National Health Screening Guideline on Noncommunicable Diseases (NCDs)

Ministry of Health

Brunei Darussalam

November 2019 Edition

Noncommunicable Diseases (NCDs) Prevention Unit, Ministry of Health

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Background Information

Health Screening

"Screening is defined as the presumptive identification of unrecognized disease in an apparently healthy, asymptomatic population by means of tests, examinations or other procedures that can be applied rapidly and easily to the target population" (WHO)

Criteria for an effective screening test as according to The Wilson & Jungner Classic Screening Criteria:

1. The condition sought should be an important health problem
2. There should be an accepted treatment for patients with recognized disease
3. Facilities for diagnosis and treatment should be available
4. There should be a recognizable latent or early symptomatic stage.
5. There should be a suitable test or examination.
6. The test should be acceptable to the population.
7. The natural history of the condition, including development from latent to declared disease, should be adequately understood.
8. There should be an agreed policy on whom to treat as patients.
9. 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.
10. Case-finding should be continuing process and not a "once and for all" project

Screening expectations

When screening for a disease or condition, depending on the sensitivity and specificity of the screening tools used, may result in false positive or false negative results:

- False positive – wrongly reported as having the condition
- False negative – wrongly reported as not having the condition

Screening can:

- Save lives or improve quality of life through early identification of a condition
- Reduce the chance of developing a serious condition or its complications

Screening does not guarantee protection. Receiving a low chance results does not prevent the person from developing the condition at a later date.

As part of the Government of His Majesty The Sultan and Yang Di-Pertuan of Brunei Darussalam's continuous effort to strengthen the planning, enhance quality and develop the country's health care system, and in alignment to the *Wawasan Brunei 2035* and the Ministry of Health's vision 'Together Towards a Healthy Nation', several key strategies and initiatives have been identified, development and implementation of population based health screening for key noncommunicable diseases (NCDs) were one of the key initiatives that have been identified.

As part of the Health Screening initiative, a technical workgroup on development of NCDs screening guideline was formed, it was represented by experts and specialists from various departments in the RIPAS Hospital, Primary Health Care, Public Health and Laboratory Services, chaired by Deputy Permanent Secretary (Professional). The objectives were to review the current health screening programmes and guidelines, to identify any update need to be made in light of latest evidence-based literature and local disease prevalence, and to develop a comprehensive NCDs screening guideline for Brunei Darussalam. This document will serve as a recommendation guideline for clinicians to refer to when considering NCD screening methods and also to guide policy makers in implementing national screening programmes based on latest evidences.

The committee had several meetings and consultations to review local disease prevalence and incidences, current screening practices in Brunei and overseas in order to develop health screening policy framework, and matrix of the health screening recommendation.

Existing Health Screening Programmes in Brunei Darussalam

Children:

- Neonatal health screening
- School health screening

Adults:

- Antenatal health screening
- Occupational health screening
- Cervical cancer screening (Well Women clinics)
- Opportunistic health screening (Hospitals and private clinics)

Levels of Recommendation on Health Screening

The following levels of recommendation are used in this health screening guideline for NCDs (Table 1). This is to serve as a guideline for clinicians when considering various health screening options for their patients and to take into consideration of individual risk factors and other clinical assessment. The health screening recommendations are to updated when new evidence or disease information emerges.

Table 1: Three Levels of Recommendation on Health Screening

Level	Definition
Suitable for population-based screening	Good evidence that the screening test is both clinically effective and cost-effective for use in screening the population
Suitable for individual-level decision or high risk screening	Net benefit does not always outweigh the risk in general populations, but screening may be useful for high-risk populations OR Evidence suggests that the screening test is effective but its cost-effectiveness has not yet been evaluated or its outcome is unfavourable
Not recommended for screening	There is lack of evidence to make a decision regarding the usefulness of the test OR Good evidence suggests that the screening test is ineffective, or that the net harm outweighs the benefits

Levels of Evidence

I	Evidence from meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs
II	Evidence from systematic reviews of case control or cohort studies or any case control or cohort studies
III	Evidence from non-analytic studies, e.g. case reports, case series
IV	Expert opinion, formal consensus

Adapted from The National Institute for Health and Care Excellence (NICE) levels of evidence

Selected Conditions for Population-based Screening

This guideline contains recommendation for population-based screening for the following group of conditions.

1. Cancers
2. Cardiovascular Diseases (CVD) and Risks
3. Other Noncommunicable Diseases (NCDs)

Cancer

Breast cancer			
Population	Females under 40 years old	Females aged 40 - 69 years old	Females aged 70 years old and above
Recommendation and rationale (if any)	Breast awareness for normal risk and asymptomatic **Screening start at aged 25-30 years for BRCA mutation carriers**	Normal risk and asymptomatic, **screen with mammography every three years**	Current **evidence insufficient** to assess the balance of benefits and harms of screening mammography. Subject to clinical assessments of patient's conditions and risk factors
Risk Assessment	Risk factors associated with breast cancer include early menarche, late menopause, later age at first pregnancy, nulliparity or low parity, not breastfeeding, high body mass index at postmenopausal age, tall stature, low physical activity levels, alcohol consumption, certain exogenous hormone therapies, history of proliferative benign breast conditions, advancing age, having a parent, sibling, or child with history of breast cancer, known underlying genetic mutation (BRCA1 or BRCA 2 genetic mutation or other familial breast cancer syndrome) and history of chest radiation therapy at a young age		
Screening tool/test:	CBE, Ultrasound, Mammography, MRI	Mammography	Mammography
Screening interval or timing	CBE – every 6 – 12 month Mammography – annually MRI – annually (in addition to mammography)	Every three years	Subject to clinical assessment
Evidence strength	IV	I	IV

Abbreviations: CBE, clinical breast exam; MRI, magnetic resonance imaging

Cervical cancer			
Population	Age 19 years old or younger	Age 20 - 65 years old	Age above 65 years old & have had prior screening & not high risk
Recommendation and rationale (if any)	Screening **not recommended**	**For those aged 20 to 29 years:** Screen with Pap Test alone **every 3 years** **For those aged 30 to 65 years:** Screen with Pap Test **every 3 years OR;** with high-risk HPV testing alone every 5 years **OR;** co-testing (Pap Test & HPV testing) every 5 years	Screening **not recommended**
Risk Assessment	Risk factors include having human papillomavirus (HPV) infection, multiple sexual partners, early sexual intercourse (<17 years old), prolonged use of oral contraceptive, multiparous, young pregnancy (before 17 years old), smoking, history of a compromised immune system, in-utero exposure to diethylstilbestrol, and previous treatment of a high-grade precancerous lesion or cervical cancer.		
Screening tool/test:	-	Pap Test +/- hrHPV testing	-
Screening interval or timing	-	Every 3 years or 5 years (see above)	-
Evidence strength	II	I & II	IV

Colorectal cancer				
Population	Below 50 years old	Age 50 - 75 years old	Age 76 - 85 years old	86 years and above
Recommendation and rationale (if any)	Individuals with risk factors may need screening before age 50 years	For those at normal risk and asymptomatic, **screening recommended**	**Do not automatically screen** Screening is appropriate for adults that are healthy enough to undergo treatment should colorectal cancer be found; if they do not have comorbid conditions.	**Not recommended**
Risk Assessment	Associated risk factors include older age, male gender, history of adenoma or serrated polyps or colorectal cancer, history of inflammatory bowel disease and family history for colorectal cancer or advanced adenoma (high grade dysplasia, > 1cm, villous or tubulovillous histology) and family history of known genetic disorders that predispose to a high lifetime risk of colorectal cancer (such as Lynch syndrome or familial adenomatous polyposis)			
Screening tool/test:	Colonoscopy	FIT, Colonoscopy	Colonoscopy, FIT	-
Screening interval or timing	Every 3 or 5 years depending on individual risk factors	FIT every 2 years if negative Colonoscopy for those with positive FIT or those opted for scope, scope every 10 years if negative	Colonoscopy if fit for scope, scope every 10 years if negative FIT if unfit for scope, every 2 years if FIT negative	-
Evidence strength	IV	I	I	IV

Liver cancer (Hepatocellular Carcinoma)	
Population	High Risk Groups (refer to risk assessment)
Recommendation and rationale (if any)	Screening recommended for high risk groups only
Risk Assessment	Patients with chronic hepatitis B infection or liver cirrhosis from other aetiologies (such as hepatitis C, alcohol, non-alcoholic steatohepatitis and other chronic liver diseases) are at increased risk of developing hepatocellular carcinoma
Screening tool/test:	Alpha-FetoProtein (AFP) and Ultrasound Hepatobiliary System (US HBS)
Screening interval or timing	Every 6 months
Evidence strength	II

Nasopharyngeal cancer (NPC)	
Population	High Risk Groups: Family members of NPC patients starting age 30 – 70 years old a) Individuals with a first degree relative (parent, sibling) with NPC b) Individuals with 2 or more relatives with NPC
Recommendation and rationale (if any)	Screening recommended for high risk groups only
Risk Assessment	Risk factors include Epstein-Barr Virus (EBV) infection, specific HLA-antigen haplotypes Lifestyle risk factors include smoking and consuming preserved vegetables
Screening tool/test:	Tumour marker for NPC , Serology EBV VCA IgA & EBV Ea IgA and Nasoendoscopy
Screening interval or timing	Annually for EBV seropositive individuals and triennial for EBV seronegative individuals
Evidence strength	II

Prostate cancer	
Population	High risk population
Recommendation & rationale (if any)	Screening recommended for high risk groups only based on individual informed choice/decision making
Risk Assessment	May offer early PSA testing in men at elevated risk of having prostate cancer **with individual informed choice and decision making**: • men > 50 years of age • men > 45 years of age and a family history of prostate cancer • men with a PSA level of > 1 ng/mL at 40 years of age • men with a PSA level of > 2 ng/mL at 60 years of age • In consideration of the low sensitivity and specificity of PSA test, patients and clinicians should consider the balance of benefits and harms (risk of overdiagnosis and overtreatment) of screening. Clinicians should not screen men who do not express a preference for screening.
Screening tool/test:	PSA test
Screening interval or timing	Offer a risk-adapted strategy (based on initial PSA level), with follow-up intervals of 2 years for those initially at risk: • men with a PSA level of > 1 ng/mL at 40 years of age • men with a PSA level of > 2 ng/mL at 60 years of age
Evidence Strength	I

Cardiovascular Diseases and Risks

Diabetes Mellitus	
Population	Adults age 40 and above
Recommendation and rationale (if any)	Screening should begin at age 40 years, and be considered at an earlier age (e.g. 30 years) if any of the risk factors for diabetes is present.
Risk Assessment	Risk factors for Diabetes Mellitus include (any one of the following): • Overweight (body mass index ≥25.0 kg/m^2) / obesity (body mass index ≥30.0 kg/m^2) • Hypertension (>140/90 mmHg) • A first degree relative (parent, sibling) with diabetes mellitus • Previous gestational diabetes mellitus • Coronary heart disease • Polycystic ovary disease • Dyslipidaemia (HDL cholesterol <1.0 mmol/l, and/or triglyceride level >2.30 mmol/l) • Previously identified impaired fasting glycaemia (IFG) or impaired glucose tolerance (IGT) Note: Biochemical criteria for diagnosis of: ○ ***Impaired fasting glycaemia (IFG)****:* FBS/FPG of 6.1 to 6.9mmol/L **and (if measured)** OGTT 2-hour post glucose <7.8mmol/L ○ ***Impaired glucose tolerance (IGT):*** FBS/FPG of <7.0mmol/L **and** OGTT 2-hour post glucose ≥7.8 and <11.1mmol/L ○ ***Diabetes*****:** FBS/FPG ≥7.0mmol/L **or** Random Plasma Glucose ≥11.1mmol/L **or** OGTT 2-hour post glucose ≥11.1mmol/L **or** HbA1c ≥6.5% (In asymptomatic individuals, performing the test on one occasion is insufficient to establish diagnosis. One further test must be carried out on a subsequent day to confirm diagnosis.)
Screening tool/test:	Three tests have been used to screen for diabetes: • Fasting blood sugar (FBS) / Fasting plasma glucose (FPG) • Haemoglobin A1c (HbA1c)* • 75-gram oral glucose tolerance (OGTT)* * Either of these tests can be used for individuals if FPG/FBS >6mmol/L

Screening interval or timing	• Every three years with FBS for those with normal glucose tolerance with no risk factors • Annually with FBS for those with normal glucose tolerance with risk factors • Annually with FBS for those with impaired fasting glycaemia (IFG) or impaired glucose tolerance (IGT). ○ To perform 75 gram oral glucose tolerance test every three years for this group
Evidence strength	IV

Note: Body Mass Index is calculated using a person's height and weight. The formula is BMI = kg/m^2 where kg is a person's weight in kilograms and m^2 is their height in metres squared. E.g. BMI = 85kg / $(1.7m)^2$ = 29.4 kg/m^2

Hyperlipidaemia		
Population	All adults aged 40 years and above	Individuals aged below 40 years with one or more risk factors given below
Recommendation & rationale (if any)	Screening recommended: All individuals 40 years and above should be screened as they have an elevated risk for atherosclerotic cardiovascular disease	Individual level decision based on additional risks given below
Risk Assessment		All adults with the following: A. Pre-existing atherosclerotic cardiovascular disease (includes atherosclerotic cardiovascular disease, cerebrovascular and peripheral arterial disease) B. Diabetes mellitus C. Impaired fasting glycaemia or impaired glucose tolerance D. Family history of premature atherosclerotic cardiovascular disease E. Familial hyperlipidaemia F. Hypertension G. Obesity H. Smoker (including ex-smokers) I. Chronic inflammatory disease (eg rheumatoid arthritis, psoriasis, HIV) *J.* Chronic kidney disease
Screening tool/test:	Fasting lipid panel: (Total cholesterol, high-density and low-density lipoprotein cholesterols)	
Screening interval or timing	Every 3 years: If results of prior cholesterol are normal for patients at low atherosclerotic cardiovascular disease risk of <10% over 10 years Yearly: If patients at increased risk	
Evidence Strength	II	IV

Hypertension		
Population	All adults aged 40 years and above	Individuals aged between 18 years and less than 40 years
Recommendation & rationale (if any)	Screening should begin at age 40 years	Screening should be considered at an earlier age (from 18 years) if felt to be at increased risk of hypertension.
Risk Assessment	Individuals with increased risk such as the following: • Renal disease • Diabetes • Atherosclerotic cardiovascular disease • Hyperlipidemia • Smoking • Obesity • Family of premature cardiovascular disease or hypertension or hyperlipidemia Note: **NORMAL BP** is defined as SBP <130mmHg & DBP <79mmHg **HIGH NORMAL BP** is defined as SBP 130 - 139mmHg with DBP 80-89mmHg **HYPERTENSION** is defined as SBP >140mmHg & DBP >90mmHg	
Screening tool/test:	Blood pressure measurement in clinic	
Screening interval or timing	Annual screening	
Evidence Strength	I	

Obesity		
Population	Children aged 6 years and older & Adolescents	Adults aged 18 years or older
Recommendation and rationale (if any)	Screening recommended & refer to intensive behavioural interventions	Screen for obesity. Patients with a body mass index (BMI) of 30 kg/m^2 or higher should be offered or referred to intensive, multi-component behavioral interventions.
Risk Assessment	Associated risk factors include: - Having obese parents - Poor nutrition - Insufficient physical activity - Lack of sleep	Being overweight is an independent risk factor for cardiovascular disease
Screening tool/test:	Body mass index (BMI)	Body mass index (BMI) and waist circumference
Screening interval or timing	Annual	Annual
Evidence strength	I	IV

Vascular Conditions: Atherosclerotic Cardiovascular Disease (ASCVD)			
Target population	Asymptomatic adult population 40 years and above Consider screening below 40 years old if presence of risk factor(s)		
Risk Assessment	Use 10-year global WHO/ISH CHD risk prediction score as per the following Figure 1 (Chart 1 and Chart 2) to assess CHD risk and follow guideline based risk-based preventive therapy		
Risk Category	**Low < 10 %**	**Intermediate (10 to 20 %)**	**High/Very High > 20 %**
Screening recommendation	**Not recommended**	Screening should be made on a **case-by-case basis** after careful discussion with the patient about the risks and benefits of screening	**Screening recommended** after careful discussion with the patient about the risks and benefits of screening
Additional factors which may lead to special consideration	Individualized informed decision may be influenced by additional risk factors including: • A family history of premature atherosclerotic cardiovascular disease (atherosclerotic cardiovascular disease event in first degree male relatives <50 years or female relatives <60 years), or • Selected high-risk occupations, such as pilots, offshore workers etc or • If it would lead to more aggressive management of atherosclerotic cardiovascular disease-related conditions (hypertension, diabetes, dyslipidemias, tobacco use) or • Certain scenarios may necessitate more aggressive screening		
Screening tool/test:	Individualized decision	Coronary Calcium: This may lead to re-classification of the patient into either the low risk or high risk category, and/or Treadmill stress test: Decision to perform this test should be made on an individualized basis.	Coronary Calcium: This may lead to re-classification of the patient into either the low risk or high risk category, and/or CT Angiography for selected individual, and/or Treadmill stress test: Decision to perform this test should be made on an individualized basis
Screening interval or timing	5 years interval (or as per employment requirement)		5 years interval or earlier as per clinician assessment

Evidence Strength	I & II

Figure 1. WHO/ISH risk prediction chart for WPR A.

10-year risk of a fatal or non-fatal cardiovascular event by gender, age, systolic blood pressure, total blood cholesterol, smoking status and *presence or absence of diabetes mellitus.*

Chart 1

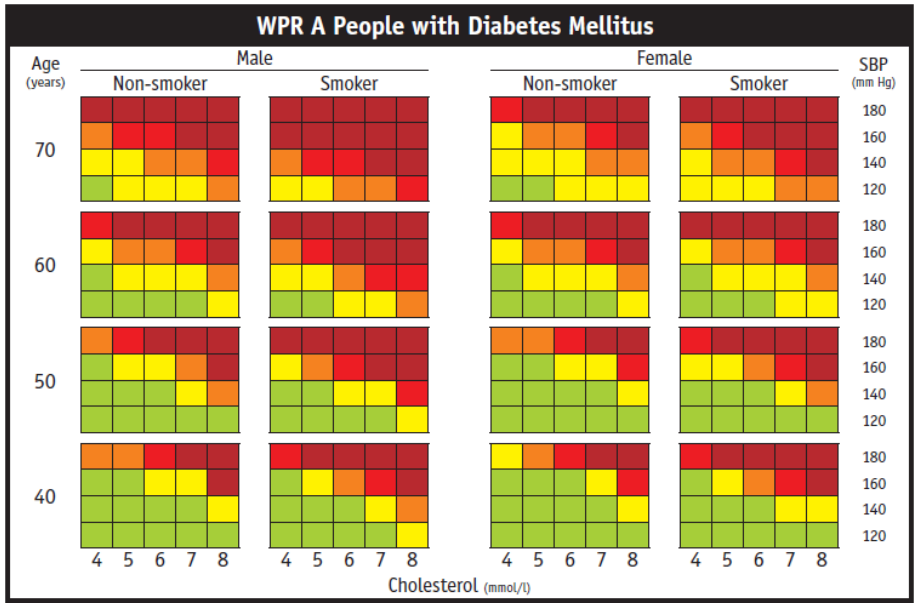
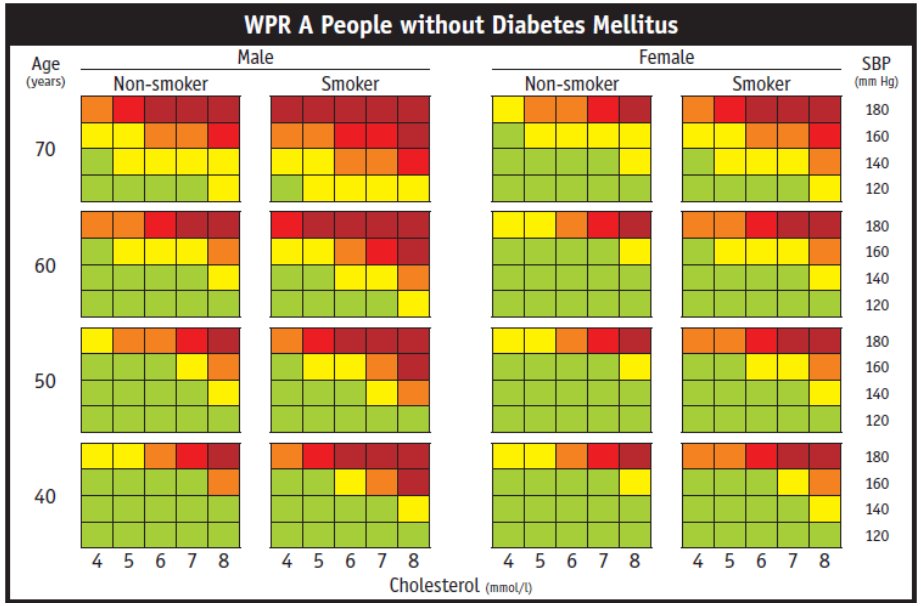


Chart 2



Other Noncommunicable Diseases (NCDs)

Abdominal Aortic Aneurysm	
Population	High Risk Groups
Recommendation & rationale (if any)	Screening recommended for those with risk factors
Risk Assessment	Population at risk: 1. Male sex 2. History of smoking (defined as 100 cigarettes in a person's lifetime) 3. Age of 65 years or older Important risk factors for AAA include older age and a first-degree relative with an AAA; other risk factors include a history of other vascular aneurysms, coronary artery disease, cerebrovascular disease, atherosclerosis, hypercholesterolemia, obesity, and hypertension.
Screening tool/test:	Abdominal Ultrasonography - Sensitivity (94% to 100%), Specificity (98% to 100%)
Screening interval or timing	One-off screening at age 65 and above
Evidence strength	I

Anaemia (Iron Deficiency)	
Population	High Risk Groups
Recommendation and rationale (if any)	Screening recommended for high risk groups only
Risk Assessment	Groups at risk: 1. Women who are: – Pregnant – Non pregnant women of childbearing age – Having history of extensive menstruation / low iron intake / previous diagnosis of iron deficiency anaemia 2. Selected infants & children: – Preterm infants and low birth weight infants – Infants consuming non-iron-fortified formula for longer than 2 months – Infants introduced to cow's milk before age 1 year, or children consuming more than 24oz of cow's milk daily. – Breast fed infants with inadequate iron in their diet after age 6 months – Young children aged 2 – 5 years at high risk of developing iron-deficiency anaemia (for example low iron diet or special health care needs)
Screening tool/test:	Full blood count (FBC)
Screening interval or timing	-
Evidence strength	IV

Dementia	
Population	**Screening for Cognitive Impairment in Older Adults**
Recommendation and rationale (if any)	Screening recommended for high risk groups only. Universal screening not recommended in view of lack of evidence
Risk Assessment	Some of the risk factors associated with cognitive impairment: • Increasing age • Tobacco use • Metabolic syndrome • Depression • Learning disabilities • Alcohol abuse
Screening tool/test:	Mini-Mental State Examination Other instruments with more limited evidence include the Clock Draw Test, Mini-Cog, Memory Impairment Screen, Abbreviated Mental Test, Short Portable Mental Status Questionnaire, Free and Cued Selective Reminding Test, 7-Minute Screen, Telephone Interview for Cognitive Status, and Informant Questionnaire on Cognitive Decline in the Elderly.
Screening interval or timing	-
Evidence strength	I

Depression (Children & Adults)		
Population	Adolescents (12-18 years)	Adults aged 18 years or older
Recommendation and rationale (if any)	Screening is recommended. Screen when professional management and support are in place to assure accurate diagnosis, effective treatment, and follow-up	Screen high risk group and vulnerable group. Screen when professional management and support are in place to assure accurate diagnosis, effective treatment, and follow-up
Risk Assessment	Risk factors for major depressive disorder (MDD): parents with history of depression, having co-morbid mental health or chronic medical illness or previously experienced a major negative live event	Increased risk for depression include: history of chronic illnesses (eg. diabetes, renal disease, cancer, learning disability, physical disability), post-natal women, being elderly.
Screening tool/test:	• Patient Health Questionnaire Modified for Adolescents (PHQ 9-A) • Beck's Depression Inventory-Primary Care Version (BDI-PC)	• For post-natal women: The Edinburgh Post Natal Depression Scale • For people with chronic illnesses: Beck's Depression Inventory, Hospital Depression Scale, Hamilton Anxiety and Depression scale can all be used • For the elderly: Geriatric Depression Scale
Screening interval or timing	The interval for screening as per clinical judgement. In older adults, significant depressive symptoms are associated with common life events, including medical illness, cognitive decline, bereavement, and institutional placement in residential or inpatient settings.	
Evidence strength	I	I

Renal Impairment / Chronic Kidney Disease	
Population	High Risk Groups
Recommendation and rationale (if any)	Screening recommended for high risk groups only
Risk Assessment	High risk groups (Any one of the following risk factors): 1) Any individual with diabetes mellitus 2) Any individual with hypertension 3) Any individual with acute kidney injury 4) Any individual with cardiovascular disease 5) Any individual with structural renal tract disease, recurrent renal calculi or prostatic hypertrophy 6) Any individual with a family history of end-stage renal disease (ESRD) or hereditary kidney disease 7) Any individual having multisystem diseases with potential kidney involvement – for example, systemic lupus erythematosus 8) Any individual with a previous history of kidney injury or childhood kidney disease 9) Individuals with opportunistic detection of haematuria
Screening tool/test:	eGFR and urine albumin:creatinine ratio (ACR)
Screening interval or timing	Frequency of monitoring tailored to the person according to: • the underlying cause of CKD • past patterns of eGFR and ACR (but be aware that CKD progression is often non-linear) • comorbidities, especially heart failure • changes to their treatment • intercurrent illness • whether they have chosen conservative management of CKD
Evidence strength	II

Appendix 1: Body Mass Index (BMI) Classification

BMI CLASSIFICATION	
Underweight	<18.5
Normal range	18.5 – 24.9
Overweight	≥25.0 – 29.9
Obese class I	≥30.0 – 34.9
Obese class II	≥35.0 – 39.9
Obese class III	≥40.0

(Based on WHO International BMI Classification)

Acknowledgement

1. Cardiology Unit, Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital
2. Community Maternal and Child Health, Ministry of Health
3. Department of Internal Medicine, RIPAS Hospital
4. Endocrinology Department, RIPAS Hospital
5. Gastroenterology Department, RIPAS Hospital
6. General Surgery Department, RIPAS Hospital
7. Geriatrics and Palliative Unit, RIPAS Hospital
8. Haematology Department, RIPAS Hospital
9. Health Promotion Centre, Ministry of Health
10. Jerudong Park Medical Centre (JPMC)
11. Nephrology Department, RIPAS Hospital
12. Noncommunicable Diseases (NCDs) Prevention Unit, Ministry of Health
13. Obstetrics and Gynaecology Department, RIPAS Hospital
14. Occupational Health Division, Environmental Health Services, Ministry of Health
15. Otorhinolaryngology (ENT) Department, RIPAS Hospital
16. Paediatrics Department, RIPAS Hospital
17. Primary Healthcare, Department of Health Services, Ministry of Health
18. Psychiatry Department, RIPAS Hospital
19. Radiology Department, RIPAS Hospital
20. Pantai Jerudong Specialist Centre (PJSC)

Literature review on health screening policies and guidelines from:

- World Health Organization (WHO)
- International Agency for Research on Cancer
- U.S. Preventive Services Task Force(USPSTF)
- Centers for Disease Control and Prevention (CDC)
- American Cancer Society (ACS)
- American College of Physicians (ACP)
- American Academy of Family Physicians
- American Academy of Pediatrics (AAP)
- American College of Cardiology
- American Heart Association
- American College of Obstetricians and Gynecologists (ACOG)
- Clinical Practice Guidelines, Singapore
- UK National Screening Committee
- The Canadian Task Force on Preventive Health Care
- The Japanese Guidelines for Breast Cancer Screening
- Cancer Expert Working Group on Cancer Prevention and Screening (CEWG) – Hong Kong
- National Comprehensive Cancer Network (NCCN)

- The National Institute for Health and Care Excellence (NICE), England
- New Zealand Guidelines Group (NZGG)
- National Health and Medical Research Council (NHMRC)

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