Section 5.

Appendices

Australian cardiovascular disease risk charts

Information[1,2]

- Absolute CVD risk assessment involves identifying cardiovascular risk factors to estimate the combined risk of experiencing a heart attack or stroke in the next five years. Assessment includes:
  - taking a clinical and social history, performing a physical examination and taking pathology for risk calculation i.e. blood cholesterol, blood glucose
  - identifying other risk factors that will influence risk and management e.g. family history of CVD, ethnicity, BMI and waist measurement, nutrition status, renal function or depression
  - assessing absolute risk of a heart attack or stroke in the next 5 years by using the following charts or the online calculator at www.cvdcheck.org.au
  - manage risk by providing lifestyle modification support (see Section 1. Lifestyle modification) and managing chronic conditions
  - continue to monitor absolute CVD risk according to baseline risk in conjunction with chronic condition management targets
- See Resource 1.

1. How to use the risk charts[1,2]

- Identify the chart relating to the person's diabetes status, sex, smoking status and age
- A 'smoker' is defined as either current daily cigarette smoker or former smoker who has quit within the previous 12 months
- The charts should be used for all adults aged 45–74 years (Aboriginal and Torres Strait Islander adults from 35 years) without a known history of cardiovascular disease (CVD) and not already known to be at clinically determined high risk
- Choose the cell (in the chart) nearest to the person's age, systolic blood pressure (SBP) and total cholesterol (TC):high density lipid (HDL) ratio
- The colour of the cell that the person falls into provides their 5 year absolute cardiovascular risk level (see legend for risk category)
- For people who fall exactly on a threshold between cells, use the cell corresponding to higher risk

1. The charts

People without diabetes[1,2]

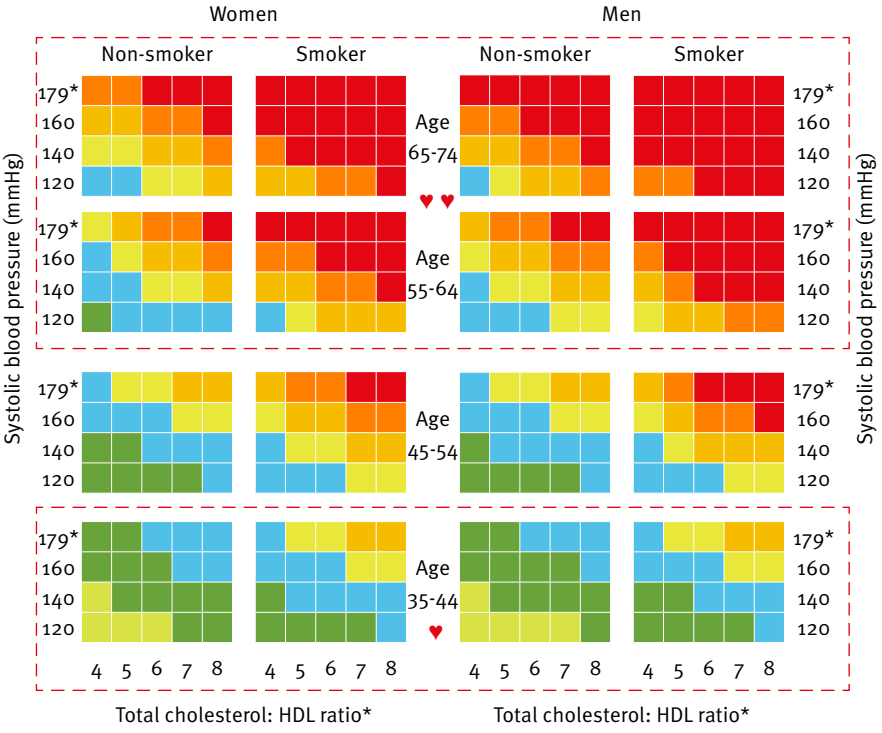
♥ Charts in this age bracket are for use in Aboriginal and Torres Strait Islander populations only

* Patients with SBP ≥ 180 mmHg, or TC › 7.5 mmol/L, should be considered at increased absolute risk of CVD

Risk level for 5 year cardiovascular (CVD) risk

High risk	Moderate risk	Low risk
≥ 30%	10–15%	5–9%
25–29%		‹ 5%
20–24%		
16–19%		

People with diabetes[1,2]



♥ Charts in this age bracket are for use in Aboriginal and Torres Strait Islander populations only

♥ ♥ Adults over the age of 60 with diabetes are equivalent to high risk (› 15%), regardless of their calculated risk level

*Patients with SBP ≥ 180 mmHg, or TC › 7.5 mmol/L, should be considered at increased absolute risk of CVD

Risk level for 5 year cardiovascular (CVD) risk

High risk	Moderate risk	Low risk
≥ 30%	10–15%	5–9%
25–29%		‹ 5%
20–24%		
16–19%		

2. How to follow-up

Table 1. Recommended interventions, goals and follow-up based on cardiovascular risk assessment[1,2]

CVD risk	Lifestyle modification	Pharmacology	Follow-up
Established CVD	• Any CVD risk – smoking cessation – physical activity – reproductive health – alcohol reduction – diet and nutrition • See Section 1. Lifestyle modification	• For modifiable risk factors • Antiplatelet therapy for secondary prevention	• Review annually
› 15% CVD risk		• Statins and antihypertensives to prevent CVD events and deaths	• Review annually • Repeat risk assessment annually
5–15% CVD risk		• Discuss with the patient – statins and antihypertensives to prevent CVD events and deaths – the higher the CVD risk, the more likely they are to benefit	• 5–9 % repeat risk assessment at five years • 10–14 % repeat risk assessment at two years
‹ 5% CVD risk		• Medication management has limited benefit	• ‹ 3 %, repeat risk assessment at 10 years • 3–5 %, repeat risk assessment at five years

3. Notes[1,2]

- The risk charts include values for systolic blood pressure (SBP) alone as this is the most informative of conventionally measured blood pressure parameters for cardiovascular risk
- **The risk charts have not been validated for all population groups. Additional guidance includes**:
  - the charts may **underestimate CVD risk** in:
    - Aboriginal and Torres Strait Islander peoples
    - adults with diabetes aged between 45 and 60 years
    - adults aged › 74 years
    - for these group the charts will provide an estimate of minimum cardiovascular risk
  - the charts are likely to **underestimate CVD risk** in adults with depression or socioeconomic deprivation (an independent risk factor for cardiovascular disease)
  - The predictive value of the charts **has not been specifically assessed** in adults who are overweight or obese
  - The **increased risk of cardiovascular events and all-cause mortality**, in addition to thromboembolic disease including stroke, should be taken into account for adults with

atrial fibrillation (particularly those aged over 65 years)

4. References

1. Ministry of Health. 2018. Cardiovascular Disease Risk Assessment and Management for Primary Care. Wellington, New Zealand: Ministry of Health. Accessed: 2020, August. Available from: https://www.health.govt.nz/publication/cardiovascular-disease-risk-assessment-and-management-primary-care
2. National Vascular Disease Prevention Alliance. 2012. Absolute cardiovascular disease management. Quick reference guide for health professionals. National Stroke Foundation. Accessed: 2020, August. Available from: https://www.heartfoundation.org.au/

5. Resources

1. The online Australian absolute cardiovascular disease risk calculator is available from: http://www.cvdcheck.org.au/

Child safety reporting

Safety concerns can be summarised as follows

- Physical abuse:
  - bruising in non-mobile child
  - patterned bruising
  - facial, head, neck and buttock bruising
  - fractures of bones, especially in children ‹ 3 years
  - injury does not fit with mechanism
  - multiple presentations with injury, ingestion, minor complaints
  - failure to engage medical care for medical conditions
- Sexual abuse:
  - direct or indirect disclosures
  - trauma to genital area and/or anus
  - sexualised behaviour
  - adolescent pregnancy
  - STIs
  - self destructive behaviours
- Psychological/emotional abuse:
  - child belittled, constantly criticised, put down
  - child exposed to domestic violence
  - child isolated or ignored
  - child issued threats causing anguish
- Neglect:
  - non-organic failure to thrive
  - delay in milestones
  - untreated physical problems
  - anxiety about being abandoned
  - poor hygiene
  - leaving a child without appropriate supervision
- To make a report to Child Safety go to: https://secure.communities.qld.gov.au/cbir/home/ChildSafety#
- **If your concerns are so serious that an urgent/immediate response is required from Child Safety:**
  - **immediately report your concerns by phoning Child Safety Services Regional Intake Service (CSS-RIS) or Child Safety After Hours Service (CSAHS). See Table 1.**

1. Steps to reporting a child protection concern

Step 1. Concerns

- A health professional has concerns for the safety and well-being of a child or young person, including an unborn child, due to physical, sexual, psychological/emotional abuse and/or neglect

Step 2. Considerations

- Assessment is made using health professional expertise, knowledge and consideration of:
  - the presence of signs, disclosures, injuries and behaviours (of parent and/or the child) that heighten your concerns about the safety and well-being of the child
  - whether there are detrimental effects on the child's body or the child's psychological or emotional state that are evident at the time of presentation or likely to become evident in the future
  - the nature and severity of the detrimental effects and the likelihood they will continue
  - the child's age, particularly the vulnerability of young children
  - if there is a parent able and willing to protect the child from harm

Step 3. Consultation

- It is recommended that health professionals consult with:
  - a line manager or colleague
  - a Child Protection Liaison Officer or Child Protection Advisor
  - the Queensland Child Protection Guide available from: https://www.csyw.qld.gov.au/about-us/partners/child-family/our-government-partners/queensland-child-protection-guide
- Note: individuals may still report concerns if consensus with colleagues is not reached

Step 4. Decision making

- **Go to Step 5**. if you have formed a reasonable suspicion that a child has suffered, is suffering or likely to suffer significant harm and may not have a parent able and willing to protect them
- **Go to Step 6**. If your concerns do not reach the threshold for a report to Child Safety, but the family would benefit from a support service, consider a referral with consent/or if consent not obtained, a referral without consent

Step 5. Reporting to Child Safety Services

- Complete the 'Report of a suspected child in need of protection' form:
  - online report form available from: https://secure.communities.qld.gov.au/cbir/home/ChildSafety#
  - a paper report is available from: https://qheps.health.qld.gov.au/csu/reportingforms then email to your local CSS-RIS or CSAHS
  - print, sign and file in the patient medical record
  - forward a copy to your local Child Protection Liaison Officer. See Table 2.
  - **Completed**
- It is recommended that you document in the patient's medical record, the date, time and name of the person you spoke to at CSS-RIS or CSAHS

Step 6. Supporting the family

- Refer to a family support service:
  - Family and Child Connect:
    - if the family has multiple and/or complex needs
    - if the family requires further assessment and identification of needs
    - complete referral form available from: https://www.qld.gov.au/community/caring-child/family-child-connect
    - print and file a copy in the patient medical record
    - if this service is not available in your area contact 13FAMILY (13 32 64) for referral options
  - Intensive Family Support Service:
    - if the family has multiple and/or complex needs
    - an appropriate intensive family support service is known and available
    - complete referral form www.communities.qld.gov.au/childsafety/child-safety-services
    - if this service is not available in your area contact 13FAMILY (13 32 64) for referral options
  - another support service:
    - refer to a specific support service
    - complete relevant referral processes for the specific service
- **Reporting/referral completed**
- Under S159M of the Child Protection Act 1999 particular prescribed entities can refer families to Family and Child Connect or Intensive Family Support Services **without consent** to prevent a child from becoming in need of protection

2. Contacts

- If you are uncertain about anything contact:
  - your local Child Protection Liaison Officer in the first instance. See Table 2. **OR**
  - if out of hours then Child Safety After Hours Service Ph: 1800 177 135 (public) **or** 1300 681 513 (professional)
  - or if child is at risk of imminent harm then call emergency '000'

Table 1. Child Safety Services Regional Intake Services (CSS-RIS)

Location (QLD)	Professional contact details (not public)
Brisbane	• Phone: 1300 705 339 • Email: BrisbaneRISIntake@CSYW.qld.gov.au
Central Queensland	• Phone: 1300 683 042 • Email: CQRISIntake@CSYW.qld.gov.au
Far North Queensland	• Phone: 1300 683 596 • Email: FNQRISIntake@CSYW.qld.gov.au
North Coast	• Phone: 1300 705 201 • Email: NCRISIntake@CSYW.qld.gov.au
North Queensland	• Phone: 1300 704 514 • Email: NQRISIntake@CSYW.qld.gov.au
South East	• Phone: 1300 678 801 • Email: SERISIntake@CSYW.qld.gov.au
South West	• Phone: 1300 683 259 • Email: SWRISIntake@CSYW.qld.gov.au

Child Safety After Hours Service (CSAHS) phone 1800 177 135 (public) or 1300 681 513 (professional)

Table 2. Child Protection Liasion Officer (CPLO) contact list

Location (QLD)		Contact details
Torres and Cape HHS CPU-TorresCape@health.qld.gov.au	Thursday Island	• Ph: 4069 0479 • Mob: 0431 777 491
	Weipa	• Ph: 4226 5942 • Mob: 0428 647 400
	Cooktown	• Ph: 4043 0170 • Mob: 0428 739 471
Cairns and Hinterland HHS CPU-Cairns@health.qld.gov.au CPU-Tablelands@health.qld.gov.au CPU-Innisfail@health.qld.gov.au	Cairns	• Ph: 4226 6773
	Innisfail	• Ph: 4061 1497
	Tablelands	• Ph: 4092 9100
Townsville HHS CPU-Townsville@health.qld.gov.au CPU-Bowen@health.qld.gov.au CPU-ChartersTowers@health.qld.gov.au	Townsville	• Ph: 4433 1818
	Charters Towers	• Ph: 4787 0361
	Ayr	• Ph: 4783 0829
North West HHS CPU-Charleville@health.qld.gov.au CPU-MtIsa@health.qld.gov.au	Mount Isa	• Ph: 4744 4887
Mackay HHS CPU-Mackay@health.qld.gov.au CPU-Whitsunday@health.qld.gov.au	Mackay	• Ph: 4885 7270
	Moranbah	• Ph: 4985 7779
Central Queensland HHS CPU-CentralHighlands@health.qld.gov.au CPU-Gladstone@health.qld.gov.au CPU-Rockhampton@health.qld.gov.au	Rockhampton	• Ph: 4920 6970
	Gladstone	• Ph: 4976 3366 • Mob: 0409 054 141
	Emerald	• Ph: 4983 9700 • Mob: 0428 794 912
	Biloela	• Ph: 4995 6900
Central West HHS CPU-CentralWest@health.qld.gov.au	Longreach	• Ph: 4652 5500
Wide Bay HHS CPU-Bundaberg@health.qld.gov.au CPU-FraserCoast@health.qld.gov.au	Bundaberg	• Ph: 4150 2736
	Fraser Coast	• Ph: 4325 6210 • Ph: 4122 8730 • Mob: 0418 716 939
Sunshine Coast HHS CPU-Gympie@health.qld.gov.au CPU-SunshineCoast@health.qld.gov.au	Nambour	• Ph: 5470 5082 • Mob: 0438 163 053
	Gympie	• Ph: 5489 8627

Table 2. Child Protection Liasion Officer (CPLO) contact list (continued)

Location (QLD)		Contact details
Metro North HHS CPU-Caboolture@health.qld.gov.au CPU-PrinceCharlesHosp@health.qld.gov.au CPU-RBW@health.qld.gov.au CPU-Redcliffe@health.qld.gov.au	Redcliffe	• Ph: 3883 7228 • Ph: 5433 8204
	Caboolture	• Ph: 5433 8574
	The Prince Charles Hospital	• Ph: 3139 4377 • Ph: 3139 5259 • Mob: 0409 873 827
	Royal Brisbane and Women's Hospital	• Ph: 3646 8916
Metro South HHS CPU-Bayside@health.qld.gov.au CPU-LoganBeaudesert@health.qld.gov.au CPU-PAH@health.qld.gov.au CPU-QEII@health.qld.gov.au	Logan	• Ph: 3299 8496 • Ph: 3299 9102
	Princess Alexandra Hospital	• Ph: 3176 2610
	QE11	• Ph: 3275 5353
	Bayside	• Ph: 3488 4256
West Moreton HHS CPU-WestMoreton@health.qld.gov.au	Ipswich	• Ph: 3810 1132 • Ph: 3810 1111
Gold Coast HHS CPU-GoldCoast@health.qld.gov.au	Southport	• Ph: 5687 1374 • Mob: 0411 897 593
Darling Downs HHS CPU-NorthernDowns@health.qld.gov.au CPU-SouthBurnett@health.qld.gov.au CPU-SouthernDowns@health.qld.gov.au CPU-Toowoomba@health.qld.gov.au	Toowoomba	• Mob: 0418 762 027 • Mob: 0417 480 156 • Ph: 4616 5185
	Dalby	• Ph: 4672 4000 • Mob: 0437 929 020
	Warwick	• Ph: 4660 3875 • Mob: 0427 029 972
	Kingaroy	• Ph: 4162 9220
South West HHS CPU-Roma@health.qld.gov.au	Roma	• Ph: 4624 2977
	Charleville	• Ph: 4650 5028
Mater Hospital HHS CPU-RCH@health.qld.gov.au	Mater Women's, Children's and Adult's Health Services	• Ph: 3163 8936

Table 2. Child Protection Liasion Officer (CPLO) contact list (continued)

Location (QLD)		Contact details
Children's Health Queensland HHS	Children's Hospital Child Protection and Forensic Medical Service (CPFMS)	• Ph: 3068 2660 • Fax: 3068 2659
	CPFMS Inala/Brisbane South	• Ph: 3275 5353 • Fax: 3275 5494
	CPFMS Bayside/Redlands	• Ph: 3488 4256 • Fax: 3488 4251
	CPFMS Redcliffe	• Ph: 3883 7228 • Ph: 5433 8204 • Fax: 3883 7344
	CPFMS Caboolture	• Ph: 5433 8574 • Fax: 5433 8496

3. Legislative requirements

- All Queensland Health staff have a duty of care to report to CSS-RIS
  - a reasonable suspicion that a child has suffered, is suffering, or is at unacceptable risk of suffering significant harm and may not have a parent able and willing to protect the child from harm
- Under the *Child Protection Act 1999 (Section 13E (1))* doctors and registered nurses are mandatory reporters. The current version is available from: https://www.legislation.qld.gov.au/view/html/inforce/current/act-1999-010
- The threshold for mandatory reporters to make a report to Child Safety Services–Regional Intake Service (CSS-RIS) is:
  - a reasonable suspicion that a child has suffered, is suffering, or is at unacceptable risk of suffering significant harm caused by physical and sexual abuse and may not have a parent able or willing to protect them from harm
  - clinicians do not have to investigate or prove that a parent may not be able or willing to protect children from harm
  - this does not preclude mandatory reporters from reporting significant harm caused by emotional/psychological abuse or neglect

The Australian type 2 diabetes risk assessment tool

- The Australian type 2 diabetes risk assessment tool (AUSDRISK) was developed by the Baker IDI Heart and Diabetes Institute on behalf of the Australian, State and Territory Governments as part of the COAG initiative to reduce the risk of type 2 diabetes
- Risk assessment should begin at age 40 and from age 18 in Aboriginal and Torres Strait Islander people

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?

Australia	☐	0 points
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 PRODUCT ON A DAILY BASIS?

No	☐	0 points
Yes	☐	2 points

8. HOW OFTEN DO YOU EAT VEGETABLES OR FRUIT?

Every day	☐	0 points
Not every day	☐	1 points

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 MEASUREMENTS TAKEN BELOW THE RIBS (USUALLY AT THE LEVEL OF THE NAVEL AND WHILE STANDING)

Waist measurement (cm) ☐

FOR THOSE OF ASIAN OR ABORIGINAL OR TORRES STRAIT ISLANDER DESCENT

Men	Women		
‹ 90 cm	‹ 80 cm	☐	0 points
90–100 cm	80–90 cm	☐	4 points
› 100 cm	› 90 cm	☐	7 points

FOR ALL OTHERS

Men	Women		
‹ 102 cm	‹ 88 cm	☐	0 points
102–110 cm	88–100 cm	☐	4 points
› 110cm	› 100 cm	☐	7 points

ADD UP YOUR POINTS TO ASSESS YOUR RISK OF DEVELOPING TYPE 2 DIABETES WITHIN 5 YEARS*

☐

☐ **5 or less: Low risk**
Approximately one person in every 100 will develop diabetes.

☐ **6–11: Intermediate risk**
For scores 6–8, approximately one person in every 50 will develop diabetes. For scores of 9–11, approximately one person in every 30 will develop diabetes.

☐ **12 or more: High risk**
For scores of 12–15, approximately one person in every 14 will develop diabetes. For scores of 16–19 approximately one person in every 7 will develop diabetes. For scores of 20 and above, approximately one person in every 3 will develop diabetes

* THE OVERALL SCORE MAY OVER ESTIMATE THE RISK OF DIABETES IN THOSE AGED LESS THAN 25 YEARS

If you scored 6–11 points you may 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

If you scored 12 points or more you may have undiagnosed type 2 diabetes or be at high risk of developing the disease

See your doctor about having a fasting blood glucose test. Act now to prevent type 2 diabetes

CHA2DS2-VASc

Information[1,2,3]

- CHA_2DS_2-VASc is a tool that evaluates the risk of stroke in patients with atrial fibrillation:
  - **C**ongestive heart failure
  - **H**ypertension
  - **A**ged ≥ 75 years
  - **D**iabetes mellitus
  - Previous **S**troke
  - **V**ascular disease
  - **A**ged 65–74 years
  - **S**ex **c**ategory (female)

1. Calculator

Table 1. CHA_2DS_2-VASc calculator

Risk factor	Score
Congestive heart failure • Signs/symptoms of heart failure or objective evidence of reduced left ventricular ejection fraction	1
Hypertension • Resting blood pressure › 140/90 mmHg on ≥ 2 occasions **OR** current antihypertensive pharmacological treatment	1
Aged ≥ 75 years	2
Diabetes mellitus • Fasting glucose › 7 mmol/L (› 125 mg/dL) **OR** treatment with oral hypoglycaemic agent and/or insulin	1
Stroke • Any history of stroke, transient ischaemic attack, or thromboembolism	2
Vascular disease • Previous myocardial infarction, peripheral artery disease, or aortic plaque	1
Aged 65–74 years	1
Sex **c**ategory • Female	1

Scoring

- Score ≥ 2 (men) or ≥ 3 (women) oral anticoagulation is **recommended**
- Score 1 (men) or 2 (women) **consider** oral anticoagulation
- Score 0 (no clinical risk factors) anticoagulation (or antiplatelet medicine) **not recommended**

2. Considerations[1,2,3]

- Low-risk patients who are not anticoagulated should be re-evaluated using the CHA_2DS_2-VASc score annually
- Stroke risk factors may change over time due to aging or development of new co-morbidities
- Assessment of bleeding and other risks should continue throughout treatment
- All patients should be educated about the benefits and risks associated with anticoagulant medicines, so they can contribute to management decisions
- Non-vitamin K oral anticoagulants (NOACs; dabigatran or rivaroxaban) are recommended in preference to warfarin (in non-valvular AF) as they are:
  - as good as or better than warfarin in reducing stroke and systemic embolism
  - have a lower risk of intracranial haemorrhage as a side effect
  - easier for patients and clinicians to manage and use
  - if a patient is already on warfarin it is reasonable to change to NOAC
- Antiplatelet therapy is not recommended for stroke prevention regardless of stroke risk

3. References

1. National Heart Foundation of Australia. 2019. Clinical fact sheet–Stroke prevention in non-valvular atrial fibrillation using CHA2DS2-VA score. Melbourne, Vic: National Heart Foundation of Australia. Accessed: 2020, August. Available from: https://www.heartfoundation.org.au/for-professionals/clinical-information/atrial-fibrillation
2. Lane Deirdre A, Lip Gregory YH. Use of the CHA2DS2-VASc and HAS-BLED Scores to Aid Decision Making for Thromboprophylaxis in Nonvalvular Atrial Fibrillation. Circulation; 2012; 126 (7). pp 860-865. Accessed: 2020, August. Available from: https://doi.org/10.1161/CIRCULATIONAHA.111.060061
3. Lip Gregory YH, Frison L, Halperin Jonathan L, Lane Deirdre A. Identifying Patients at High Risk for Stroke Despite Anticoagulation. Stroke; 2010; 41 (12). pp 2731-2738. Accessed: 2020, August. Available from: https://doi.org/10.1161/STROKEAHA.110.590257

HAS-BLED

Information[1,2,3,4]

- HAS-BLED is a tool to assess bleeding risk and support clinical decision making for patients on anticoagulant therapy:
  - **H**ypertension
  - **A**bnormal renal/liver function
  - **S**troke
  - **B**leeding history or predisposition
  - **L**abile international normalized ratio (INR)
  - **E**lderly (>65 years)
  - **D**rugs/alcohol concomitantly

1. Calculator

Table 1. HAS-BLED calculator

Risk factor	Score
Hypertension • Systolic blood pressure › 160 mmHg	1
Abnormal renal function • Dialysis, renal transplantation and/or serum creatinine ≥ 200 mmol/L	1
Abnormal liver function • Chronic liver disease (eg, cirrhosis) or biochemical evidence of significant hepatic derangement (e.g. bilirubin twice upper limit of normal in association with AST / ALT / ALP 3 x upper limit normal etc.)	1
Stroke	1
Bleeding tendency or predisposition • History of intracranial bleeding, bleeding requiring hospitalisation, haemoglobin fall ›20mg/mL, and/or transfusion	1
Labile international normalised ratio (INR) • Time in therapeutic range ‹ 60%	1
Elderly • Age › 65 years	1
Drugs and/or alcohol • Concomitant antiplatelets or non-steroidal anti-inflammatory drugs	1
Drugs and/or alcohol • Excessive alcohol	1

Scoring

- Score ≥ 3 equates to a high risk of bleeding; caution and regular review is recommended
- A high score does not necessarily indicate that anticoagulant medicines should be avoided

2. Considerations[1,2,3,4]

- In patients with a high bleeding risk, all bleeding risk factors should be identified and addressed
- Modifiable bleeding risk factors include:
  - hypertension (especially when systolic blood pressure is › 160 mmHg)
  - labile INR or time in therapeutic range ‹ 60% (in patients taking warfarin)
  - medicines that may predispose to bleeding (such as antiplatelet medicines or NSAIDs)
  - excessive alcohol consumption (typically ≥ 8 drinks/week)
- Potential modifiable bleeding risk factors include:
  - anaemia
  - impaired kidney function
  - impaired liver function
  - reduced platelet count or function
- Non-modifiable bleeding risk factors include:
  - age › 65 years, or ≥ 75 years
  - history of major bleeding
  - previous stroke
  - dialysis-dependent kidney disease or kidney transplant
  - cirrhotic liver disease
  - malignancy
  - genetic factors
- Assessment of bleeding and other risks should continue throughout treatment
- All patients should be educated about the benefits and risks associated with anticoagulant medicines, so they can contribute to management decisions
- Non-vitamin K oral anticoagulants (NOACs; dabigatran or rivaroxaban) are recommended in preference to warfarin as they are:
  - as good as or better than warfarin in reducing stroke and systemic embolism
  - have a lower risk of intracranial haemorrhage as a side effect
  - easier for patients and clinicians to manage and use
  - if a patient is already on warfarin it is reasonable to change to NOAC
- Antiplatelet therapy is not recommended for stroke prevention regardless of stroke risk

3. References

1. Pisters R, Lane DA, Nieuwlaat R, de Vos CB, Crijns HJGM, Lip GYH. A Novel User-Friendly Score (HAS-BLED) To Assess 1-Year Risk of Major Bleeding in Patients With Atrial Fibrillation: The Euro Heart Survey. Chest; 2010; 138 (5). pp 1093-1100. Accessed: 2020, August. Available from: http://www.sciencedirect.com/science/article/pii/S0012369210605855
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Safe use of warfarin

Information[1,2]

- Warfarin inhibits the production of functional vitamin K–dependent coagulation factors II, VII, IX and X, and the anticoagulant proteins C and S
- When starting warfarin, there is a delay in achieving therapeutic anticoagulation because it takes a number of days for circulating coagulation factors to decrease
- When starting warfarin for an indication that requires immediate anticoagulant activity (e.g. treatment of deep venous thrombosus), concurrent therapy with a parenteral anticoagulant is needed until warfarin achieves a therapeutic effect
- When immediate anticoagulation is not required (e.g. stroke prevention for patients with atrial fibrillation), warfarin can be started without concurrent parenteral therapy

Indications

- Prevention of stroke in patients with prior myocardial infarction and increased embolic risk
- Patients with atrial fibrillation and a high risk of stroke or systemic embolism
- Venous thromboembolism prophylaxis and/or treatment
- Thromboembolism prophylaxis for patients with either moderate or severe mitral stenosis, or a mechanical heart valve (i.e. rheumatic heart disease)

1. Warfarin patient education

- Always take the same brand of warfarin tablets
- Take warfarin tablets at about the same time every day
- Inform a doctor if a painful, purplish, bruise-like rash develops
- Use a booklet to tick the days after taking a dose so that any missed doses can easily be identified. See Resource 1.
- Warfarin is affected by vitamin K which is found in certain foods e.g. green leafy vegetables. Eat a normal, balanced diet without dramatic changes, to keep intake of vitamin K stable
- Avoid drinking large amounts of cranberry juice as this may increase the effects of warfarin
- Ensure patients have appointments for regular blood tests in case the dose of warfarin needs adjusting and ensure they have been advised of the next dose to take when the test result is known
- Inform any health care professional including dentists that a patient is taking warfarin
- Refer patient to the MO/NP if they feel unwell for any reason including:
  - unexplained bruising
  - bleeding
  - pink, red or dark brown urine
  - red or black faeces
  - bleeding from gums or nose

- dizziness
- trouble breathing or chest pain
- severe headache
- unusual pain or weakness
- dark, purplish or mottled fingers or toes
- vomiting or coughing up blood
- excessive menstrual bleeding

Many medications interact with warfarin. The MO/NP or pharmacist should review every patient on warfarin before starting or stopping other medications, vitamin supplements, herbal or over-the-counter products

2. Indications for warfarin therapy

Table 1. Indications for warfarin therapy duration and target INR[1,2]

Indication	Minimum recommended duration	Target INR range
Valve repairs (includes bioprosthetic)	6 weeks post operatively	2–3
DVT or PE	3 months	2–3
AF (Assess stroke risk. See Appendix 4: CHA2DS2-VASc, page 522) **Irreversible, clinically hyper-coagulable states** **Mechanical AVR with no risk factors#**	Life long, balanced against risks	2–3
High risk mechanical heart valves **Mechanical MVR** **Mechanical AVR with risk factors#**	Life long, balanced against risks	2.5–3.5

Risk factors: AF, previous VTE, hypercoagulable state, left ventricular dysfunction or older generation AVR

3. Initiating warfarin therapy

Table 2. Regime for initiation of warfarin[1,2]

Day to take INR test (initiation = day 1)	INR	Daily warfarin dose (until next INR)
Patients at LOW risk of thrombosis (i.e. atrial fibrillation)		
Day 1	**Obtain baseline INR**	• 3 mg (provided baseline INR < 1.4)
Day 8	**< 1.4**	• Increase to 6 mg • Check INR again on day 11 or 12
	1.4–1.5	• Increase to 5 mg
	1.6–1.8	• Increase to 4 mg
	1.9–2.1	• Maintain 3 mg
	2.2–2.5	• Reduce to 2.5 mg
	2.6–2.7	• Reduce to 2 mg
	2.8–3.0	• Omit 1–2 daily doses • then reduce dose to 1 mg
	> 3.0	• **Stop warfarin** • Check causes and indications • Repeat INR in 3 to 5 days • If warfarin definitely indicated, recommence at 1 mg
Day 15 and weekly thereafter	Check INR and continue to dose as per Table 4.	
Patients at HIGH risk of thrombosis (e.g. DVT)		
Day 1	**< 1.4**	5 mg
Day 2	**< 1.8**	5 mg
	1.8–2	1 mg
	> 2	Nil
Day 3	**< 2**	5 mg
	2–2.5	4 mg
	2.6–2.9	3 mg
	3–3.2	2 mg
	3.3–3.5	1 mg
	> 3.5	Nil
Day 4	**< 1.4**	10 mg
	1.4–1.5	7 mg
	1.6–1.7	6 mg
	1.8–1.9	5 mg
	2–2.3	4 mg
	2.4–3	3 mg
	3.1–3.2	2 mg
	3.3–3.5	1 mg
	> 3.5	Nil

4. Monitoring

- Warfarin therapy requires regular monitoring of international normalised ratio (INR) levels
- Consider alternative anticoagulant therapy for patients with a persistently high or labile INR

Table 3. Warfarin monitoring[1,2]

Monitoring frequency based on INR	Duration until change of monitoring frequency
Patients at LOW risk of thrombosis (i.e. atrial fibrillation)	
Initially: • when INR ≤ 4.0 then weekly • when INR › 4.0 then every 2–3 days	• Until the INR is in target range **for at least 2** consecutive test results
• Then fortnightly	• Until the INR is in target range **for 2–3** consecutive test results
• Thereafter	• Test **every 4–6 weeks** for most patients • For very stable patients it is reasonable to test every 8 weeks
Patients at HIGH risk of thrombosis (e.g. DVT)	
• Initially, daily for at least 5 days	• Until the INR is in target range **for at least 2** consecutive test results
• Then, every three to 5 days	• Until the INR is in target range **for at least 2** consecutive test results
• Then, weekly	• Until the INR is in target range **for 2–3** consecutive test results
• Then, fortnightly	• Until the INR is in target range **for 2–3** consecutive test results
• Thereafter	• Test **every 4–6 weeks** for most patients • For very stable patients it is reasonable to test every 8 weeks

5. Warfarin INR target ranges

Table 4. Warfarin dosing regime for INR target range of 2.0–3.0*[1,2]

INR	Dosage adjustment
< 1.5	• Increase weekly dose by 20%
1.5–1.9	• No change–recheck in 1 week • If persistent, increase weekly dose by 10%
2–3	• No change
3.1–3.9	• No change–recheck in one week • If persistent, decrease weekly dose by 10–20%
4–4.9	• Omit one dose • Decrease weekly dose by 10%–20% • Recheck INR in 2–5 days
≥ 5	• See Table 5.

*Dose modification is required for patients with mechanical heart valves as the target INR range is higher (2.5–3.5)

6. Managing high INR

6.1 Bleeding risk factors[1,2,4]

- The risk of bleeding is highest during the first 3 months of warfarin therapy
- Bleeding can occur even when the INR is in the therapeutic range
- Risk factors of a major bleeding episode are:
  - a major bleed within the preceding 4 weeks
  - surgery within the preceding 2 weeks
  - a platelet count less than 50 × 109/L
  - liver disease
  - concurrent medication use:
    - aspirin, clopidogrel, prasugrel and ticagrelor increases bleeding risk but not INR
    - NSAIDs increase the risk of gastrointestinal bleeding during warfarin therapy
- Bleeding increases significantly when the target INR is › 3 and the achieved INR › 5
- Patient factors associated with increased risk of bleeding during warfarin therapy are:
  - aged (› 65 years)
  - prior bleeding episode
  - cancer, including metastatic cancer
  - kidney failure
  - liver failure
  - thrombocytopenia
  - prior stroke
  - diabetes
  - anaemia

- concurrent antiplatelet or NSAID therapy
- poor anticoagulant control
- co-morbidity that results in reduced functional capacity
- recent major surgery
- frequent falls
- excessive alcohol intake

6.2 Management of bleeding[1,2]

- Management of bleeding depends on:
  - the extent of bleeding
  - the INR
  - the presence of bleeding risk factors (as above)
- Modify precipitating factor(s)
- Rapid reversal of anticoagulation by giving replacement coagulation factors:
  - prothrombinex TM-VF OR
  - fresh frozen plasma (FFP) plus
  - vitamin K:
    - slower reversal by giving vitamin K alone
    - intravenous vitamin K reverses the INR more quickly than oral vitamin K
    - both routes have a similar effect on INR by 24 hours
- The anticoagulant effect of warfarin can be difficult to re-establish after large doses of vitamin K. Consider lowest possible dose if warfarin is to be restarted

Table 5. Management of warfarin-related bleeding and/or overanticoagulation[1,2]

	INR	Dosage adjustment and/or treatment
No bleeding	**Greater than therapeutic range but < 4.5**	• Reduce or withhold next dose of warfarin based on sensitivity risk factors. See HAS-BLED, page 524 • Resume lower dose of warfarin once INR approaches therapeutic range • If INR is only minimally above therapeutic range (i.e. by 10%) dose reduction is generally not necessary
	4.5–10	• Cease warfarin. Consider reasons for elevated INR and patient specific factors. Vitamin K is usually not required • If bleeding risk high (see above) give vitamin K 1-2 mg PO or 0.5-1 mg IV • Check INR within 24 hours. Resume lower dose of warfarin once INR approaches therapeutic range
	> 10	• Cease warfarin. Give vitamin K 3–5 mg PO (the higher dose may lead to difficult re-warfarinisation) or 0.5-1 mg IV • If bleeding risk is high (see above), consider Prothrombinex TM-VF 15-30 units/kg • Check INR in 12 to 24 hours and continue to monitor every 1–2 days over the following week • Resume lower dose of warfarin once INR approaches therapeutic range
Bleeding	**≥ 1.5 with** life-threatening critical organ or intracranial bleeding	• Cease warfarin. Give vitamin K 5-10 mg IV, Prothrombinex TM-VF 50 units/kg and FFP 150-300 mL • If Prothrombinex TM-VF is unavailable, increase FFP dose to 15 mL/kg. • Assess INR frequently until clinically stable
	≥ 2 with clinically significant non life-threatening bleeding	• Cease warfarin. Give vitamin K# 5-10 mg IV and ProthrombinexTM-VF 35-50 units/kg • If ProthrombinexTM-VF is unavailable, give FFP 15 mL/kg • Assess INR frequently until clinically stable
	Any INR with minor bleeding	• Omit warfarin. Repeat INR the following day and adjust warfarin dose to maintain INR in target therapeutic range • If bleeding risk is high (see above) or INR > 4.5, consider vitamin K 1-2 mg PO or 0.5-1 mg IV

7. Considerations[1,2,3]

- Low-risk patients who are not anticoagulated should be re-evaluated using the CHA_2DS_2-VASc score annually
- Stroke risk factors may change over time due to aging, development of co-morbidities or changes to lifestyle
- Assessment of bleeding and other risks should continue throughout treatment
- Non-vitamin K oral anticoagulants (NOACs; apixaban, dabigatran or rivaroxaban) are recommended in preference to warfarin as they are:
  - as good as or better than warfarin in reducing stroke and systemic embolism
  - have a lower risk of intracranial haemorrhage as a side effect
  - easier for patients and clinicians to manage and use
  - if a patient is already on warfarin it is reasonable to change to NOAC
- Antiplatelet therapy is not recommended for long-term secondary prevention of stroke in patients with atrial fibrillation regardless of stroke risk
- In patients without atrial fibrillation or another source of cardiogenic embolism, the use of warfarin is not recommended

8. References

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9. Resources

5. Patient warfarin monitoring and education booklet is available from: https://www.medicines.org.uk/emc/rmm/1081/Document