familial hypercholesterolaemia or familial combined hyperlipidaemia • chronic kidney disease	Fasting blood lipids Lifestyle advice Cholesterol lowering therapy	Every 12 months	I A 318

Intervention	Technique	References
Fasting blood lipids	Fasting total cholesterol, LDL cholesterol, HDL cholesterol and triglycerides. If total cholesterol (TC) is raised (>4 mmol/L) or LDL >2.5 mmol/L, a second confirmatory sample should be taken on a separate occasion (as levels may vary between tests) before a definitive diagnosis is made	318
Dietary advice	All people regardless of their cholesterol level should be given dietary advice. In patients whose cholesterol is raised, absolute cardiovascular risk should be determined (see *Page 91*). Those at low absolute risk of CVD should be given dietary and other lifestyle advice and monitored. See Section 6 *Prevention of chronic disease*	318

8.3 Type 2 diabetes

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
*															

*Aboriginal people and Torres Strait Islanders

Patients should be screened for diabetes every 3 years from 40 years of age using the Australian Type 2 Diabetes Risk Assessment Tool (AUSDRISK) **(A)**. Aboriginal people or Torres Strait Islanders should be screened from 18 years of age. Those with a risk score of 15 or more should be tested by fasting plasma glucose **(B)**.

Who is at higher risk of type 2 diabetes?	What should be done?	How often?	Level of evidence and references
Increased risk • All patients >40 years of age • Aboriginal people and Torres Strait Islanders	AUSDRISK (see *Appendix 2*)	Every 3 years	III B 321
High risk • Any one of following risk factors: – all people with a history of a previous CV event (acute myocardial infarction or stroke) – women with a history of gestational diabetes mellitus (GDM) – women with polycystic ovary syndrome – those on antipsychotic drugs – those with impaired glucose tolerance test (IGT) or impaired fasting glucose (IFG) (not limited by age)	Fasting plasma sugar	Every 3 years	III B 321,322

Test	Technique	References
Fasting blood sugar	Measure plasma glucose levels preferably on a fasting sample, although a 'random' sample is acceptable for screening purposes. • <5.5 mmol/L – diabetes unlikely • 5.5–6.9 mmol/L fasting – may need to perform an oral glucose test • 7.0 mmol/L or more fasting (>11.1 nonfasting) – diabetes likely, repeat fasting blood sugar to confirm on a separate day The test should be performed on venous blood and tested in a laboratory. However, capillary blood and a properly calibrated point of care device may be used for screening (if a laboratory is used to confirm a positive result)	321
Oral glucose tolerance test	Two hours after a 75 g oral glucose load is taken, the plasma glucose is measured. If this is >11.1 mmol/L, diabetes is likely. If it is between 7.8 and 11.0 mmol/L then there is impaired glucose tolerance. If it is <7.8 mmol/L diabetes is unlikely	321
Diabetes risk (AUSDRISK assessment tool)	Diabetes risk may be calculated using the AUSDRISK assessment tool. This calculates a score related to the risk of developing diabetes over a 5 year period based on cohort data for that population (see *Appendix 2*) (The tool may underestimate risk below the age of 25 years)	323
Glycosylated haemoglobin (HbA1c)	This is not currently recommended as a test to diagnose diabetes as the appropriate cut off is still to be determined	324 325

Prevention of diabetes		
Target group	**Intervention**	
Pre-diabetes (IGT, IGT, GDM) and those with identified risk factors with negative screening test	• Increasing physical activity (eg. 30 minutes brisk walking 5 times per week) and/or weight loss reduces risk of developing diabetes by 40–60% in those at high risk[326] • Give advice on a healthy low fat diet (<30% kcal from fat and <10% from saturated fat). High fibre, low glycaemic index with cereals, legumes, vegetables, fruits, weight loss and increased physical activity (see *SNAP* guidelines) • Refer patients to a dietician and a physical activity program • Provide pre-conception advice to women with a history of gestational diabetes	327–329

8.4 Stroke

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

All patients over 45 years of age should be screened for hypertension, diabetes, smoking, obesity, dyslipidaemia, nonvalvular atrial fibrillation and physical inactivity, as modifying these risk factors reduces the risk of stroke. General practitioners should be alert to the symptoms of transient ischaemic attacks (TIAs) in this age group and assess early in order to prioritise those needing urgent investigation and management. Antihypertensive and lipid lowering therapy should be used for all patients with stroke and TIA unless contraindicated **(B)**. Anticoagulation or antiplatelet therapy should also be considered for patients with TIAs and those with atrial fibrillation (AF) and a history of previous thrombotic stroke or myocardial infarction unless specific contraindications exist **(A)**.

Who is at higher risk of stroke?	What should be done?	How often?	Level of evidence and references
Increased risk • Adults over 45 years* of age with: – hypertension – diabetes – smoking – obesity – dyslipidaemia – physical inactivity * Over 40 years of age for Aboriginal people and Torres Strait Islanders	Assess each person's stroke risk* (using an absolute risk assessment approach) Screen for and treat hypertension Screen for and treat other risk factors * Those with a 5 year CV risk >15% should be started on low dose aspirin (75–150 mg/day) if there are no contraindications	See Chapter 8.1 and 8.2 Every 12 months	I A 330 I A 330 I A 300,331 207
High risk • Atrial fibrillation with other risk factors • Pre-existing vascular disease (eg. CHD, PVD, MI, CKD) • Previous stroke* • Previous TIA * Especially with co-existent AF or high grade (70–99%) symptomatic carotid stenosis	Determine cause of AF and treat (eg. anticoagulate). Commence and monitor appropriate antiplatelet agents in those without AF Manage other risk factors aggressively Stratify risk of stroke in all patients with symptoms of a TIA* (See ABCD2 tool on page 46) Question about symptoms of TIA and consider anticoagulation	Every 12 months	I A 330,332, 333 for stroke/TIA 146,293, 294
Patients who have had a TIA or ischaemic stroke*	Anticoagulation with warfarin should be considered in patients with documented ischaemic stroke or TIAs due to AF Antiplatelet therapy should be used for noncardioembolic stroke or TIA Review or commence (unless contraindicated) antihypertensive and lipid lowering therapy for all patients	Every 12 months	I A 333
Auscultation for carotid bruit	Auscultating for carotid bruits in asymptomatic people is not recommended in the general adult population as a screening tool for stroke risk. Screening with duplex ultrasonography in this population is not cost effective (yields many false-positive results) coupled with the fact that the overall benefit of surgery is at best small. Therefore careful selection of patients is needed to justify surgery in those with severe (>60%) but asymptomatic stenosis.** However, the presence of a carotid bruit has been shown to be associated with increased risk of myocardial infarction and CV death, so may be a useful prognostic marker when assessing CV risk generally Screen patients with known asymptomatic carotid artery stenosis for other treatable causes of stroke and treat these intensively		330,334–336 330

Test	Technique	Reference
Question about TIA	Question patient or carer regarding symptoms of sudden onset of loss of focal neurological function such as weakness or numbness of arms or legs, speech disturbance, double vision or vertigo	
ABCD2 tool	All patients with suspected TIA should have stroke risk assessment including the ABCD2 tool A = AGE >60 years (1 point) B = BLOOD PRESSURE >140/90 mmHg (1 point) C = CLINICAL FEATURES: unilateral weakness (2 points), speech impairment without weakness (1 point) D = DURATION >60 minutes (2 points), 10–59 minutes (1 point) D = DIABETES (1 point) >4 = high risk: urgent CT brain ('urgent' is considered as soon as possible, but certainly within 24 hours). If carotid territory symptoms exist, consider duplex ultrasound for patients who are potential candidates for carotid revascularisation ≤4 = low risk: CT brain (and carotid ultrasound where indicated) as soon as possible (ie. within 48–72 hours)	333

* For further information about secondary prevention after stroke or TIA, go to www.strokefoundation.com.au
** See also Chapter 15 *Screening tests of unproven benefit*

8.5 Kidney disease

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Screening for kidney disease is recommended every year starting at 50 years of age **(B)**. Screening should include BP and urinalysis.[337,338] Patients at high risk should be screened every 12 months and should also have glomerular filtration rate (GFR) estimated from serum creatinine, age and gender.[339,340]

Who is at higher risk of kidney disease?	What should be done?	How often?	Level of evidence and references
Increased risk • Age >50 years • Smoking	BP, urinalysis	Every 5 years	III B 322,341,342
High risk • Hypertension • Obesity[343] • Family history of kidney disease • Diabetes • Aboriginal people or Torres Strait Islanders >35 years of age	BP, urinalysis, microalbumin,*[344] and GFR * If positive, arrange two further samples for urine albumin:creatinine ratio over 2 months	Every 12 months (microalbumuria testing should be performed every 3 years; patients with diabetes, every 12 months)	III A 309,345–347 III B 309,321,341 348,349

Test	Technique	References
Urinalysis	Dipstick test on random urine sample for proteinuria. Proteinuria present if dipstick 1+ or more	
Micro-albuminuria	• Spot, untimed collection of urine for calculation of urine albumin:creatinine ratio NB: dipstick urine test is NOT adequate to identify microalbuminuria • Urine albumin:creatinine ratio: **Females** / **Males** Normal <3.6 mg/mmol / <2.6 mg/mmol Microalbuminuria 3.6–35.0 mg/mmol / 2.6–25.0 mg/mmol Macroalbuminuria >35.0 mg/mmol / >25.0 mg/mmol	341
eGFR	This is usually automatically reported with every test for serum creatinine using the abbreviated modification of diet in renal disease (MDRD) formula: eGFR (mL/min/1.73 m^2) = 175 x serum creatinine (µmol/L)/88.4–1.154 x (0.742 if female) x (1.21 if Afro-American) An automated calculator for MDRD may be found at www.kidney.org.au • Staging of chronic kidney disease: – Stage 1 >90 mL/min/1.73 m^2 with proteinuria or haematuria – Stage 2 (mild) 60–89 mL/min/1.73 m^2 with proteinuria or haematuria – Stage 3 (moderate) 30–59 mL/min/1.73 m^2 – Stage 4 (severe) 15–29 mL/min/1.73 m^2 – Stage 5 (end stage) <15 mL/min/1.73 m^2 Refer patients with stage 4 or 5 to a renal unit or nephrologist and consider referral at stage 3 or earlier (eg. if proteinuria >1 g or rapidly deteriorating GFR) See www.racgp.org.au/Content/NavigationMenu/ClinicalResources/RACGPGuidelines/ChronicKidneyDiseaseCKDManagementinGeneralPractice/CKDBrochure.pdf The eGFR may be unreliable in the following situations (it has not been validated in all ethnic groups): • acute changes in renal function • dialysis patients • certain diets (eg. vegetarian, high protein, recent ingestion of cooked meat) • extremes of body size • muscle diseases (may underestimate) or high muscle mass (may overestimate) • children <18 years of age • severe liver disease	348 350 348

09 Early detection of cancers

General practitioners and the general practice team play an important role in the prevention and detection of cancers by providing evidence based advice, opportunistic case finding or screening where appropriate, especially in the case of skin, cervical, breast and colorectal cancer (CRC). This process involves encouraging age and risk appropriate patients to participate in population screening programs; as well as risk assessment and screening by the GP or appropriately trained practice staff.

Barriers to screening for cancer include concerns about cost; radiation; embarrassment; poor access, including travel difficulties; anxiety about test results; inconvenience; forgetting or procrastination; and discomfort associated with the screening test.[351] Strategies to overcome these are discussed in the 'green book'. Screening not supported by evidence can lead to harm from anxiety or tests and treatments that would not have happened otherwise.

Health inequality

Some cancers are more common in low SES groups. Aboriginal women, older women and women living in low socioeconomic areas have a higher incidence of cervical cancer.[352] Oral cancer is more prevalent among low SES groups.[353] Low income and less educated patients are less likely to be screened and more likely to be diagnosed with late stage CRC.[354–356]

Women of low SES are less likely to have a mammogram[357] or to have attended health services for a Pap test.[358] This is not corrected by increased access to general practice.[357] Aboriginal and Torres Strait Islander women are less likely to take part in both cervical and breast cancer screening and are also less likely to attend for second round screening if they report symptoms. This is also true for women from non-English speaking backgrounds.[359]

To increase screening in these community groups, strategies must address barriers to preventive care including financial and structural barriers (including transport). Strategies include providing longer consultations to disadvantaged patients with complex needs (see the 'green book' for more details).

9.1 Skin cancer

General population screening for melanoma or nonmelanoma skin cancer (NMSC) is not recommended as there is no evidence to show this reduces death from melanoma or any other type of skin cancer, which is prerequisite to justify population cancer screening. Providing education that raises awareness of early detection of skin cancer or its prevention is recommended.

Assess opportunistically or when the patient is concerned about skin lesions or their skin cancer risk, and plan appropriate strategies for their level of risk.

People generally should be encouraged to be alert for new or changing skin lesions by looking for changes regularly (every 3 months); particularly those over 40 years of age.

9.1.1 Melanocytic skin cancer

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
Advise on sun protection and prevention	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Assess risk and advise						■	■	■	■	■	■	■	■	■	■
Screen high risk only			■	■	■	■	■	■	■	■	■	■	■	■	■

Skin self examination should be encouraged for high risk individuals every 3 months **(B)**. All people, particularly children, should be advised to adopt protective measures when UV levels are 3 and above **(C)**. There is evidence to suggest that sunscreen may not prevent melanoma, so minimising sun exposure is an important means of sun protection to reduce the risk of melanoma.[360–364]

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Average risk • Those with light skin complexion without past history of risk	Preventive advice	Opportunistically	III B 365
Increased risk • Family history of melanoma in first degree relative • Fair complexion, a tendency to burn rather than tan, the presence of freckles, light eye colour, light or red hair colour • Age over 30 years (>50 years of age most at risk) • Presence of solar lentigines • Past history of NMSC (<40 years of age higher risk) • Those with childhood high levels of UV exposure and episodes of sunburn in childhood	Preventive advice and examination of skin	Opportunistically	V B 365,366
High risk • Those with multiple atypical or dysplastic naevi who have a history of melanoma in themselves or in one or more first degree relative (usually >15 years of age)	Preventive advice, examination of skin (with or without photography) and advice on self examination	Every 3–12 months	III C 367

Intervention	Technique	References
Sun protection advice	All people (especially children) should be advised to adopt protective measures when UV levels are 3 and above, especially between the hours of 10 am and 3 pm. These measures include: use of shade, a broad brimmed, bucket or legionnaire style hat; protective clothing; sunglasses; and SPF 30+ sunscreen (which needs to be reapplied every 2 hours)	365,368
Skin examination	Skin examination should be preceded by inquiry for patient concern, eg. of newly grown lesions or change in appearance of any lesions in the past few months (evolution). Examination should assess asymmetry, border, colour, diameter and elevation (ABCDE). Lesions that are asymmetric, have an irregular border, variation in colour or have a red halo, are >6 mm or elevated, are possibly melanomas. Also to identify nodular melanoma use 'EFG' (elevated, firm, growing for more than 1 month). The mole that stands out from the others (the 'ugly duckling' sign) has been found to be a useful sign Excision biopsy or referral should be considered. Examination under surface magnification (x 10) can assist in diagnosis (after appropriate training). Use of photography can reduce the excision rate of benign lesions[369] Full body skin examination has been shown in general and dermatology practice, with and without dermatoscopy, to take on average 2–3 minutes[370] Photography may aid in monitoring skin lesions over time	365,371–373
Self examination	People should be advised on the specific changes that suggest melanoma and encouraged to perform self examination, especially of naevi. Those at high risk can benefit from total body photography	366,374

Implementation
General practitioners should question the need to excise moles and pigmented lesions in patients who are younger or female.[351] Evidence suggests that GPs tend to excise relatively more benign lesions in these groups;[351] they should be more active at examining the skin of men over 50 years of age and excising any suspicious pigmented lesions.[351]

9.1.2 Nonmelanoma skin cancer (basal cell and squamous cell carcinoma)

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
Opportunistic case finding															
Prevention advice															

High risk individuals from 40 years of age should be examined for NMSC opportunistically **(B)**. Skin self examination should be encouraged for high risk individuals **(B)**. The most common preventable cause of NMSC is UV exposure. All people, including children, should be advised to use protective measures when UV levels are 3 or above **(A)**. Use of sunscreen helps prevent squamous cell skin cancer **(B)**.[375]

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Average risk • Those with fair to lighter than olive skin colour, <40 years of age without any risk factors	Preventive advice	Opportunistically	III B 376
Increased risk • Fair complexion, a tendency to burn rather than tan, the presence of freckles, light eye colour, light or red hair colour • Family history of skin cancer • Age >40 years • Male gender • Presence of multiple solar keratoses • Those with high levels of UV exposure (eg. those who work outdoors)	Preventive advice, education to present if changes occur in a skin lesion, and examination of skin	Opportunistically	III B 376
High risk • Fair complexion, a tendency to burn rather than tan, the presence of freckles, light eye colour, light or red hair colour • Age >40 years • Previous NMSC (up to 60% grow another in 3 years) • Past exposure to arsenic • Immunosuppressed (eg. postrenal or heart transplant)	Preventive advice, education to present if changes occur in a skin lesion, examination of skin, and advice on self examination	If initial opportunistic assessment indicates the need, every 12 months or when patient develops a new skin lesion	III B 377

Intervention	Technique	References
Sun protection advice	All people (particularly children) should be advised to adopt protective measures when UV levels are 3 or above, especially between the hours of 10 am and 3 pm. These measures include: use of shade, a broad brimmed, bucket or legionnaire style hat, protective clothing, sunglasses and SPF 30+ sunscreen (which needs to be reapplied every 2 hours)	86
Skin examination	Skin examination should be preceded by inquiry for relevant history, eg. of lesions of concern to patient or recent appearance or change in any lesions in the past few months or years. Examination should identify skin lumps, ulcers or scaly patches, particularly growing, scarred or inflamed lesions. Incision, shave, or excision biopsy for histology (or referral) should be considered. There are many suitable means to treat NMSCs, including the use of surgery, cryotherapy, curettage, cytotoxic and immune modulating creams Examination under magnification can assist in diagnosis Full body skin examination has been shown to take on average 2–3 minutes in general and dermatology practice, with and without dermatoscopy	351,373
Self examination	People should be advised to look for skin lesion changes	376

9.2 Cervical cancer

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

Pap test screening is recommended every 2 years for women who have ever had sex and have an intact cervix starting from 18–20 years of age (or up to 2 years after first having sexual intercourse, whichever is later).

Australia has the lowest mortality rate and the second lowest incidence of cervical cancer in the world. The success of the Cervical Screening Program is dependent upon recruitment of women. Eighty-five percent of women in Australia who develop cervical cancer have either not had a Pap test or have been inadequately screened in the past 10 years. Women over the age of 50 years still represent an under-screened group. The introduction of the HPV vaccine as part of the National Immunisation Program (NIP) in 2007 aims to reduce the future incidence of cervical cancer, but it is not a substitute for a continuing screening program.

Who is at higher risk of cervical cancer?	What should be done?	How often?	Level of evidence and references
Average risk • All women who have ever been sexually active	Pap test	Women who have ever had sex and still have an intact cervix should undergo Pap test screening Routine screening with Pap tests should be carried out every 2 years for women who have no symptoms or history suggestive of cervical pathology All women who have ever been sexually active should start having Pap tests at 18–20 years of age, or 1–2 years after first having sexual intercourse, whichever is later Pap tests may cease at the age of 70 years for women who have had two normal Pap smears within the past 5 years. Women over 70 years of age who have never had a Pap test, or who request a Pap test, should be screened Women with female sex partners are also at risk of developing cervical cancer and should be screened as above	II A 378
	HPV vaccination	For maximum effect the vaccination should be given before the onset of sexual activity. It has no modifying effect on already acquired HPV infections. It is available as part of the NIP for girls in year 7	49,379
Increased risk • Persistent infection with high risk HPV types is necessary for the development of cervical cancer. Other risk factors include: – immunosuppression – cigarette smoking – use of the combined oral contraception pill for >5 years	Pap test	It is important to ensure patients always receive their test results **Low grade squamous intraepithelial lesions (LSIL)** Woman with a Pap test report of possible/definite LSIL should have a repeat Pap test in 12 months. If the repeat test at 12 months shows LSIL (definite or possible) she should be referred for colposcopy Women aged 30 years or over with a Pap test report of LSIL, without a history of negative smears in the preceding 2–3 years, should be offered either colposcopy or a repeat Pap test at 6 months **High grade squamous intraepithelial lesion (HSIL)** Women should be referred for colposcopic assessment and targeted biopsy where indicated **Glandular abnormality or adenocarcinoma** Refer for colposcopy by an experienced gynaecologist or gynaecological oncologist If the woman is symptomatic or has a clinically abnormal cervix, referral for colposcopy is recommended	V B 380

Test	Technique	References
Pap test	A sample of the ectocervix using an extended tip spatula, then the endocervix using a cytobrush provides the best method of sampling and can be used in all age groups of women. (The cytobrush is not recommended for use during pregnancy.) The cervical broom can be used on its own in premenopausal women if it is possible to sample from both sides of the transformation zone. In postmenopausal women the transformation zone tends to be higher in the endocervical canal. The cervical cells should be placed onto a glass slide and fixed with spray within 5 seconds. If the smear is reported as technically unsatisfactory, it should not be repeated before 6 weeks. In postmenopausal women with atrophic changes it may be necessary to use vaginal oestrogen for 14–21 days before the test. (See Chapter 15 *Screening tests of unproven benefit* regarding evidence related to bimanual vaginal examination)	381
HPV testing	**As a primary screening tool** Current national guidelines do not support the use of HPV testing as a primary screening tool for cervical cancer **In triage of LSIL** The use of HPV testing in the triage of LSILs remains under investigation and is not currently recommended by the National Cervical Cancer Screening guidelines **In follow up of HSIL** In women treated for HSIL, cervical cytology plus HPV testing should be performed 12 months post-treatment and annually thereafter until both tests are negative on two consecutive occasions, at which point they can return to the routine cervical screening interval	378,382,383 378,384–386
Liquid based cytology	Liquid based cytology can be used as an additional test to the conventional smear but not as a substitute. Its addition may be useful when repeating an unsatisfactory test. It should be added if requested by the woman	387,388

Strategy
Methods of encouraging women to undergo cervical screening include: invitations, reminders, education, message framing, counselling, risk factor assessment, procedures and economic interventions. Evidence supports the use of invitations, and to a lesser extent, educational materials. It is likely other methods are advantageous, but the evidence is not as strong. Further research is required.[389]

9.3 Breast cancer

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

For women at average risk and aged 50–69 years, screening by mammogram every 2 years is recommended **(A)**. For women who are eligible and attending for regular mammographic screening, there is no evidence that clinical breast examination will provide additional benefit **(E)**. Mammographic screening is not recommended for women at average risk under 40 years of age. All women should be advised to be familiar with the normal look and feel of their breasts and to report any new or unusual changes to their GP without delay. No specific technique is promoted for breast self examination as there is no evidence of the effectiveness of any one approach. The breast awareness approach should be seen as a supplement to, not a substitute for, regular mammograms in women within the target age range for screening.[390]

Who is at higher risk of breast cancer?	What should be done?	How often?	Level of evidence and references
Average risk or slightly above (>95% of the female population) • No confirmed family history of breast cancer • One first degree relative diagnosed with breast cancer at age 50 years or over • One second degree relative diagnosed with breast cancer at any age • Two second degree relatives on the same side of the family diagnosed with breast cancer at age 50 years or over • Two first or second degree relatives diagnosed with breast cancer at age 50 years or over, but on different sides of the family (ie. one on each side of the family) As a group, lifetime risk of breast cancer is between one in 11 and one in 8. This risk is no more than 1.5 times the population average	Mammogram Breast awareness	Every 2 years from 50–69 years of age* Regular	I A 391–396
Moderately increased risk (<4% of the female population) • One or two first or second degree relatives diagnosed with breast cancer before the age of 50 years (without the additional features of the potentially high risk group) • Two first degree relatives on the same side of the family diagnosed with breast cancer (without the additional features of the potentially high risk group) • Two second degree relatives on the same side of the family diagnosed with breast cancer, at least one before the age of 50 years (without the additional features of the potentially high risk group) As a group, lifetime risk of breast cancer is between one in 8 and one in 4. This risk is 1.5–3.0 times the population average	Mammogram Breast awareness Consider referral to, or consultation with, a family cancer clinic for further assessment	At least every 2 years from 50–69 years of age*	III C 391
Potentially high risk (<1% of the female population) • Women who are at potentially high risk of ovarian cancer (see Category 3 below) • Two first or second relatives on one side of the family diagnosed with breast or ovarian cancer plus one or more of the following features on the same side of the family: – additional relative(s) with breast or ovarian cancer – breast cancer diagnosed before the age of 40 years – bilateral breast cancer – breast and ovarian cancer in the same woman – Ashkenazi Jewish ancestry – breast cancer in a male relative • One first or second relative diagnosed with breast cancer at age 45 years or less plus another first or second relative on the same side of the family with sarcoma (bone/soft tissue) at age 45 years or less • Member of a family in which the presence of a high risk breast cancer gene mutation has been established • Three or more first or second degree relatives on the same side of the family diagnosed with any cancers associated with hereditary nonpolyposis colorectal cancer (HNPCC): CRC (particularly if diagnosed before the age of 50 years), endometrial, ovarian or gastric cancers, and cancers involving the renal tract • A woman suspected to have HNPCC • Member of a family in which the presence of a high risk breast cancer gene mutation has been established Women in high risk groups may carry BRCA1 or BRCA2 or other gene mutations. Women who carry BRCA1 and BRCA2 mutations are at high risk of developing breast cancer and ovarian cancer See the National Breast Cancer Centre (NBCC) guidelines. Available at www.nbcc.org.au for further information As a group, lifetime risk of breast cancer is between one in 4 and one in 2. Risk may be more than three times the population average. Individual risk may be higher or lower if genetic test results are known	Advise referral to a cancer specialist or family cancer clinic for development of an individualised surveillance program This may include clinical breast examination, mammography and/or ultrasound and surveillance for ovarian cancer	Individualised surveillance program	III C 391

* For all women there is a chance that mammography will either miss a change due to breast cancer (false negative) or that further tests will be performed to examine a change that is not due to breast cancer (false positive). The chance of a false negative or false positive result is higher in younger women because their breast tissue is more dense. Women 40–49 years of age should be advised that the benefits of mammographic screening increase with increasing age. Women in this age group are more likely to be recalled for additional assessment and investigation.[392, 393] Women in this age group should balance the benefits and downsides of mammographic screening for them. Breast cancer remains common and can be readily detected by mammography in women over 70 years of age. With increasing life expectancy some women may elect to continue regular mammographic screening to an age decided in consultation with their doctor having regard to comorbidities and life expectancy[394]

Strategies

A recent systematic review of strategies for increasing the participation of women in community breast cancer screening found five active strategies for inviting women into community breast cancer screening services to be favourable: letter of invitation, mailed educational material, letter of invitation plus phone call, phone call, and training activities plus direct reminders.[401] Physical activity is associated with a reduced risk of breast cancer.[397] Studies have shown a 20–40% reduction in risk of breast cancer in both pre- and post-menopausal women.[398]

9.4 Oral cancer

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

There is insufficient evidence to recommend screening by visual inspection or by other screening methods.[399]

Who is at higher risk or oral cancer?	What should be done?	How often?	Level of evidence and references
Average risk	Education regarding prevention	Every 2 years	V B 86
Increased risk • Smokers aged >50 years, heavy drinkers, patients chewing tobacco or areca/betel nut • Patients exposed to excessive amounts of sunlight (at risk of lip cancer)	Opportunistic examination of the mouth and lips	Every 12 months	V B 86,402

Preventive care	Technique	References
Education	All patients should be advised about the hazards of smoking or chewing tobacco, excessive alcohol consumption and sunlight exposure	86
Oral examination	Examine the extra oral areas: neck, lips, and face looking for lumps and swellings Inspect the oral cavity, buccal mucosa (cheeks), gingivae (gums), tongue: lateral borders, dorsum, floor of mouth, palate looking for white or red patches, ulceration or induration	403

9.5 Colorectal cancer (bowel cancer)

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
High risk															

Organised screening by faecal occult blood testing (FOBT) is recommended for the asymptomatic average risk population from 50 years of age every 2 years **(A)** until 75 years of age with repeated negative findings.[404,405] Increased risk is determined by family history and this should include determining the number of relatives affected by CRC, side of family and age at onset. Digital rectal examination (DRE) is not recommended as a screening tool **(D)** but should be used as part of an investigation of patients who present with symptoms such as rectal bleeding.

A GP recommendation can positively influence participation in bowel cancer screening using FOBTs.[406,407]

Who is at higher risk of bowel cancer?	What should be done?	How often?	Level of evidence and references
Category 1 – average or slightly increased risk Asymptomatic people with: • no personal history of bowel cancer, colorectal adenomas or ulcerative colitis and no confirmed family history of CRC, or • one first degree or second degree relative with CRC diagnosed at 55 years of age or over	FOBT	Every 2 years from 50 years of age	I A 86,404, 408,409
Category 2 – moderately increased risk Asymptomatic people with: • one first degree relative with CRC diagnosed before 55 years of age, or • two first or second degree relatives on the same side of the family with CRC diagnosed at any age (without potentially high risk features as in Category 3)	Colonoscopy (sigmoidoscopy plus double contrast barium enema) or CT colonography (performed by an experienced operator) acceptable if colonoscopy is contraindicated Consider offering FOBT	Every 5 years from 50 years of age, or at an age 10 years younger than the age of first diagnosis of CRC in the family, whichever comes first In intervening years	III B 404,410,411
Category 3 – high risk Asymptomatic people with: • three or more first or second relatives on the same side of the family with CRC diagnosed at any age* OR • two or more first or second relatives on the same side of the family diagnosed with CRC, including any of the following high risk features: – multiple CRC in the one person – CRC before 50 years of age – family member who has/had a HNPCC related cancer OR • at least one first or second degree relative with CRC, with a large number of adenomas throughout the large bowel (suspected familial adenomatous polyposis FAP) OR • family member in whom the presence of a high risk mutation in the adenomatous polyposis coli (APC) or one of the mismatch repair (MMR) genes has been identified (Members of proven FAP and HNPCC families who test negatively for the mutation are no longer at high risk and revert to the moderately at risk group but still require surveillance) * HNPCC related cancers include cancer of the endometrium, ovary, pancreas, hepatobiliary tract, stomach, small intestine (usually duodenum or jejunum), upper urinary tract (transitional cell carcinoma of ureter and renal pelvis), brain (glioblastoma)	Refer for genetic screening of affected relatives Refer to bowel cancer specialist to plan appropriate surveillance FAP: flexible sigmoidoscopy HNPCC: colonoscopy FOBT	Those at risk for FAP: – every 12 months from 12–15 years of age to 30–35 years of age and every 3 years after 35 years of age HNPCC: 1–2 yearly from 25 years of age or 5 years earlier than the youngest affected member of the family (whichever earliest) Alternate years	III B 404,410,411

Test	Technique	References
Faecal occult blood test screening	Two main types of FOBT are available: guaiac and immunochemical tests. Two or three serial stools should be tested, depending on the type and brand of test being used. Follow the manufacturer's instructions. It is essential that any positive FOBT (including just one of the samples) be appropriately investigated by diagnostic tests as these people are at least 12 times more likely to have CRC than someone with a negative test. With guaiac tests, even if a subject fails to follow dietary restrictions, it is dangerous to assume that a positive result is a result of dietary noncompliance	404,406

Strategy
Measures to increase screening in these groups include recall and reminders, community outreach and links to other community services and organisations (see the 'green book'). The National Bowel Cancer Screening Program commenced in 2006 targeting specific age groups. General practitioners play a critical role in this program in terms of maximising participation, managing participants with a positive FOBT and providing information to the program about the investigation of people with a positive FOBT.[412]

9.6 Testicular cancer

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
	Not recommended as a preventive activity														

There is insufficient evidence to routinely screen for testicular cancer using clinical or self examination.[413,414] There is little evidence to show that those performing testicular self examination are more likely to detect early stage tumours or have better survival than those who do not **(C)**.

Who is at higher risk of testicular cancer?	What should be done?	How often?	Level of evidence and references
High risk Those with history of cryptorchidism, orchidopexy, testicular atrophy or previous testicular cancer	Testicular examination	Opportunistically	V C 415

9.7 Prostate cancer

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
										Inform patients of risks and benefits					

Routine screening for prostate cancer with digital rectal examination (DRE), prostate specific antigen (PSA) or transabdominal ultrasound is not recommended.[416–418] Patients should make their own decision about being tested for prostate cancer after being fully informed of the potential benefits, risks and uncertainties of prostate cancer testing **(C)**.[419] Where a patient chooses to be tested, both PSA and DRE should be performed.

Who is at higher risk of prostate cancer?	What should be done?	How often?	Level of evidence and references
Average risk The risk of developing prostate cancer increases with age. However, because prostate cancer is usually slow growing, men over 75 years of age or with a life expectancy of less than 10 years are at reduced threat of dying from a diagnosis of prostate cancer Men with uncomplicated lower urinary tract symptoms (LUTS) do not appear to have an increased risk of prostate cancer. The most common cause of LUTS is benign prostate enlargement. Early prostate cancer often does not have symptoms	Inform patients of risks and benefits of screening	Opportunistically	V C 420
High risk • Men with one or more first degree relatives diagnosed before the age of 65 years • Men with a first degree relative with familial breast cancer (BRAC1 or BRAC2)	Inform patients of risks and benefits of screening	Opportunistically	V C 421,422

Not recommended	Justification	References
PSA screening	While there is currently good evidence that PSA screening can detect early stage prostate cancer when curative treatment can be offered, it can also lead to 'over detection', ie. detection of disease which will not impact on the health of a man during his lifetime. There is inconclusive evidence that such early detection can reduce mortality. (There are two large studies currently designed to address this question due to report in the next 5 years.) Testing and treatment for prostate cancer can cause substantial harm, including erectile dysfunction (20–70%) and urinary incontinence (15–30%)	416–418

Strategy
Patients who request testing should be informed about the risks and benefits of testing for prostate cancer and assisted to make their own decision as to whether to go ahead with testing.[423] Written material, particularly decision aids, may be useful for this purpose (see the 'green book'). Responding to patients' concerns and fulfilling medicolegal responsibilities are considerations in discussion with patients requesting testing.

10 Psychosocial

General practitioners play an important role in the detection and management of mental illness, especially high prevalence conditions such as depression and anxiety. The lifetime incidence of major depression is up to 30% and is twice as common in women than men. The prevalence in the community of major depression is 3–5%.[424]

The likelihood of depression among low SES persons is almost double that of high SES persons (most marked for persistent depression).[425] Anxiety and affective disorders are more common in unemployed people; they are also less likely to seek help from their GP.[426] In patients with chronic disease, lower educational level and unemployment are predictive of depression.[427] Practices in disadvantaged areas have a higher prevalence of depression to identify and manage in their patients.[428] Being aware of this is important for opportunistic screening for depression. Other general strategies to increase screening in this group are outlined in other chapters and are also discussed in the 'green book'. Suicide and attempted suicide are consistently associated with markers of socioeconomic disadvantage,[429–432] including low SES, limited educational achievement, and homelessness. These markers are more prevalent in Aboriginal people and Torres Strait Islanders.[433] Refer to the *National guide to a preventive assessment in Aboriginal and Torres Strait Islander peoples*.

Epidemiological studies have consistently shown a link between suicide and social disadvantage[434,435] including low SES, limited educational achievement and homelessness.[436]

10.1 Depression

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79+

There is evidence for opportunistic screening for depression in the general adult population provided there is effective treatment and follow up offered to those found to have depression **(B)**.[437] There is insufficient evidence to recommend for or against routine screening in adults where feedback and management are not available; or in children and adolescents. Clinicians should maintain a high level of awareness for depressive symptoms in patients at high risk for depression.

Who is at higher risk for depression?	What should be done?	How often?	Level of evidence and references
Average risk • Adult population 18 years of age and over	Screen for depression and offer effective management and follow up if further assessment confirms depression	Opportunistically	I B 437
• Adolescents	The benefits of screening have not been established. Be alert for signs of depression in this age group	At every encounter	Insufficient evidence 437,438
Increased risk • Those with a past history of depression • Aboriginal people and Torres Strait Islanders • Those with multiple or unexplained somatic complaints • Those with chronic illness/pain, chronic insomnia/fatigue • Those with acute cardiovascular events (MI/stroke) • Those who have experienced recent loss/trauma • Those abusing alcohol or other drugs • Comorbid psychological conditions (eg. panic disorder or generalised anxiety) or other psychiatric disorders • Postpartum women • Those with poor social supports • Un/underemployed people • Young men living in rural areas • Mothers from low SES groups • Those suffering from life stress including refugees and recent migrants	Screen for depression and offer effective management and follow up if further assessment confirms depression Maintain a high level of clinical awareness of those at high risk of depression	Opportunistically	III C 437,439,440

Test	Technique	Level of evidence and reference
Question regarding mood and anhedonia	Asking two simple questions may be as effective as longer instruments: • 'Over the past 2 weeks, have you felt down, depressed or hopeless?', and • 'Over the past 2 weeks have you felt little interest or pleasure in doing things?' Asking a patient if help is needed in addition to these two screening questions improves the specificity of a diagnosis of depression	IV 441

10.2 Suicide

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

There is a lack of evidence for the routine screening of patients using a screening instrument **(C)**. General practitioners should be alert for higher risk individuals and the possibility of suicide in patients at higher risk. There is evidence that detecting and treating depression has a role in suicide prevention.[442,443] For example, the incidence of suicide has decreased in older men and women in association with exposure to antidepressants.[444]

Who is at higher risk of suicide?	What should be done?	How often?	Level of evidence and references
Average risk • General population	No routine screening for suicide	N/A	III C 445,446
Increased risk • Attempted suicide is a higher risk in the following: – those with a mental illness, especially mood disorders, alcohol and drug abuse – previous suicide attempts or deliberate self harm – males – young people – those with a recent loss or other adverse event – patients with a family history of attempted or completed suicide – Aboriginal people and Torres Strait Islanders – those who are widowed – those living alone or in prison – those with a chronic and terminal medical illness	Evaluate risk for suicide	When risk factors present and with all patients aged 14–24 years	III V C 54,442,445

Test	Technique	References
Evaluate the risk of suicide in the presence of risk factors	• How has your mood been lately? • Has anything been troubling or worrying you? • Have you had times when you have been feeling sad or 'down'? • Have you ever felt like life is just getting on top of you? • Do you sometimes wish you could just make it all stop, or that you could just end it? • Have you thought about how you might do this? • Have you ever wished you were dead? • Have you ever thought about taking your own life? Patients with suicidal ideation should be questioned regarding preparatory actions, eg. obtaining a weapon, making a plan, putting affairs in order, giving away prized possessions, preparing a suicide note	86,447
Screening for psychological distress with young people	The following questions might be asked: • 'How are you going generally?' • 'Do you ever feel miserable?' • 'How are things at home (or where you live)?' • 'Lots of people use alcohol and drugs, how about you?'	86

10.3 Identification of intimate partner violence

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

There is currently a lack of evidence for the effectiveness of interventions in clinical practice to reduce intimate partner violence. Consensus guidelines[448] recommend that clinicians ask all pregnant adult and adolescent women about intimate partner violence, but that a case finding approach be taken in situations where patients have symptoms of intimate partner violence or abusive behaviour.

Who is at higher risk of intimate partner violence?	What should be done?	How often?	Level of evidence and references
Increased risk • Pregnant adult and adolescent women • Women with: – symptoms of mental ill health – chronic unexplained physical symptoms – unexplained injuries – frequent attendance • Men who: – ask for help with anger issues – have marital problems – are 'wife mandated' to change their behaviour – have alcohol or other substance abuse problems – were abused or witnessed intimate partner violence as a child	Ask about partner violence Ask about relationship and any abusive or controlling behaviours	Opportunistically	Consensus 448

Test	Technique	References
Ask about intimate partner violence	Victimised women stress the importance of a trusting doctor-patient relationship, confidentiality, respectful and nonjudgmental attitudes to achieving disclosure as well as acceptance of nondisclosure and a supportive response. It is crucial for safety reasons that any questions are asked privately, when the patient is alone, not when another family member, adult or child over the age of 2 years is present. It is a clinician's responsibility to ask and support women regardless of their response. Asking about abuse may 'plant a seed' for later action. The collaborative group believe that GPs should ask women who are 'symptomatic' (eg. symptoms of mental ill health, chronic unexplained physical symptoms, unexplained injuries, frequent attendance) **Possible questions to ask if you suspect intimate partner violence** • 'Sometimes partners use physical force. Is this happening to you?' • 'Have you felt humiliated or emotionally abused by your partner (ex-partner)?' • 'Are you now or have you been afraid of your partner (ex-partner)?' • 'Has your partner ever physically threatened or hurt you? Or have you been kicked, hit, slapped or otherwise physically hurt by your partner (ex-partner)?' • 'In the past year have you been forced to engage in any sexual activity by your partner (ex-partner)?'	448 449

11 Oral hygiene

Age	<2	2–3	4–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	> 65

Good oral hygiene helps to prevent dental caries, gingivitis and improves oral health. There is insufficient evidence to recommend for or against routine assessment of preschool children for dental caries.[450] There is evidence that use of fluoride in water or topically, reduces caries in children.[451]

Who is at higher risk?	What should be done?	How often?	Level of evidence and references
Increased risk • Aboriginal people and Torres Strait Islanders • Rural and remote populations • Migrant groups (especially refugees) • Those with reduced saliva flow (eg. head and neck radiation therapy, Sjogren syndrome, multiple drug therapy including psychotropic medications)	Examination of the mouth Education regarding prevention Recommendation of professional or home application of topical fluoride pastes, gels or mouth rinses	At least every 12 months More frequent dental check ups, as determined by a dentist	IV C 54 I B 86,452 I A 452

Intervention	Technique	References
Education	• Advise about the hazards of high carbohydrate and acidic between meal snacks and drinks • Advise against the use of baby bottles with any fluid apart from water at night • Brush teeth twice daily with fluoride toothpaste • Home use of high fluoride toothpastes, gels or mouth rinses for those at high risk • Use sugar free chewing gum for saliva stimulation • Use a mouth guard when playing contact sport • Recommend regular dental check ups	54,86,452 452,453
Oral examination	• Inspection of mouth for carous, stained, or worn teeth and gums for swelling and inflammation • Xerostomia may present as dry and reddened gums and increased caries rate particularly on root surfaces	
Fluoridation	• Water fluoridation is beneficial at reducing dental caries • Approximately two-thirds of Australians now drink fluoridated water. Details regarding fluoride levels in Australian water supplies and recommended dosages of fluoride are available at www.health.gov.au:80/nhmrc/advice/pdf/fluoride.pdf	

Inequality
Oral disease is more prevalent among low SES groups.

Glaucoma 12

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

There is insufficient evidence to recommend routine screening for glaucoma using tonometry or visual fields test **(C)**.[455] However, GPs have an essential role in identifying patients at higher risk for glaucoma, and referring them for testing.

Who is at higher risk of glaucoma?	What should be done?	How often?	Level of evidence and references
Increased risk • Patients with: – a family history of glaucoma – age ≥60 years – high myopia >8 diopters – diabetes (see Chapter 8 *Prevention of vascular disease*) – history of long term steroid use	Refer for ophthalmoscopy, tonometry and visual field assessment*	Every 12 months	III C 456
* This may be by an ophthalmologist or optometrist in regional areas with limited access			

Intervention	Technique	References
Tonometry	Tonometry is not recommended. Schiotz tonometry has poor sensitivity and specificity for early detection of glaucoma. Tonometry is an inadequate screening tool as it grossly overestimates glaucoma prevalence **(C)**	
Perimetry (visual fields)	Not advisable in general practice as only automated perimetry is sensitive for detecting glaucoma **(C)**	457,458
Fundus (ophthalmoscopy)	There is some evidence that new generation (panoptic) ophthalmoscopes can better detect glaucomatous discs as well as macular degeneration and diabetic retinopathy **(B)**	459

13 Urinary incontinence

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80

There is no evidence for screening in the general population. Case find in those at higher risk **(B)**. Within the general population up to 19% of children, 13% of men and 37% of women may be affected by some form of urinary incontinence.[460] Urinary incontinence is most common in women and increases with age.

Who is at higher risk of urinary incontinence?	What should be done?	How often?	Level of evidence and references
Average risk	There is no evidence to support screening	N/A	IV
Higher risk • Peri- and post-natal women • Younger women who have had children • Women who are overweight • Those with diabetes, stroke, heart conditions, neurological disorders, recent surgery, respiratory conditions, and prostate problems • The frail, elderly or long term care residents	Ask about the occurrence of urinary incontinence	Every 12 months	IV B 460,461

Intervention	Technique	References
Case finding	Question patients about the occurrence of urinary incontinence, eg. 'Do you have trouble with your bladder?' 'Do you ever lose your urine or get wet?' Effectiveness of self reported scales, professional assessment of clinical history and ultrasound to detect urinary incontinence in women is comparable to urodynamic testing and consistent across race, age, and socioeconomic groups History taking for a patient with urinary incontinence should include questions about leakage such as precipitating factors, amount and frequency of urine loss, and protective measures (eg. pads or change of clothing)	461,462
Assessment	Patients with urinary incontinence should be assessed to determine the diagnostic category as well as underlying aetiology. This can usually be determined on the basis of history, physical examination and urinary culture and microscopy. There are four common types of incontinence: • Stress incontinence is the leaking of small amounts of urine which may occur during exercise, coughing, sneezing, laughing, walking, lifting or playing sport. This is more common in women, although it also occurs in men, especially after prostate surgery. Pregnancy, childbirth and menopause are the main contributors • Urge incontinence is a sudden and strong need to urinate. It is often associated with frequency and nocturia and is often due to having an overactive or unstable bladder, neurological conditions, constipation, enlarged prostate or history of poor bladder habits • Mixed incontinence is a combination of both stress and urge incontinence and is most common in older women • Overflow incontinence as a result of bladder obstruction or injury and often occurs in an atonic bladder with overfilling. It often masks stress incontinence	460

Osteoporosis 14

Age	0–9	10–14	15–19	20–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–79	>80
Women															
Men															

Women aged 45 years and over and men from 50 years of age should have their risk factors for osteoporosis and fracture assessed **(C)**. Screening by bone mineral densitometry should only be conducted in women over 65 years of age or in men or women over 60 years of age whose BMI is less than 20 kg/m^2 **(B)**.[423–426]

Who is at higher risk of osteoporosis?	What should be done?	How often?	Level of evidence and references
Average risk • Women 45 years of age or over • Men 50 years of age or over*	Assessment for risk factors Preventive advice	Every 12 months	I A (women) 463 V C (men)
High risk • Postmenopausal women over 65 years of age • Those over 45 years of age who sustain a low trauma fracture • Postmenopausal women with suspected vertebral fracture or major risk factors	Bone mineral densitometry and management of risk factors	At presentation and every 2 years	II B

Intervention	Technique	References
Assessment of risk factors	Take a thorough history paying particular attention to: • previous low trauma fracture, osteopenia/vertebral deformity, loss of height (>0.5 cm/year), thoracic kyphosis • age (women 65 years of age or over), menopause (especially premature), maternal history of hip fracture, low body weight (BMI <19), immobilisation • medical conditions*: current or past history of corticosteriod therapy (prednisolone >7.5 mg/day for ≥6 months, or equivalent), eating disorders associated with low body weight, chronic liver or renal disease, malabsorption, primary hypogonadism, amenorrhea >12 months before 45 years of age, inflammatory arthropathies (eg. rheumatoid arthritis or thyroxine excess) • lifestyle factors: poor diet, limited sun exposure • falls risk (see Chapter 5.1 *Falls and physical activity*) * Risk factors which apply particularly to men are: hypogonadism, glucocorticoid use, excess alcohol, multiple myeloma, conditions associated with thyroxine excess and primary hyperparathyroidism	464
Preventive actions	Provide advice regarding risk factor modification, especially a good general diet high in calcium (1000–1500 mg/day) and vitamin D, adequate levels of physical activity, smoking cessation and limited alcohol and caffeine intake Counsel patients regarding falls prevention – involving family and community agencies may be appropriate Offer modest calcium with vitamin D supplements to those with poor diet and limited sun exposure	
Bone mineral densitometry	Bone density measured at the femoral neck by dual energy X-ray absorptiometry (DXA) is the best site for prediction of hip fracture	463,465

15 Screening tests of unproven benefit

The following are not recommended as screening tests in low risk general practice populations. These tests may have value as diagnostic tests or as tests to monitor disease progression.

Screening test	Condition	Reason not to use	References for further reading
Abdominal ultrasound	Abdominal aortic aneurysm	No evidence of improved outcome	466
Bimanual vaginal examination	• Ovarian malignancy • Hormone therapy (asymptomatic women) • Sexual health check • Cervical cancer	There is no evidence to support. Pelvic examinations may be performed at the time of routine Pap tests to aid in technical issues with the Pap test itself	467
Bone mineral density	Osteoporosis	Low specificity. Low predictive value for fracture in low risk populations	468
CA125 Transabdominal or transvaginal ultrasound	Ovarian cancer	Less than 50% of women presenting with FIGO stage I ovarian cancer have elevated levels of CA125 No evidence to recommend routine screening for women in general	469
Chest X-ray	Lung cancer	There is no evidence that screening for lung cancer with chest X-ray decreases mortality from lung cancer	470
Coronary calcium CT scanning (electron-beam computerised tomography [EBCT] scanning for coronary calcium)	Coronary heart disease	There is fair evidence that these are ineffective and that the harms outweigh the benefits	471
Exercise electrocardiograph (ECG)	Coronary artery disease	Low sensitivity and specificity	472
Helical computerised tomography	Lung cancer	Lack of evidence of benefit. However, a trial is currently underway with smokers	473
Magnetic resonance angiography or digital subtraction angiography	Cerebrovascular abnormalities	Low prevalence, lack of sensitivity and evidence of improved outcome	474
Prostate specific antigen (PSA) test	Prostate cancer	Lack of sensitivity, specificity and evidence of improved outcome	475
Respiratory function tests	Chronic obstructive pulmonary disease (COPD)	Screening a practice population is possible but difficult. Insufficient evidence of improved outcomes	476
Screening for asymptomatic bacteuria in elderly	Urinary tract infection	No evidence to support benefit	477
Thyroid function tests	Hyper- or hypo-thyroidism	Screening for congenital hypothyroidism in neonates is recommended. However, it is not recommended in adults, even if family history because of low prevalence and lack of evidence of benefit	478
Whole body CT scanning	Various cancers	There is no evidence of benefit. There is evidence of harm due to increased radiation exposure	479

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Glossary

Screening

Screening: Detection of unrecognised disease or condition in the general population by using reliable tests, examinations or other procedures which can be applied rapidly

Opportunistic screening: Detection of, or case finding of specific diseases that can be controlled better when detected early in their natural history, particularly in individuals or groups who may be predisposed to that disease, eg. individuals with particular risk factors

High risk individuals: Those individuals who have risk factors which are likely to predispose them to impending disease

High index of suspicion: Level of awareness of clusters of risk factors such as lifestyle, socioeconomic, personal medical history and family medical history, which may predispose individuals to disease.

Evidence

Good evidence: There is good quality evidence obtained from randomised clinical trials to support or reject a recommendation

Fair evidence: Evidence obtained from studies such as well designed pseudo randomised controlled trials (alternate allocation or some other method), comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies, or interrupted time series with a control group or comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group

Poor evidence: Evidence obtained from case series, either post- or pre-test and post-test, or opinions of respected authorities based on clinical experience, descriptive studies or reports of expert committees

No evidence: Exhaustive searches have revealed there are no studies that address recommendations in general practice for the target disease or condition.

Prevention

Primary prevention: Prevention of diseases or disorders in the general population by encouraging community wide measures such as good nutritional status, physical fitness, immunisation, and making the environment safe. Primary prevention maintains good health and reduces the likelihood of disease occurring

Secondary prevention: Detection of the early stages of disease before symptoms occur, and the prompt and effective intervention to prevent disease progression

Tertiary prevention: Prevention or minimisation of complications or disability associated with established disease. Preventive measures are part of the treatment or management of the target disease or condition.

Acronyms

23vPPV	Pneumococcal polysaccharide vaccine
2vHPV	Bivalent human papillomavirus
4vHPV	Quadrivalent human papillomavirus
7vPCV	Pneumococcal conjugate vaccine
ABCDE	Asymmetry, border, colour, diameter, elevation
ACEI	Angiotensin converting enzyme inhibitor
ACIR	Australian Childhood Immunisation Register
AF	Atrial fibrillation
ALA	Alpha-linolenic acid
AMD	Aged related macular degeneration
APC	Adenomatous polyposis coli
AUSDRISK	Australian Type 2 Diabetes Risk Assessment Tool
BCG	Bacillus Calmette-Guérin
BMI	Body mass index
BP	Blood pressure
BSE	Breast self examination
CBE	Clinical breast examination
CF	Cystic fibrosis
CHD	Coronary heart disease
CIN	Cervical intraepithelial neoplasia
CKD	Chronic kidney disease
COPD	Chronic obstructive pulmonary disease
CRC	Colorectal cancer
CT	Computerised tomography
CV	Cardiovascular
CVD	Cardiovascular disease
DBP	Diastolic blood pressure
DHA	Docosahexaenoic acid
DNA	Deoxyribonucleic acid
DPA	Docosapentaenoic acid
DRE	Digital rectal examination
dT	Diphtheria tetanus

DTPa	Diphtheria, tetanus and acellular pertussis
EFG	Elevated, firm, growing for more than 1 month
eGFR	Estimated glomerular filtration rate
EPA	Eicosapentaenoic acid
ESRD	End stage renal disease
FAP	Familial adenomatous polyposis
FOBT	Faecal occult blood test
GDM	Gestational diabetes mellitus
GFR	Glomerular filtration rate
GPCOG	General practitioner assessment of cognition
HBIG	Hepatitis B immunoglobulin
HbsAg+ve	Hepatitis B surface antigen positive
HCG	Human chorionic gonadotrophin
HDL	High density protein
hepB	Hepatitis B
HFE (gene)	Haemochromatosis
Hib	Haemophilus influenzae type b
HIV	Human immunodeficiency virus
HNPCC	Hereditary nonpolyposis colon cancer
HPV	Human papillomavirus
HSIL	High grade intraepithelial lesion
IADL	Instrumental activities of daily living
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance test
IPV	Inactivated poliomyelitis
LCR	Long control region
LDL	Low density protein
LSIL	Low grade squamous intra-epithelial lesion
LUTS	Lower urinary tract symptoms
MBS	Medicare Benefits Schedule
MCV	Mean corpuscular volume
MDRD	Modification of diet in renal disease
MenCCV	Meningococcal C
MI	Myocardial infarction
MMR	Measles, mumps and rubella
MMR	Mismatch repair
MMRV	Measles, mumps, rubella and varicella

MMSE	Mini-Mental State Examination
NAAT	Nucleic acid amplification test
NBCC	National Breast Cancer Centre
NHMRC	National Health and Medical Research Council
NIP	National Immunisation Program
NMSC	Nonmelanoma skin cancer
NRT	Nicotine replacement therapy
NTD	Neural tube defect
Ω-3 PUFA	Omega-3 polyunsaturated fatty acid
OPV	Oral poliomyelitis
PCR	Polymerase chain reaction
PEDS	Parents' evaluation of developmental status
PSA	Prostate specific antigen
PVD	Peripheral vascular disease
RACGP	The Royal Australian College of General Practitioners
RUDAS	Rowland Universal Dementia Assessment Scale
SBP	Systolic blood pressure
SES	Socioeconomic status
SIDS	Sudden infant death syndrome
SNAP	Smoking, nutrition, alcohol, physical activity
SPF	Sun protection factor
STI	Sexually transmitted infection
TC	Total cholesterol
TIA	Transient ischaemic attack
TSE	Testicular self examination
TUGT	Timed up and go test
VZV	Varicella
WHO	World Health Organization

01 Appendix

AUDIT-C – Overview

The AUDIT-C is a 3-item alcohol screen that can help identify persons who are hazardous drinkers or have active alcohol use disorders (including alcohol abuse or dependence). The AUDIT-C is a modified version of the 10 question AUDIT instrument.

Clinical utility

The AUDIT-C is a brief alcohol screen that reliably identifies patients who are hazardous drinkers or have active alcohol use disorders.

Scoring

The AUDIT-C is scored on a scale of 0–12.

Each AUDIT-C question has 5 answer choices. Points allocated are:

a = 0 points, b = 1 point, c = 2 points, d = 3 points, e = 4 points

- **In men**, a score of 4 or more is considered positive, optimal for identifying hazardous drinking or active alcohol use disorders
- **In women**, a score of 3 or more is considered positive (same as above)
- However, when the points are all from Question #1 alone (#2 and #3 are zero), it can be assumed that the patient is drinking below recommended limits and it is suggested that the provider review the patient's alcohol intake over the past few months to confirm accuracy[1]
- Generally, the higher the score, the more likely it is that the patient's drinking is affecting his or her safety.

Psychometric properties

For identifying patients with heavy/hazardous drinking and/or active DSM alcohol abuse or dependence.

	Men[2]	Women[3]
≥3	Sens: 0.95/Spec. 0.60	Sens: 0.66/Spec. 0.94
≥4	Sens: 0.86/Spec. 0.72	Sens: 0.48/Spec. 0.99

For identifying patients' with active alcohol abuse or dependence:

≥3	Sens: 0.90/Spec. 0.45	Sens: 0.80/Spec. 0.87
≥4	Sens: 0.79/Spec. 0.56	Sens: 0.67/Spec. 0.94

1. Bradley KA, Bush KR, Epler AJ, et al. Two brief alcohol-screening tests from the Alcohol Use Disorders Identification Test (AUDIT): Validation in a female veterans affairs patient population. Arch Internal Med April 2003;163:821–829.
2. Frequently asked questions guide to using AUDIT-C can be found via the website: www.oqp.med.va.gov/general/uploads/FAQ%20AUDIT-C.
3. Bush K, Kivlahan DR, McDonell MB, et al. The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. Arch Internal Med 1998(3):1789–95.

Appendix 01

Audit-C Questionnaire

Patient name Date of visit

1.	**How often do you have a drink containing alcohol?**
	❍ a. Never
	❍ b. Monthly or less
	❍ c. 2–4 times a month
	❍ d. 2–3 times a week
	❍ e. 4 or more times a week
2.	**How many standard drinks containing alcohol do you have on a typical day?**
	❍ a. 1 or 2
	❍ b. 3 or 4
	❍ c. 4 or 6
	❍ d. 7 to 9
	❍ e. 10 or more
3.	**How often do you have six or more drinks on one occasion?**
	❍ a. Never
	❍ b. Less than monthly
	❍ c. Monthly
	❍ d. Weekly
	❍ e. Daily or almost daily

AUDIT-C is available for use in the public domain

02 Appendix

The Australian Type 2 Diabetes Risk Assessment Tool (AUSDRISK)

1. Your age group?

Under 35 years	0 points
35–44 years	2 points
45–54 years	4 points
55–64 years	6 points
65 years or over	8 points

2. Your gender?

Female	0 points
Male	3 points

3. Your Ethnicity/Country of birth:

3a. Are you of Aboriginal, Torres Strait Islander, Pacific Islander or Maori descent?

No	0 points
Yes	2 points

3b. Where were you born?

Asia (including the Indian sub-continent), Middle East, North Africa, Southern Europe	2 points
Other	0 points

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

No	0 points
Yes	3 points

5. Have you ever been found to have high blood glucose (sugar) (for example, in a health examination, during an illness, during pregnancy)?

No	0 points
Yes	6 points

6. Are you currently taking medication for high blood pressure?

No	0 points
Yes	2 points

7. Do you currently smoke cigarettes or any other tobacco products on a daily basis?

No	0 points
Yes	2 points

8. How often do you eat vegetables or fruit?

Everyday	0 points
Not everyday	1 point

9. On average, would you say you do at least 2.5 hours of physical activity per week (for example, 30 minutes a day on 5 or more days a week)?

Yes	0 points
No	2 points

10. Your waist measurement taken below the ribs (usually at the level of the navel)?

For those of Asian or Aboriginal or Torres Strait Islander descent:

Men	*Women*	
Less than 90 cm	Less than 80 cm	0 points
90–100 cm	80–90 cm	4 points
More than 100 cm	More than 90 cm	7 points

For all others:

Men	*Women*	
Less than 102 cm	Less than 88 cm	0 points
102–110 cm	88–100 cm	4 points
More than 110 cm	More than 100 cm	7 points

Add up your score

Your risk of developing type 2 diabetes within 5 years*:

Less than 5: Low risk
Approximately one person in every 100 will develop diabetes.

6–14: Intermediate risk
For scores of 6–8, approximately one person in every 50 will develop diabetes.

For scores of 9–14, approximately one person in every 20 will develop diabetes.

15 or more: High risk
For scores of 15–19, approximately one person in every seven will develop diabetes.

For scores of 20 and above, approximately one person in every three will develop diabetes.

If you scored 15 or more points, it is important that you discuss your score with your doctor.

* The overall score may overestimate the risk of diabetes in those aged less than 25 years and underestimate the risk of diabetes in people of Aboriginal and Torres Strait Islander descent.

The Australian Type 2 Diabetes Risk Assessment Tool was originally developed by the International Diabetes Institute on behalf of the Australian, State and Territory Governments as part of the COAG reducing the risk of type 2 diabetes initiative

The AUSDRISK Australian Type 2 Diabetes Risk Assessment Tool

How do you score?

If you scored 15 points or more in the AUSDRISK you may have undiagnosed type 2 diabetes or be at high risk of developing the disease in the next 5 years.

See your doctor about having a fasting blood glucose test. Act now to prevent type 2 diabetes. You may be eligible for enrolment in a lifestyle modification program, so discuss this with your doctor.

If you scored 6–14 points in the AUSDRISK you may still be at increased risk of type 2 diabetes.

Discuss your score and your individual risk with your doctor. Improving your lifestyle may help reduce your risk of developing type 2 diabetes.

What is type 2 diabetes?

Type 2 diabetes is a chronic (long-term) disease marked by high levels of sugar in the blood. It occurs when the body does not produce enough insulin (a hormone released by the pancreas) or respond well enough to insulin. Type 2 diabetes is the most common form of diabetes. There are approximately 1 million people with type 2 diabetes currently. This figure is expected to increase significantly in the coming years.

People with diabetes have a higher risk of developing heart disease, stroke, high blood pressure, circulation problems, nerve damage and damage to the kidneys and eyes.

Risk factors

Many Australians, particularly those over 40, are at risk of developing type 2 diabetes through lifestyle factors such as physical activity and nutrition. Family history and genetics also play a role in type 2 diabetes.

What can you do to lower your risk of developing type 2 diabetes?

Your lifestyle choices can prevent, or at least, delay the onset of type 2 diabetes.

You cannot change risk factors like age and your genetic background. You can do something about being overweight, your waist measurement, how active you are, eating habits, or smoking.

If there is type 2 diabetes in your family, you should be careful not to put on weight. Reducing your waist measurement reduces your risk of type 2 diabetes.

By increasing your physical activity and improving your eating habits you can lower your risk. Eat plenty of vegetables and high fibre cereal products every day and use a small amount of fats and oils. Monounsaturated oils, such as olive or canola oil, are the best choice.

You can have type 2 diabetes and not know it because there may be no obvious symptoms.

Notes