



Functional Screening for Older Adults in the Community

HPB-MOH Clinical Practice Guidelines 1/2010



College of Family Physicians,
Singapore



Chapter of Geriatricians,
College of Physicians



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Singapore



MINISTRY OF HEALTH
SINGAPORE



June 2010

Levels of evidence and grades of recommendation

Levels of evidence

Level	Type of Evidence
1 ⁺⁺	High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias
1 ⁺	Well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias
1 ⁻	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2 ⁺⁺	High quality systematic reviews of case control or cohort studies. High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2 ⁺	Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2 ⁻	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, e.g. case reports, case series
4	Expert opinion

Grades of recommendation

Grade	Recommendation
A	At least one meta-analysis, systematic review of RCTs, or RCT rated as 1 ⁺⁺ and directly applicable to the target population; or A body of evidence consisting principally of studies rated as 1 ⁺ , directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2 ⁺⁺ , directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1 ⁺⁺ or 1 ⁺
C	A body of evidence including studies rated as 2 ⁺ , directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2 ⁺⁺
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2 ⁺
GPP (good practice points)	Recommended best practice based on the clinical experience of the guideline development group.

CLINICAL PRACTICE GUIDELINES

Functional Screening for Older Adults in the Community

HPB-MOH Clinical Practice Guidelines 1/2010

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Statement of Intent

These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.

The contents of this publication are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case. These guidelines should neither be construed as including all proper methods of care, nor exclude other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient, in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

Contents

	Page
Executive summary of recommendations	1
1 Introduction	8
2 Physical Function	11
3 Vision	14
4 Hearing	17
5 Oral Health	23
6 Continence	27
7 Mood	31
8 Cognition	35
9 Cost-effectiveness Issues	38
10 Clinical quality improvement	40
Annexes	42
References	51
Self-assessment (MCQs)	60
Workgroup Members	62

Foreword

Singapore faces the challenges of a rapidly ageing population, with the number of residents aged 65 or older set to multiply threefold from the current 300,000 to 900,000 in 2030, making one in every five residents a senior.*

With a rapidly ageing population, a major public health concern is the increasing proportion of the population that is at higher risk of acquiring disabilities that affect independence, such as reduced mobility, vision loss, hearing loss and dementia. Functional screening can assist in the timely provision of healthcare services to older adults with declining function and improve their quality of life.

As such, it is timely to develop local guidelines on the functional screening of older adults. This set of guidelines addresses the screening and referral of older adults with functional decline in the domains of physical function, vision, hearing, oral health, continence, mood and cognition. I hope this set of guidelines will assist healthcare professionals and community service providers in improving the care of older adults in the community.

PROFESSOR K SATKU
DIRECTOR OF MEDICAL SERVICES

* Ministry of Community Development, Youth and Sports. Report on the ageing population. [Online]. 2006 [cited 2010 Mar 20]. Available at: URL: http://www.mcys.gov.sg/successful_ageing/report/Executive%20Summary.pdf

Executive summary of recommendations

Details of recommendations can be found in the main text at the pages indicated.

Physical Function

C Community-dwelling older adults should be screened for functional disability. (pg 12)

Grade C, Level 2+

C The Vulnerable Elders Survey-13 (VES-13) and the Short Physical Performance Battery (SPPB) can be used to screen for functional disability in older adults. (pg 12)

Grade C, Level 2+

D Older adults who score ≥ 3 on the Vulnerable Elders Survey-13 (VES-13) or ≤ 6 on the Short Physical Performance Battery (SPPB) tools can be considered for referral to a primary care physician. (pg 13)

Grade D, Level 4

Vision

GPP Community-dwelling older adults should be screened for visual impairment. (pg 15)

GPP

B A visual acuity chart (e.g. Snellen chart) is recommended for identifying the presence of visual impairment. (pg 15)

Grade B, Level 2++

GPP Older adults with visual acuity 6/12 or better (acceptable/normal visual acuity) should be screened every 1-2 years. (pg 15)

GPP

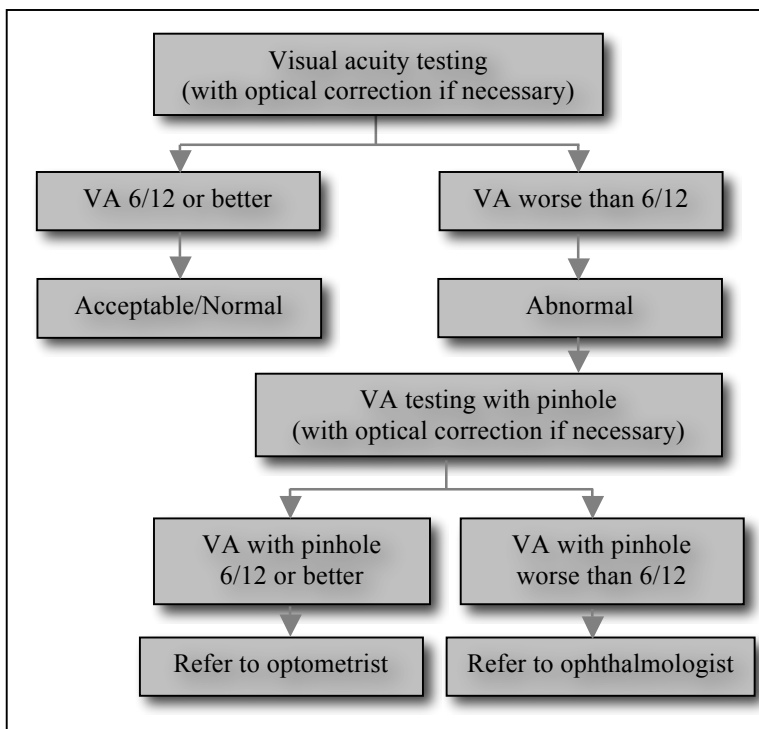
GPP Individuals with visual acuity worse than 6/12 (abnormal visual acuity) without pinhole on initial screening should have visual acuity testing repeated with pinhole.

Individuals with pinhole visual acuity of 6/12 or better are likely to have refractive error and should be referred to an optometrist based in an optical outlet.

Individuals with pinhole visual acuity worse than 6/12 may have eye conditions other than refractive error and should be referred to an ophthalmologist. (pg 15)

GPP

Suggested algorithm for vision screening



Hearing

B Community-dwelling older adults should be screened for hearing impairment. (pg 18)

Grade B, Level 1+

D The Single Global Screening Question: “Do you or your family think that you may have hearing loss?” is recommended as a first screening tool for hearing impairment, although mild hearing impairment might still be missed. (pg 18)

Grade D, Level 2+

C The Hearing Handicap Inventory for the Elderly-Screening (HHIE-S) is recommended as a screening tool for hearing impairment. (pg 19)

Grade C, Level 2+

B The audioscope is recommended as a screening tool for hearing impairment. (pg 19)

Grade B, Level 2++

GPP The algorithm in section 4.5 is recommended for the screening of hearing impairment in older adults. (pg 20)

GPP

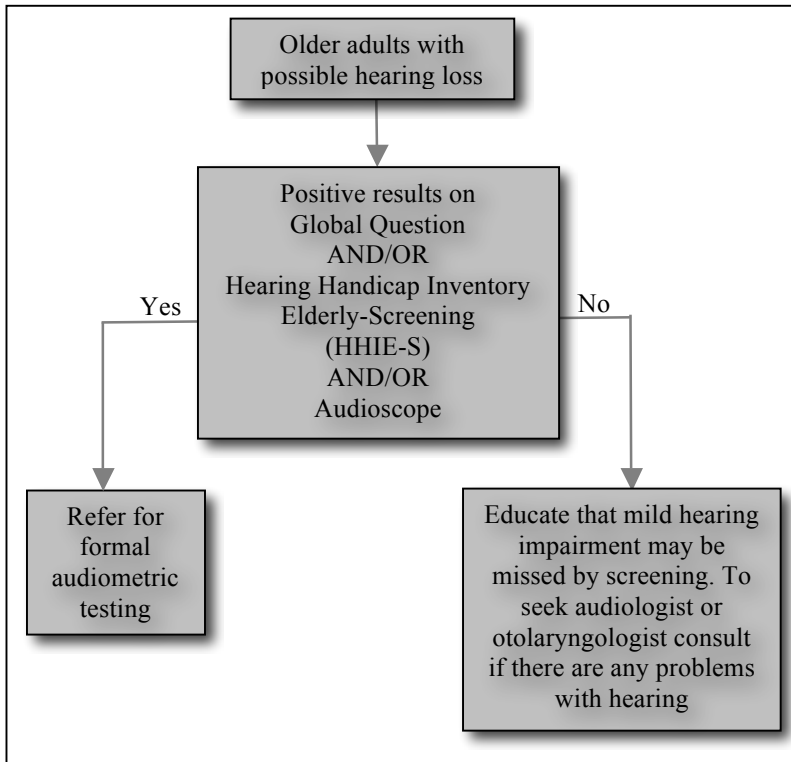
GPP Currently in Singapore, individuals that fail any of the three tests (Single Global Screening Question, HHIE-S & Audioscope test) should be referred to an audiologist and/or otolaryngologist. (pg 20)

GPP

GPP For older adults that have been screened for hearing impairment and found to have normal hearing, screening for hearing impairment should be repeated yearly. (pg 21)

GPP

Suggested algorithm for hearing screening



Oral Health

D All individuals should be screened on their level of oral cleanliness, number and condition of teeth, health of oral tissues, characteristics of saliva, condition of prosthesis, as well as the signs and symptoms of dental pain. (pg 23)

Grade D, Level 3

D Individuals should be screened using the Oral Health Assessment Tool (OHAT). (pg 23)

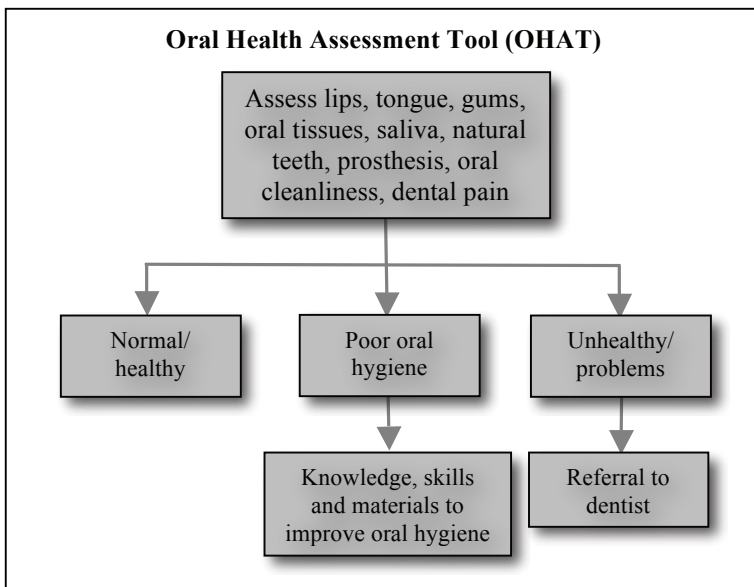
Grade D, Level 3

D It is recommended that:

- Individuals with only poor oral hygiene should be provided with advice and skills to improve oral self-maintenance.
- Individuals with oral pain, dry mouth, poor dentition status, poor periodontal health, in need of oral prosthesis or have existing prosthesis in need of repair/relining should be referred to a dentist. (pg 24)

Grade D, Level 3

Suggested algorithm for oral health screening



Contenance

D Community-dwelling older adults should be screened for urinary incontinence. (pg 27)

Grade D, Level 3

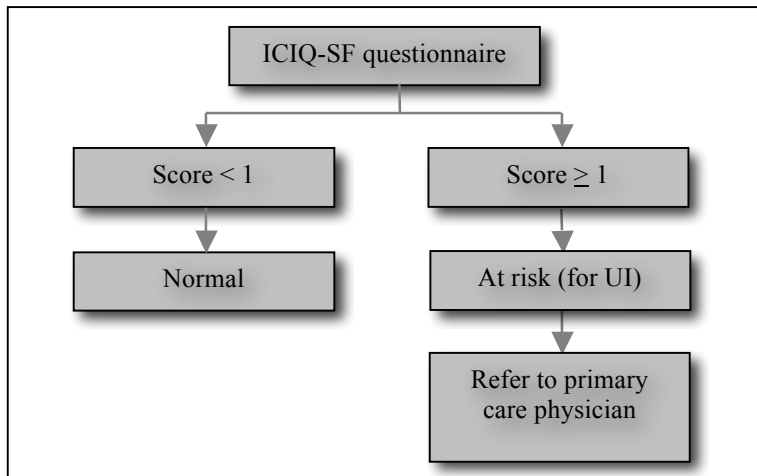
D Individuals should be screened for urinary incontinence with the International Consultation on Incontinence Questionnaire Urinary Incontinence – Short Form. (ICIQ-UI SF). (pg 27)

Grade D, Level 3

GPP Older adults with an ICIQ score of 1 or greater are recommended to visit a primary care physician for further evaluation and follow-up consultation. (pg 28)

GPP

Suggested algorithm for continence screening



Mood

GPP Community-dwelling older adults should be screened for depression. (pg 32)

GPP

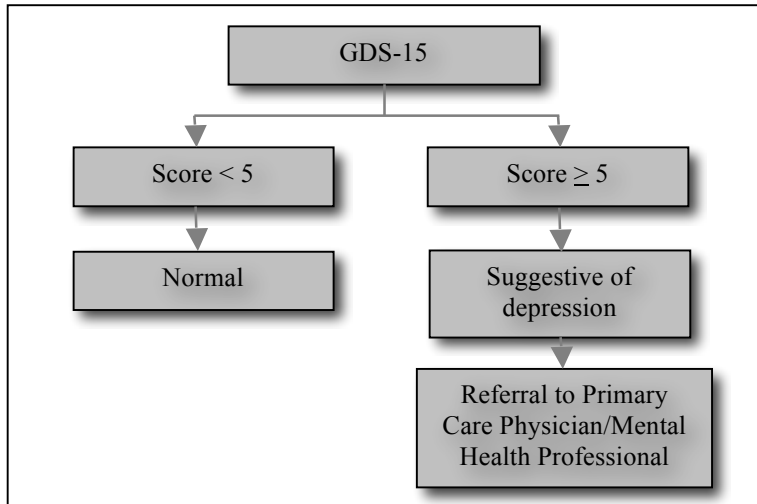
B It is recommended that the 15-item Geriatric Depression Scale (GDS-15) be used to screen for depression among older adults. (pg 32)

Grade B, Level 2++

C Individuals who score 5 or more points on the GDS-15 must be referred to primary care doctors for further assessment and treatment. Primary care doctors can refer the more complicated patients to mental health professionals for treatment as necessary (see algorithm in section 7.6). (pg 33)

Grade C, Level 2++

Suggested algorithm for depression screening



Cognition

C Currently, community screening or routine screening in the primary care setting for dementia in asymptomatic older persons **is not recommended**. (pg 37)

Grade C, Level 2+

1 Introduction

1.1 Objectives and scope of guideline

These guidelines are not to be viewed as a protocol, but they provide a framework to:

- Assist non-physician health professionals and community service providers to perform easy and simple functional screening for older adults
- Promote consistency in functional screening for older adults locally.
- Identify older adults at risk for common geriatric conditions to prevent deterioration in function and increase quality of life.

1.2 Target users

The primary target users of the guidelines are nursing/allied health professionals and community service providers who perform functional screening of older adults aged 60 years and above, in the community setting. The secondary target users include medical professionals involved in the care of older patients. Although these doctors may not be directly involved in functional screening of this nature, they may be called to evaluate older adults who have been identified as requiring further functional assessment after this screening process.

1.3 Guideline development

These guidelines have been developed by a committee comprising specialists from the fields of geriatric medicine, public health, family medicine, rehabilitation medicine, physiotherapy, occupational therapy, ophthalmology, psychiatry, otorhinolaryngology, dentistry, nursing as well as community stakeholders appointed by the Ministry of Health, Singapore. The guidelines were developed using the best available current evidence and expert opinion.

1.4 Review of guidelines

Evidence-based clinical practice guidelines are only as current as the evidence that supports them. Users must keep in mind that new evidence could supercede recommendations in these guidelines. The workgroup advises that these guidelines be scheduled for review 5 years after publication, or if new evidence emerges that requires substantive changes to the recommendations.

1.5 Use of guidelines

Potential users need to be aware that there are substantial gaps in the evidence on functional screening of community-dwelling older persons living in Singapore. In particular, there is paucity of evidence directly linking the screening processes with beneficial health outcomes; the evidence available largely hinges on intermediate outcomes.

The level of evidence and strength of recommendations provided in this document varies for different functional domains, and these need to be appreciated when service providers consider embarking on such screening programs. Most screening instruments have not been validated in the local setting. Evidence is not available to inform decisions on screening frequency for most of the functional domains.

In addition, the commitment to ensure that there are systematic plans for appropriate follow-up of individuals with positive screens needs to be made by service providers before initiating screening programmes. It is recommended that service providers obtain the advice and collaboration of relevant health services when planning these programmes.

To assist guideline users, we have also included sections in most chapters with 'Advice on provision of services' and 'Education'. These contain the workgroup's suggestions on resources for implementing the recommendations, such as qualifications of assessors or useful equipment, and education for older adults. These suggestions do not amount to evidence-based clinical recommendations, but may be considered as good practice points.

It must be emphasised that these guidelines and tools are not designed for use by physicians. Functional screening by physicians needs to incorporate targeted history-taking and physical examination which are beyond the scope of these guidelines.

1.6 Components of functional screening

There is currently no standard definition for function. At one end of the spectrum, function could refer to the ability to carry out basic activities of daily living, such as bathing and dressing, but at the other end, it could include psychosocial functioning, nutritional status and oral functioning. For the purpose of this CPG, we will address the following domains of function:

- Physical Function
- Vision
- Hearing
- Oral Health
- Continence
- Mood
- Cognition

2 Physical function

2.1 Prevalence of functional disability

Based on the National Survey of Senior Citizens conducted in 2004/5¹, the prevalence of functional disability is estimated at 7.8% of the population of community-dwelling older adults aged 55 years and above.

While a high proportion (92.2%) of older adults 55 years and older was fully ambulant and physically independent, the proportion decreased from 96.8% (aged 55 to 64 years), to 92.9% (aged 65 to 74 years), and 77.2% (aged 75 years and above).²

Mobility	Total (55 years and above)	55 to 64 years	64 to 74 years	75 years and above
Independent	92.2%	96.8%	92.9%	77.7%
Independent + walking aids	5.2%	2.8%	4.8%	12.9%
Assisted and dependent	2.6%	0.4%	2.3%	2.6%

Even though only a small proportion of the older adults required assistance in activities of daily living, the proportion increased from 1.7% (aged 55 to 64 years), to 4.7% (aged 65 to 74 years) and 15.7% (aged 75 years and above).²

Coping with Daily Living*	Total (55 years and above)	55 to 64 years	64 to 74 years	75 years and above
Independent	94.9%	98.3%	95.1%	84.3%
Assisted and dependent	5.1%	1.7%	4.7%	15.7%

* Bathe, dress, use toilet, in/out of bed/chair, continence, meal time.

2.2 Screening

Well-conducted epidemiological studies in different populations of community-dwelling older adults have shown that screening of physical function, when conducted by trained personnel using a variety of tools, is able to identify older persons who are at risk of adverse outcomes.²⁻⁶

C Community-dwelling older adults should be screened for functional disability.

Grade C, Level 2+

A brief, easy to carry out screening examination that bears no or little extra cost or hazard, with high efficacy to identify essentially asymptomatic ambulatory community-dwelling older adults who are at high risk of common functional limitations is desirable. Such a screening tool should be performance based, so as to maximise consistency in outcomes.^{2-4, 6}

2.3 Possible tools

The **Vulnerable Elders Survey-13 (VES-13)**⁵⁻⁹ is a 13-item screening tool that is used to detect the risk of health deterioration in already-vulnerable older populations. Higher scores on the VES-13 reflect greater risk of health deterioration.

The **Short Physical Performance Battery (SPPB)**^{2-4, 10-11} is a 3-item screening tool that is used to evaluate lower limb extremity functioning in older persons. Lower scores on the SPPB reflect higher odds of mobility-related disability.

Both the VES-13 and the SPPB have been shown to be useful in different cultural and population settings for identifying older adults at risk of developing functional decline, increased morbidity, mortality, institutionalisation and falls.

C The Vulnerable Elders Survey-13 (VES-13) and the Short Physical Performance Battery (SPPB) can be used to screen for functional disability in older adults.

Grade C, Level 2+

2.4 Post-Screening Follow-up

D Older adults who score ≥ 3 on the Vulnerable Elders Survey-13 (VES-13) or ≤ 6 on the Short Physical Performance Battery (SPPB) tools can be considered for referral to a primary care physician.

Grade D, Level 4

These cut-off points (≥ 3 on the VES-13 & ≤ 6 on the SPPB) are estimates that have been shown to be appropriate in populations of community-dwelling older adults in the US, Ireland, France and Italy, but similar data in the local setting is currently unavailable.

2.5 Advice on provision of services

Individuals involved in the process of screening of physical function need to be familiar with the tools being employed. Ideally, local normative values that are validated should first be obtained prior to general usage of these tools.

2.6 Education

Current local populations of older persons often construe functional decline as an expected part of the ageing process and may not understand the importance of assessment of physical function.

Public education should thus be directed first and foremost to highlight the association between physical function and morbidity.

3.1 Prevalence

Visual impairment is defined by the World Health Organisation (WHO) as visual acuity worse than 6/18 but equal or better than 6/120 in the better eye, while blindness is defined as visual acuity worse than 6/120 in the better eye.

Among Singaporean adults of Chinese origin aged 40 to 79 years old, 1.1% and 0.5% were reported as being visually impaired and blind in both eyes respectively.¹²

3.2 Screening

Visual acuity (VA) testing using a visual acuity chart (e.g. Snellen chart) is the usual method for screening for visual acuity impairment in the primary care setting and at eye clinics.¹³ The best visual acuity should be obtained in each eye with the person's habitual optical correction (glasses or contact lenses) and/or pinhole if necessary.¹⁴

Screening questions are not as accurate as visual acuity testing for identifying visual impairment. Evidence is limited on the use of other vision tests, including the Amsler grid (a chart used to test central vision to detect macular disorders), or fundoscopy, in screening in the primary care setting to detect visual impairment due to age-related macular degeneration or cataracts.¹⁵

The US Preventive Services Task Force concludes that there is insufficient evidence to indicate whether screening older adults for visual impairment improves functional outcomes.¹⁵ The balance of benefits and harms cannot be determined. Potential benefits include improved quality of life, reduced falls and accident rates, increased independence and decreased prevalence of depression.

On the basis that vision impairment is common in older adults and that treatment is available for the majority of causes of impaired vision, it is beneficial for community-dwelling older adults to be screened for visual impairment.

GPP Community-dwelling older adults should be screened for visual impairment.

GPP

3.3 Specific tool

B A visual acuity chart (e.g. Snellen chart) is recommended for identifying the presence of visual impairment.

Grade B, Level 2++

3.4 Post-screening follow-up

GPP Older adults with visual acuity 6/12 or better (acceptable/normal visual acuity) should be screened every 1-2 years.

GPP

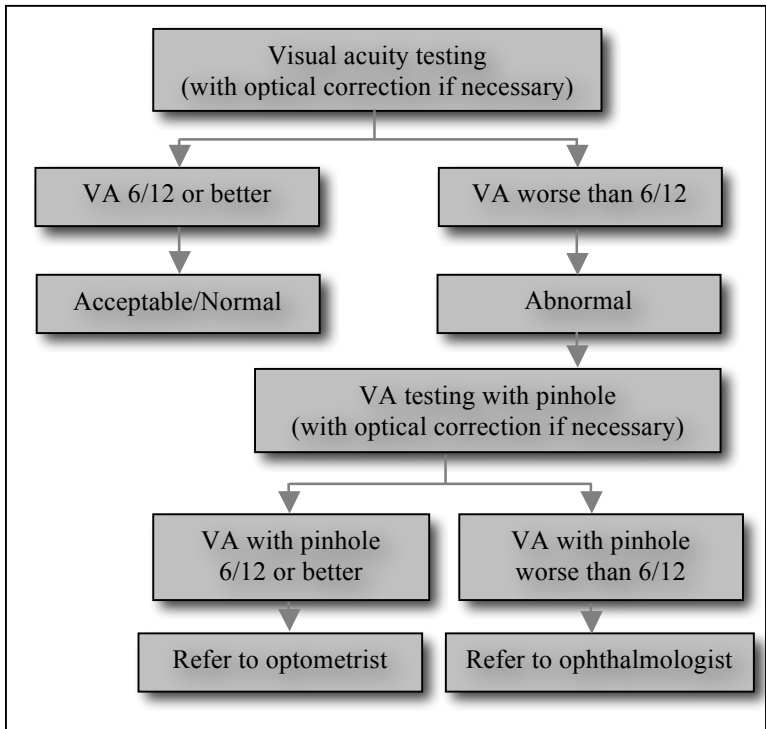
GPP Individuals with visual acuity worse than 6/12 (abnormal visual acuity) without pinhole on initial screening should have visual acuity testing repeated with pinhole.

Individuals with pinhole visual acuity of 6/12 or better are likely to have refractive error and should be referred to an optometrist based in an optical outlet.

Individuals with pinhole visual acuity worse than 6/12 may have eye conditions other than refractive error and should be referred to an ophthalmologist.

GPP

3.5 Suggested algorithm for vision screening



3.6 Social and cultural considerations

Screening for visual impairment and blindness using the visual acuity chart is socially acceptable among the older population. Visual acuity charts for persons with limited literacy are available.

3.7 Advice on provision of services

Visual acuity testing (using the Snellen Chart) can be performed by both eye care or non-eye care professionals. While there are no specific requirements, on-the-job training is necessary for the latter.

4.1 Prevalence of hearing impairment

Hearing impairment is highly prevalent amongst the elderly, but often missed and under-diagnosed. In Singapore, 27.6% of adults 60 years and above felt they had hearing loss. 26.7% reported having difficulty following conversations in the presence of background noise (e.g. noise from a TV or radio; traffic noise in the street; people talking at other tables in a crowded restaurant).¹⁶

In America, hearing impairment affects 25% to 40% of those 65 years or older.¹⁷ The prevalence of age-adjusted hearing impairment has increased significantly since the 1960s.¹⁸

4.2 Screening

Hearing impairment is traditionally defined as having a speech frequency pure-tone average greater than 25 dB in the better ear at 500 Hz, 1000 Hz, and 2000 Hz. An average of 25-40 dB is mild, 41-70 dB is moderate 71-90 dB severe, and greater than 90dB profound hearing impairment.

Importantly however, this traditional definition underestimates the degree of hearing impairment. Age-related hearing impairment, also termed presbycusis, often affects the higher frequencies of hearing (3000 to 8000 kHz) first. This results in difficulty hearing the consonants of speech, especially in noisy background situations, meetings or over the telephone. Though the older adults hear words being spoken, they cannot discriminate the exact words. Many older adults try to lip-read and use context cues. Many screening hearing tests do not test the higher frequencies due to limitations in the machines, time and manpower.

Even mild hearing impairment can be associated with significant hearing handicap. The actual handicap and impact on daily life related to hearing impairment is better measured by non-audiometric tests or questionnaires.¹⁹

The prevalence and adverse effects of not treating hearing impairment are both significant. Treatment and rehabilitation of hearing impairment improves the quality of life.²⁰ Effective treatment is available and is important under certain conditions.

The US Preventive Service Task Force* and the Canadian Task Force on Preventive Health Care† recommend screening for hearing impairment in older adults.²¹

B Community-dwelling older adults should be screened for hearing impairment.

Grade B, Level 1+

Hearing impairment impairs communication, negatively impacting the elderly occupationally, socially and emotionally. It is associated with functional decline, dementia, depression, anxiety, paranoia, decreased social activity and insecurity.¹⁹⁻²⁰

4.3 Specific tool

a) The **Single Global Screening Question** “Do you think you have a hearing problem?” was used for geriatric medical patients in Singapore.²² A systematic review showed that the single question is only moderately useful if the hearing impairment is mild.²³ A family member’s assertion that the patient has difficulty hearing may be as important as, if not more important than, the patient’s own recognition of hearing impairment.

D The Single Global Screening Question: “Do you or your family think that you may have hearing loss?” is recommended as a first screening tool for hearing impairment, although mild hearing impairment might still be missed.

Grade D, Level 2+

b) The **Hearing Handicap Inventory for the Elderly-Screening (HHIE-S)** is a 10-item, self-administered questionnaire that can be completed in 5 minutes. It scores the degree of functional (social and emotional) handicap associated with hearing impairment.²⁴⁻²⁵ A total score of 0-8, 10-24 or 26-40 indicates a 13%, 50% and 84%

* www.ahcpr.gov/clinic/uspstfix.htm

† www.ctfphc.org

probability of hearing impairment respectively.²⁶ A systematic review of 7 studies showed that if HHIE-S score >8, hearing impairment of \geq 40 dB has LR of 3.8 (95% CI, 3.0-4.8).²³

C The Hearing Handicap Inventory for the Elderly-Screening (HHIE-S) is recommended as a screening tool for hearing impairment.

Grade C, Level 2+

Used to measure hearing handicap initially, the HHIE-S is also useful as a screening tool for those patients who are motivated to seek treatment.²⁷ It reflects the degree of functional hearing impairment, but not the audiometric severity of hearing impairment. When compared to formal audiometric testing for hearing impairment therefore, the sensitivity of HHIE-S is lower in milder hearing impairment.

c) **Audioscope** screening for hearing impairment uses a hand-held device combining an otoscope and audiometer. The audioscope is held securely in the ear canal, and gives 25- to 40-dB pure tones at 500 Hz, 1000 Hz, 2000 Hz, and 4000 Hz. The audioscope also allows for inspection of the ear canal.

Four studies²⁶⁻²⁹ used a 40-dB pure-tone average threshold (reference standard), while the remaining 2 studies used a 30-dB³⁰ and a 45-dB³¹ threshold, respectively. Despite slight differences in the definition of hearing impairment, the sensitivity to detect hearing impairment was consistently high, ranging from 87% - 100% and specificity 42% - 90%. Passing audioscope screening makes hearing impairment above 30-45 dB very unlikely (summary LR, 0.07; 95% CI, 0.03-0.17). Failing the audioscope screening gives a moderately increased probability of hearing impairment (summary LR, 2.4; 95% CI, 1.4-4.1).²³ The first clinical trial to study long-term effectiveness of treatment for hearing impairment after routine screening of the elderly with the HHIE-S and Audioscope is ongoing in America.³²

B The audioscope is recommended as a screening tool for hearing impairment.

Grade B, Level 2++

d) The **whispered voice test** is a simple test that has a sensitivity of 90% and specificity of 70-87% if carried out meticulously. The examiner whispers words from behind the patient at varying distances.²⁹ However, continuing concerns about standardisation, inter-observer variability and test-retest reliability are important limitations.

GPP The algorithm in section 4.5 is recommended for the screening of hearing impairment in older adults.

GPP

The algorithm is a combination of functional tests with the modified Single Global Question, the HHIE-S and the Audioscope. In the event that an audioscope is not available, the Whisper Test could be used, but is less preferred as standardisation remains difficult between different testers. The gold standard hearing test remains the pure tone audiogram performed in a sound-proof room by a professional audiologist, with the results interpreted together with an ENT specialist after clinical consultation, such that treatable causes are not missed.

4.4 Post-screening follow-up

GPP Currently in Singapore, individuals that fail any of the three tests (Single Global Screening Question, HHIE-S & Audioscope test) should be referred to an audiologist and/or otolaryngologist.

GPP

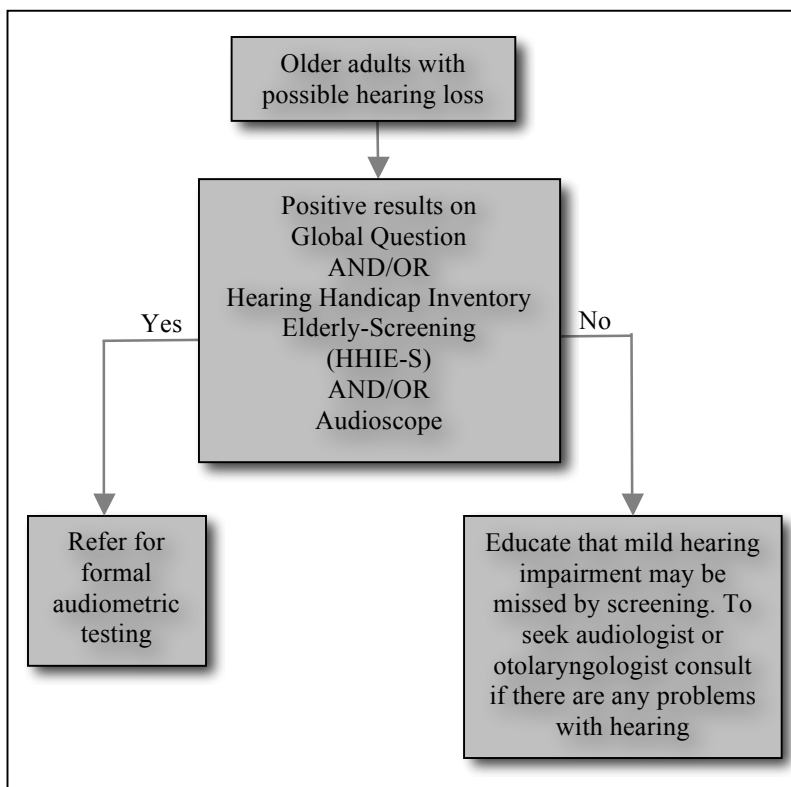
Certain ear diseases must be treated. Examples include sudden-onset hearing impairment, significant impacted wax, chronic middle ear effusions or infections, and middle ear or acoustic nerve tumours. Other diseases like otosclerosis, ossicular chain problems and Meniere's Disease can also benefit from medical and surgical treatment besides the use of hearing aids.

In most cases of presbycusis without other ear problems, hearing aids and assistive listening devices are sufficient to address the hearing impairment. Proper education and continuing support on use of the aids greatly increase the rate of uptake and continuity of use. Middle ear and cochlear implants are needed for some patients.

GPP For older adults that have been screened for hearing impairment and found to have normal hearing, screening for hearing impairment should be repeated yearly.

GPP

4.5 Suggested algorithm for hearing screening



4.6 Social and cultural considerations

Hearing impairment is usually underestimated as many older adults can still hear sounds though they may not be able to discriminate speech well. In Singapore, some also deny hearing impairment as many still fear stigmatisation and subsequently, poorer social and work options. The cost of hearing aids is also a consideration as they are generally costly. As hearing impairment is not life threatening,

many older adults may choose to ignore it, especially as there is still a lack of awareness of the consequences of having poor hearing.

The optimal functioning of hearing aids require expert follow-up, including tuning. They must have been appropriately chosen and tailored for the patient. If not, they may not work well. Other treatment may be required for some patients.

4.7 Advice on provision of services

The screening can be done by trained personnel, nurses and general practitioners at the community setting. The screeners can be trained in a 4-hour lecture-cum-demonstration session.

4.8 Education

Screening should be accompanied by education material (e.g. a simple flyer/CD Rom) on:

- a. The importance and benefits of treating hearing impairment and
- b. The importance of a support programme to encourage the continued use of hearing assistive devices.

5

Oral health

5.1 Prevalence of oral health conditions

Missing teeth due to oral diseases (decayed teeth and periodontal conditions) is highly prevalent in Singapore amongst the elderly, affecting 100% of 60-64-year-olds (mean number of missing teeth = 13); 99.4% of 65-69-year-olds (mean number of missing teeth = 15) and 100% of 70-74-year-olds (mean number of missing teeth = 16).³³

A large survey of Singapore adults ≥ 20 years ($n=6,560$) conducted by the Health Promotion Board (HPB) in 2003 showed that 88.9% of adults brushed their teeth at least twice a day but only 32.8% flossed at least once a day and 45.5% visited a dentist once a year.³⁴ No specific information was available on elderly Singaporeans. However with increasing age, males and low educational attainment were found to be significantly associated with less favourable tooth-brushing practices.

5.2 Screening

D All individuals should be screened on their level of oral cleanliness, number and condition of teeth, health of oral tissues, characteristics of saliva, condition of prosthesis, as well as the signs and symptoms of dental pain.³⁵

Grade D, Level 3

5.3 Specific tool

D Individuals should be screened using the Oral Health Assessment Tool (OHAT).³⁵

Grade D, Level 3

The diagnostic performance (sensitivity and specificity) of the Oral Health Assessment Tool (OHAT) has not been assessed. OHAT was validated in Australia amongst 455 elderly nursing home residents (mean age = 82.1 years). Intra-examiner reproducibility using OHAT by carers was moderate to high while inter-examiner reproducibility was moderate. Percentage agreement and Pearson correlation analysis were completed between individual OHAT categories and associated

dental examination findings for 21 residents. There was complete agreement on scoring for the lips. Scoring for natural teeth, dentures and tongue had the highest significant correlations and high percentage agreements, and that for gums had a significant but lower correlation. Non-significant and low correlations and percentage agreements were found for saliva, oral cleanliness and pain.³⁵⁻³⁶

No special dental equipment is required with the exception of gloves and the best available natural or artificial light source. Mean time of assessment was 7.8 minutes.

OHAT was validated in a population of Australian elderly (mean age = 82.1 years) of whom 56.5% had a diagnosed dementia and 88.9% were in Residential Care Services. It is recommended that OHAT be validated for the community dwelling older adults in Singapore.

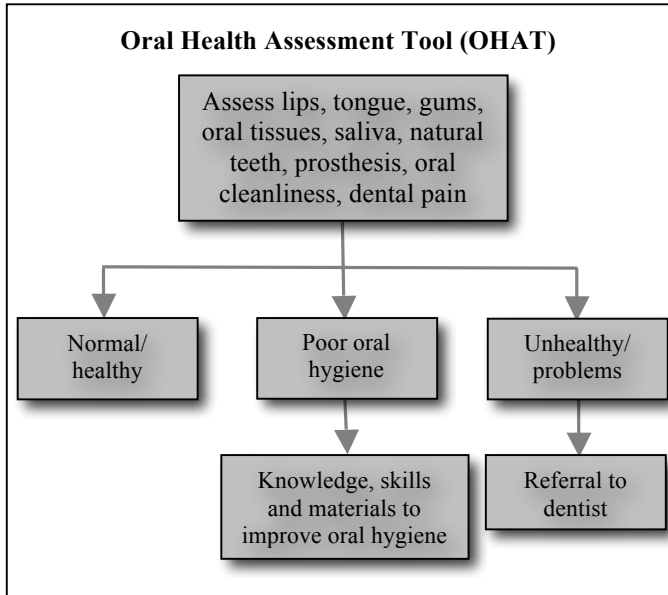
5.4 Post-screening follow-up

D It is recommended that:

- Individuals with only poor oral hygiene should be provided with advice and skills to improve oral self-maintenance.⁵⁻⁷
- Individuals with oral pain, dry mouth, poor dentition status, poor periodontal health, in need of oral prosthesis or have existing prosthesis in need of repair/relining should be referred to a dentist.³⁷⁻³⁹

Grade D, Level 3

5.5 Suggested algorithm for oral health screening



5.6 Social and cultural considerations

Dental treatment is generally costly. As such, cost may be a major barrier for older adults seeking follow-up treatment after screening.

5.7 Advice on provision of services

The assessors would need disposable gloves and an artificial light source (e.g. pen torch). A CD/DVD training programme would be a reusable resource for the assessors.

The minimum qualification for the assessor should be at least a nurse assistant.

The nurse assistants can receive training from a dentist or even an experienced dental therapist or hygienist to recognise the signs of a healthy mouth and also the signs and symptoms of problems related to the oral cavity. They do not need to know the various diseases and

pathologies. They can be taught to recognise the following conditions and to refer to a dental therapist or dentist:

- Decayed teeth
- Abscessed teeth
- Loose teeth
- Poor oral hygiene
- Abnormalities of the oral tissues including periodontal conditions such as bleeding gums, calculus, receding gums
- Ill-fitting dentures
- Poor salivary flow

5.8 Education

Instructions and skills for oral self-care maintenance is an adjunct to screening.

6

Continence

6.1 Prevalence of urinary incontinence

The International Continence Society (ICS) defines Urinary Incontinence as a condition where involuntary loss of urine is a social or hygienic problem.⁴⁰

In Singapore, the prevalence of urinary incontinence among community dwelling older adults aged 55 to 98, was reported as 3.5% in those aged ≥ 55 years, 4.8% in those aged ≥ 65 years and 7.9% in those aged ≥ 75 years.⁴¹

Urinary incontinence is associated with a low quality of life in adults, especially women.⁴² Although urinary incontinence is not a life-threatening problem, the symptoms of incontinence can cause considerable impairment, leading to a reduced quality of life.⁴³

6.2 Screening

A questionnaire is the simplest form of screening continence in both the community and primary care setting. Basic questions like frequency and quantity of leakage as well as impact of incontinence on the quality of life should be included in the assessment of continence.

D Community-dwelling older adults should be screened for urinary incontinence.⁴³⁻⁴⁶

Grade D, Level 3

6.3 Specific tool

D Individuals should be screened for urinary incontinence with the International Consultation on Incontinence Questionnaire Urinary Incontinence – Short Form. (ICIQ-UI SF).⁴⁷

Grade D, Level 3

In the validation study of the Spanish version of the ICIQ-SF on a sample of 500 women who attended a UI-specialised unit found its psychometric properties to be satisfactory—the sensitivity, specificity,

PPV and NPV in relation to clinical diagnosis were 92.1%, 55.6%, 88.3%, & 65.9% respectively.⁴⁸

In the validation study of the ICIQ-SF in Portuguese, the internal consistency for the tool was high (0.88) as measured by the Cronbach's alpha coefficient. A cross-sectional observational study where the pre-tested translated questionnaire was applied to 123 consecutive patients of both genders (29 males and 94 females) with a median age 53 years (range: 16 to 86) who sought the urogynaecology and urodynamics outpatient services of the School of Medical Sciences of Unicamp. The mean retest interval for the ICIQ-SF was 14.37 days (range: 6 to 41). No changes from the original format were observed at the end of the process of translation and cultural adaptation. The test-retest value was considered moderate to strong, as measured by the weighted Kappa index (range: 0.72 to 0.75) and Pearson correlation coefficient (0.89). The intraclass correlation coefficient for the final ICIQ-SF score was 0.80.⁴⁹

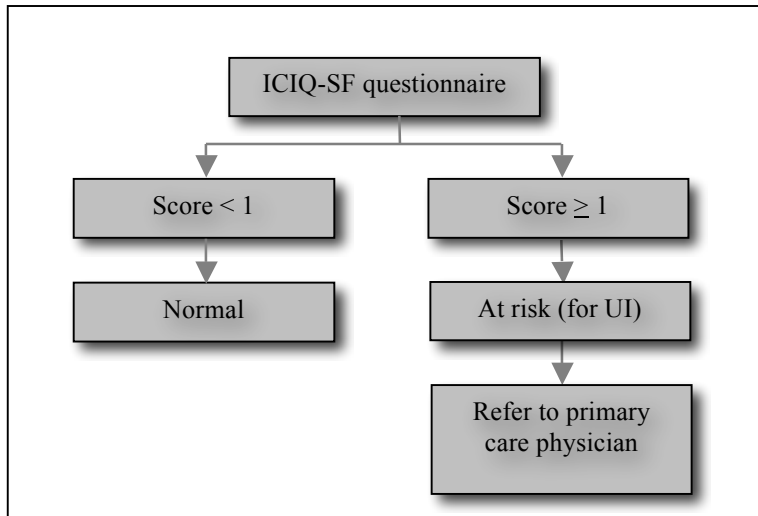
6.4 Post-screening follow-up

An ICIQ score of 1 or greater indicates the presence of urinary incontinence and the need for further evaluation.⁵⁰

GPP Older adults with an ICIQ score of 1 or greater are recommended to visit a primary care physician for further evaluation and follow-up consultation.

GPP

6.5 Suggested algorithm for continence screening



6.6 Social and cultural considerations

Some older adults may be reluctant to disclose that they have incontinence, especially in a community setting. Gender difference between the assessor and the older adult is another area of concern which must be managed sensitively. A female assessor interviewing a male older adult may be acceptable, but not vice versa.

6.7 Advice on provision of services

Personnel who are trained to interpret the results/findings of the ICIQ-SF questionnaire are essential. Such assessors should have good communication and interpersonal skills and confidence in using different local languages, especially as many of the older adults may not be fluent in English.

6.8 Education

Many older adults do not perceive incontinence as treatable, and would rather live with the condition as long as it does not cause them

excessive social inconvenience. Therefore, educational messages should accompany screening to encourage older adults to seek treatment for incontinence to improve their quality of life.

7.1 Definition

Depression is diagnosed when five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

- (1) Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g. feels sad or empty) or observation made by others (e.g. appears tearful)
- (2) Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)
- (3) Significant weight loss when not dieting or weight gain (e.g. a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.
- (4) Insomnia or hypersomnia nearly every day.
- (5) Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
- (6) Fatigue or loss of energy nearly every day.
- (7) Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
- (8) Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

7.2 Prevalence

In Singapore, the prevalence of depressive disorder in the elderly is recorded as 4.6%⁵¹ in one study and 5.7% in another local study.⁵²

7.3 Screening

There is no conclusive evidence to support depression screening of older adults in the community. However, it is postulated that screening provides early detection of depressive symptoms, and with appropriate referral and management, the older adults may benefit from improved health outcomes.

GPP Community-dwelling older adults should be screened for depression.

GPP

Review of literature on the effects of disease management programmes that include screening for major depression in general practice found the results of disease management programmes for depression in primary care that include screening are positive and are more effective than usual case.⁵³

The following screening tools or scales were considered for their sensitivity and applicability for screening of the older community dwelling adult.

- (a) GDS-15 (Geriatric Depression Scale)
- (b) GDS 4 (Geriatric Depression Scale)
- (c) EBAS DEP (Even Briefer Assessment Scale for Depression)
- (d) Single Question
- (e) Cornell Scale for Depression in Dementia

7.4 Specific tool

B It is recommended that the 15-item Geriatric Depression Scale (GDS-15) be used to screen for depression among older adults.

Grade B, Level 2++

The GDS-15 is a self reporting tool that can be self-completed in 5-7 minutes or administered by a provider with minimal training on its use.⁵⁴ It is reliable and has been validated for use in the Chinese elderly population.⁵⁵⁻⁵⁶ In Singapore, the sensitivity and specificity of the GDS-15 was reported to be 84.0% and 85.7% respectively.⁵⁷

A systematic review of the screening accuracy of GDS-15 reported sensitivity of 80.5% and specificity of 75.0%.⁵⁸ In one study, 198 elderly attending the GP clinic were asked to complete the GDS-15. 87.6% found the questionnaire to be acceptable. Only 3.6% found it difficult or stressful.⁵⁹

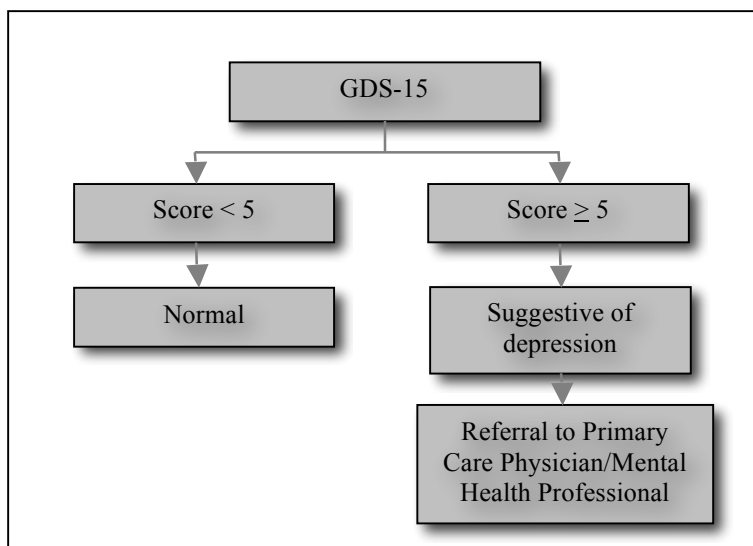
However, the GDS-15 is limited in that it does not maintain its validity in demented populations because it fails to identify depression with mild to moderate dementia.⁶⁰

7.5 Post-screening follow-up

C Individuals who score 5 or more points on the GDS-15 must be referred to primary care doctors for further assessment and treatment. Primary care doctors can refer the more complicated patients to mental health professionals for treatment as necessary (see algorithm in section 7.6).

Grade C, Level 2++

7.6 Suggested algorithm for depression screening



7.7 Social and cultural considerations

The GDS-15 contains questions designed to reflect that an individual may be depressed, and not specifically to reflect mood. Given the cultural and linguistic diversity of the target audience, addressing this may be more challenging.

The GDS-15 has also been translated and validated in Chinese and Malay.

The assessor should possess the linguistic ability to conduct the screening with the target audience.

7.8 Advice on provision of services

Although the GDS-15 can be self-administered, provisions must be made to cater to older adults who are illiterate and/or are experiencing visual acuity problems.

Assessors should be trained to assist the target audience in completing the screening.

8.1 Prevalence of dementia

Various epidemiological studies using different screening instruments and strategies have been conducted in Singapore; figures from the two most recent studies indicate a local prevalence of 3.9-5.2%.⁶¹⁻⁶² There is an age-related increase in prevalence of dementia from 0.8% in the 60-64 year age group to 32.2% among those aged 85 years and older.¹ The most common causes of dementia are Alzheimer's disease and vascular dementia.

8.2 Screening tools

There are various cognitive screening instruments that have been validated locally. These can be broadly classified as:

- i. *mental status tests*, such as Abbreviated Mental Test (AMT), Mini-Mental State Examination (MMSE), Chinese MMSE, Clock Drawing Test (CDT), and Elderly Cognitive Assessment Questionnaire (ECAQ);⁶³⁻⁶⁶
- ii. *informant-based assessments*, such as the Informant Questionnaire on Cognitive Decline in the Elderly (IQCODE), the Informant Report of Memory Problem (IRMP), and single question on progressive forgetfulness;⁶⁷⁻⁶⁸ and
- iii. *combinations* of screening tests.⁶⁹

These tests demonstrate good diagnostic performance in the local validation studies (sensitivity: 75-100%; specificity: 75-100%).⁶³⁻⁶⁹ They are generally easy to administer, and most can be completed in less than 5 minutes. Other than the specific questionnaires, special equipment is not required.

8.3 Harms of screening/treatment

Screening

The harms of dementia screening have not been systematically studied.⁷⁰ Potential harms include risk of depression and anxiety, the time and cost of screening, and possible labelling effects. Concerns have been raised about the potential psychological, social and ethical

impact in persons with a positive screening test but who do not meet criteria for dementia after rigorous evaluation. Stress-inducing practical, social and psychological difficulties have been reported among patients coping with an uncertain diagnostic label.⁷¹⁻⁷²

Treatment

Currently, the established modalities for treatment of mild to moderate dementia are considered to be primarily symptomatic rather than disease modifying in their mode of action. Cholinesterase inhibitors confer modest benefits in terms of clinician global impression of change, cognition, function, and behaviour in mild to moderate Alzheimer's disease.⁷³ Current evidence does not support the use of cholinesterase inhibitors in the treatment of mild cognitive impairment.⁷⁴

The most common side effects experienced by people taking cholinesterase inhibitors are nausea, vomiting and diarrhoea. Using healthcare databases from Ontario, Canada, Gill et al recently reported that the use of cholinesterase inhibitors is associated with increased rates of hospital visits for syncope and bradycardia; pacemaker insertion; and hip fracture in older adults with dementia.⁷⁵ Thus, the risk of these previously under-recognised serious adverse events must be weighed carefully against the drugs' high costs and the generally modest benefits.

8.4 Recommendation

Current evidence does not support community screening or routine screening in the primary care setting for dementia in asymptomatic older persons. This is consistent with the recommendations of the Dementia Clinical Guidelines, MOH; the National Dementia Strategy; and the US Preventive Services task Force (USPTF).⁷⁰

A community-screening programme that is premised on case finding (and thus "sacrificing" diagnostic specificity at the expense of sensitivity) will result in the increased labelling of screen-positive individuals who do not fulfil criteria for dementia as having "mild cognitive impairment". Thus, even though locally validated screening instruments are available, this is superseded by the lack of evidence of positive health outcomes with screening⁷⁶ and concerns which are raised about the attendant social, psychological and ethical

implications of screening;^{72, 77} the lack of effective treatment in mild cognitive impairment;⁷⁴ the uncertainty about the prognosis and clinical course of mild cognitive impairment;⁷¹ and the ethical concerns of exposing otherwise well screen-positive individuals to possible morbidity accruing from current pharmacological modalities of treatment.^{75, 77}

C Currently, community screening or routine screening in the primary care setting for dementia in asymptomatic older persons **is not recommended.**

Grade C, Level 2+

However, this recommendation should be reviewed as and when there are new developments that are of relevance e.g. effective treatment for mild cognitive impairment.

In general, there is a paucity of data on the cost-effectiveness of applying functional screening tools in community-living elderly persons. We could find no local cost-effectiveness studies in this area.

Three cost-effectiveness studies conducted elsewhere were found.

General screening tools

A 1999 paper assessed the cost-effectiveness of outpatient geriatric assessment with an intervention to increase adherence.⁷⁸ The study population was 351 community-dwelling elderly persons with at least 1 of 4 geriatric conditions (depression, urinary incontinence, falls or functional impairment). The intervention was a single Comprehensive Geriatric Assessment with a geriatrician, nurse practitioner, social worker and, as indicated a physical therapist, compared to usual care. Those in the intervention group also received a dual strategy intervention aimed at the participants and their physicians. Health gains were measured using the 10-item physical functioning scale from the SF-36 and transformed into utility scores measured on the Quality of Well-Being (QWB) scale. The resulting cost-effectiveness over a 5-year horizon (assuming the health gains observed in the intervention group at the end of the study, at 64 weeks, persisted for 5 years after) was US\$10,500 per QALY, with a range of US\$3,200-US\$26,500 in their sensitivity analysis.

While there are methodological issues with the study (for example, discounting was not used in the base case analysis), and the study population is not directly applicable (since it comprised elderly with geriatric conditions), this paper does suggest that a geriatric assessment coupled with follow-up intervention is effective and may possibly be cost-effective.

Screening for urinary incontinence

A systematic review on methods of screening urinary incontinence was published in 2006,⁷⁹ although this review did not address the use of these methods for screening purposes. The paper used derived data to examine the incremental cost-effectiveness of 3 tests commonly used in the primary care setting (diary, validated scales or pad tests) in

addition to patient history, using a second-order Monte Carlo simulation. In this analysis, average estimates of effectiveness and costs for validated scales in general were used because studies that formed the primary data sources assessed a wide variety of validated scales. It found that the diary appeared to be the most cost-effective of the 3 for diagnosis, at £35-77 per extra unit of effectiveness (or case diagnosed). The incremental cost per case diagnosed for validated scales was £129-290, and that for pad test was £132-255.

Screening for hearing impairment

A 2007 study on the acceptability,⁸⁰ benefit and costs of early screening for hearing disability found that the costs of screening and intervention were in the range of £800-1000 per quality adjusted life-year (QALY) when using the Health Utilities Index, and about £2500 per QALY, when using the Short Form 6 Dimensions system. The study also noted that early identification of persons with hearing impairment resulted in benefits to these individuals because of the additional years of use of hearing aids. These individuals also tended to adapt better to use of the aids and therefore were more likely to be long-term users. This result may not be directly applicable because the screening tool used was a 5-question screening questionnaire followed by a clinic-based audiometric screen for those who failed the screening questionnaire, different from those proposed in these guidelines.

No cost-effectiveness studies were found that addressed the following:

- a) Screening of physical function using
 - i) Short Physical Performance Battery,
 - ii) Vulnerable Elderly Survey-13 or
 - iii) Timed-Up-and-Go tests to prevent physical disability.
- b) Screening of oral health using the Oral Health Assessment Tool
- c) Screening for depression using the Geriatric Depression Scale-15
- d) Screening for visual impairment using the Snellen Chart

10 Clinical quality improvement

The following quality assurance parameters, which are based on recommendations in these guidelines, are proposed:

Overall Indicators

1. Proportion of older adults who were screened for functional impairment
2. Proportion of older adults with functional impairments who were referred for appropriate follow-up intervention
3. Proportion of referred older adults who underwent follow-up intervention

Potential Domain-specific Indicators

1. Physical Function

- a. Proportion of older adults who were screened for physical function
- b. Proportion of older adults screened for physical function who were referred to primary care physicians or for appropriate targeted interventions
- c. Proportion of older adults referred who consulted primary care physicians or underwent appropriate targeted interventions

2. Vision

- a. Proportion of older adults who were screened for vision
- b. Proportion of older adults screened for vision who were referred to ophthalmologists or optometrists for follow-up
- c. Proportion of older adults referred who consulted ophthalmologists or optometrists

3. Hearing

- a. Proportion of older adults who were screened for hearing

- b. Proportion of older adults screened for hearing who were referred to audiologists or otolaryngologists for follow-up
- c. Proportion of older adults referred who consulted audiologists or otolaryngologists

4. Oral Health

- a. Proportion of older adults who had their oral health screened
- b. Proportion of older adults with poor oral hygiene who were given education, including advice and skills to improve oral self maintenance
- c. Proportion of older adults assessed who were referred to dentists for follow-up
- d. Proportion of older adults referred who consulted dentists

5. Continence

- a. Proportion of older adults who were screened for urinary incontinence
- b. Proportion of older adults screened who were referred to primary care physicians for follow-up
- c. Proportion of older adults referred who consulted primary care physicians

6. Mood

- a. Proportion of older adults who were screened for depression
- b. Proportion of older adults with possible depression who were referred to primary care physicians for follow-up
- c. Proportion of older adults referred who consulted primary care physicians

Annex A Vulnerable Elders Survey – 13 (VES-13)

VES-13

1. Age _____

SCORE: 1 POINT FOR AGE 75-84
3 POINTS FOR AGE ≥ 85

2. In general, compared to other people your age, would you say that your health is:

- Poor,* (1 POINT)
- Fair,* (1 POINT)
- Good,
- Very good, or
- Excellent

SCORE: 1 POINT FOR FAIR or POOR

3. How much difficulty, on average, do you have with the following physical activities:

	<u>No Difficulty</u>	<u>A little Difficulty</u>	<u>Some Difficulty</u>	<u>A Lot of Difficulty</u>	<u>Unable to do</u>
a. stooping, crouching or kneeling?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/> *
b. lifting, or carrying objects as heavy as 10 pounds?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/> *
c. reaching or extending arms above shoulder level?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/> *
d. writing, or handling and grasping small objects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/> *
e. walking a quarter of a mile?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/> *
f. heavy housework such as scrubbing floors or washing windows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> *	<input type="checkbox"/> *

SCORE: 1 POINT FOR EACH * RESPONSE
IN Q3a THROUGH f. MAXIMUM OF 2
POINTS.

4. Because of your health or a physical condition, do you have any difficulty:

a. shopping for personal items (like toilet items or medicines)?

- | | | |
|---|--------------------------------|-----------------------------|
| <input type="checkbox"/> YES → Do you get help with shopping? | <input type="checkbox"/> YES * | <input type="checkbox"/> NO |
| <input type="checkbox"/> NO | | |
| <input type="checkbox"/> DON'T DO → Is that because of your health? | <input type="checkbox"/> YES * | <input type="checkbox"/> NO |

b. managing money (like keeping track of expenses or paying bills)?

- | | | |
|---|--------------------------------|-----------------------------|
| <input type="checkbox"/> YES → Do you get help with managing money? | <input type="checkbox"/> YES * | <input type="checkbox"/> NO |
| <input type="checkbox"/> NO | | |
| <input type="checkbox"/> DON'T DO → Is that because of your health? | <input type="checkbox"/> YES * | <input type="checkbox"/> NO |

Continued

c. walking across the room? USE OF CANE OR WALKER IS OK.

- YES → Do you get help with walking? YES * NO
 NO
 DON'T DO → Is that because of your health? YES * NO

d. doing light housework (like washing dishes, straightening up, or light cleaning)?

- YES → Do you get help with light housework? YES * NO
 NO
 DON'T DO → Is that because of your health? YES * NO

e. bathing or showering?

- YES → Do you get help with bathing or showering? YES * NO
 NO
 DON'T DO → Is that because of your health? YES * NO

**SCORE: 4 POINTS FOR ONE OR MORE *
RESPONSES IN Q4a THROUGH Q4e**

Source:

Saliba, S, Elliott M, Rubenstein LA, Solomon DH, et al. The Vulnerable Elders Survey (VES-13): A Tool for Identifying Vulnerable Elders in the Community. *Journal of the American Geriatric Society* 2001; 49:1691-9

Annex B Short Physical Performance Battery (SPPB)

Short Physical Performance Battery

1. Repeated Chair Stands

Instructions: Do you think it is safe for you to try and stand up from a chair five times without using your arms? Please stand up straight as quickly as you can five times, without stopping in between. After standing up each time, sit down and then stand up again. Keep your arms folded across your chest. Please watch while I demonstrate. I'll be timing you with a stopwatch. Are you ready? Begin

Grading: Begin stop watch when subject begins to stand up. Count aloud each time subject arises. Stop the stopwatch when subject has straightened up completely for the fifth time. Also stop if the subject uses arms, or after 1 minute, if subject has not completed rises, and if concerned about the subject's safety.. Record the number of seconds and the presence of imbalance.. Then complete ordinal scoring.

Time: _____ sec (if five stands are completed)

Number of Stands Completed: 1 2 3 4 5

Chair Stand Ordinal Score: _____

0 = unable

1 = > 16.7 sec

2 = 16.6-13.7 sec

3 = 13.6-11.2 sec

4 = < 11.1 sec

2. Balance Testing

Begin with a semitandem stand (heel of one foot placed by the big toe of the other foot). Individuals unable to hold this position should try the side-by-side position. Those able to stand in the semitandem position should be tested in the full tandem position. Once you have completed time measures, complete ordinal scoring.

a. Semitandem Stand

Instructions: Now I want you to try to stand with the side of the heel of one foot touching the big toe of the other foot for about 10 seconds. You may put either foot in front, whichever is more comfortable for you. Please watch while I demonstrate.

Grading: Stand next to the participant to help him or her into semitandem position. Allow participant to hold onto your arms to get balance. Begin timing when participant has the feet in

position and lets go.

Circle one number

- 2. Held for 10 sec
- 1. Held for less than 10 sec; number of seconds held _____
- 0. Not attempted

b. Side-by-Side stand

Instructions: I want you to try to stand with your feet together, side by side, for about 10 sec. Please watch while I demonstrate. You may use your arms, bend your knees, or move your body to maintain your balance, but try not to move your feet. Try to hold this position until I tell you to stop.

Grading: Stand next to the participant to help him or her into the side-by-side position. Allow participant to hold onto your arms to get balance. Begin timing when participant has feet together and lets go.

Grading

- 2. Held of 10 sec
- 1. Held for less than 10 sec; number of seconds held _____
- 0. Not attempted

c. Tandem Stand

Instructions: Now I want you to try to stand with the heel of one foot in front of and touching the toes of the other foot for 10 sec. You may put either foot in front, whichever is more comfortable for you. Please watch while I demonstrate.

Grading: Stand next to the participant to help him or her into the side-by-side position. Allow participant to hold onto your arms to get balance. Begin timing when participant has feet together and lets go.

Grading

- 2. Held of 10 sec
- 1. Held for less than 10 sec; number of seconds held _____
- 0. Not attempted

Balance Ordinal Score: _____

- 0 = side by side 0-9 sec or unable
- 1 = side by side 10, <10 sec semitandem

- 2 = semitandem 10 sec, tandem 0-2 sec
- 3 = semitandem 10 sec, tandem 3-9 sec
- 4 = tandem 10 sec

3. 8' Walk (2.44 meters)

Instructions: This is our walking course. If you use a cane or other walking aid when walking outside your home, please use it for this test. I want you to walk at your usual pace to the other end of this course (a distance of 8'). Walk all the way past the other end of the tape before you stop. I will walk with you. Are you ready?

Grading: Press the start button to start the stopwatch as the participant begins walking. Measure the time take to walk 8'. Then complete ordinal scoring.

Time: _____ sec

Gait Ordinal Score: _____

- 0 = could not do
- 1 = >5.7 sec (<0.43 m/sec)
- 2 = 4.1-6.5 sec (0.44-0.60 m/sec)
- 3 = 3.2-4.0 (0.61-0.77 m/sec)
- 4 = <3.1 sec (>0.78 m/sec)

Summary Ordinal Score: _____

Range: 0 (worst performance) to 12 (best performance). Shown to have predictive validity showing a gradient of risk for mortality, nursing home admission, and disability.

Source:

Guralnik JM, Simonsick EM, Ferrucci L, Glynn RJ, Berkman LF, Blazer DG, Scherr PA, Wallace RB. A short physical performance battery assessing lower extremity function: association with self-reported disability and prediction of mortality and nursing home admission. *J Gerontol Med Sci* 1994; 49(2):M85-M94

Annex C Hearing Handicap Inventory for the Elderly-Screening (HHIE-S)

Box 1. Questions From Hearing Handicap Inventory for the Elderly-Screening Version (HHIE-S)*

1. Does a hearing problem cause you to feel embarrassed when meeting new people?
2. Does a hearing problem cause you to feel frustrated when talking to members of your family?
3. Do you have difficulty hearing when someone speaks in a whisper?
4. Do you feel handicapped by a hearing problem?
5. Does a hearing problem cause you difficulty when visiting friends, relatives, or neighbors?
6. Does a hearing problem cause you to attend religious services less often than you would like?
7. Does a hearing problem cause you to have arguments with family members?
8. Does a hearing problem cause you difficulty when listening to TV or radio?
9. Do you feel that any difficulty with your hearing limits or hampers your personal or social life?
10. Does a hearing problem cause you difficulty when in a restaurant with relatives or friends?

*The HHIE-S scores are yes, 4 points; sometimes, 2 points; or no, 0 points, to each question about a particular handicap. Scores range from 0 (no handicap) to 40 (maximum handicap). Adapted with permission.^{36,37}

Source:

Weinstein BE. Validity of a screening protocol for identifying elderly people with hearing problems. *ASHA*. 1986; 28:41-45.

Annex D Oral Health Assessment Tool (OHAT)

Oral Health Assessment Tool for dental screening (modified from Kayser-Jones et al. (1995) by Chalmers (2009))

Resident: _____	Room: _____	Study ID _____	Baseline / 3-mths / 6-mths <i>(please circle)</i>
			Completed by: _____ Date: ____/____/____
Category	Scores <i>(* If score 1 or 2 for any category please arrange for a dentist to assess the resident)</i>		Category scores
	0 = healthy	1 = changes *	2 = unhealthy *
Lips	smooth, pink, moist roughness, pink,	dry, chapped, or red at corners	swelling or lump, white/red/ulcerated patch; bleeding/ulcerated at corners
Tongue	normal, moist roughness, pink,	patchy, fissured, red, coated	patch that is red &/or white, ulcerated, swollen
Gums and tissues	pink, moist, smooth, no bleeding	dry, shiny, rough, red, swollen, one ulcer/ sore spot under dentures	swollen, bleeding, ulcers, white/red patches, generalised redness under dentures
Saliva	moist tissues, watery and free flowing saliva	dry, sticky tissues, little saliva present, resident thinks they have a dry mouth	tissues parched and red, very little/no saliva present, saliva is thick, resident thinks they have a dry mouth
Natural teeth	no decayed or broken teeth/roots	1-3 decayed or broken teeth/roots	4 + decayed or broken teeth/roots, or less than 4 teeth
Dentures	no broken areas or teeth, dentures regularly worn, and fitted	1 broken area/ tooth or dentures only worn for 1-2 hrs daily, or dentures not fitted	more than 1 broken areatooth, denture missing or not worn, needs denture adhesive, or not fitted
Oral cleanliness	clean and no food particles or tartar in mouth or on dentures	food particles/ tartar/ plaque in 1- 2 areas of the mouth or on small area of dentures	food particles/tartar/plaque in most areas of the mouth or on most of dentures
Dental pain	no behavioural, verbal, or physical signs of dental pain	are verbal &/or behavioural signs of pain such as pulling at face, chewing lips, not eating, aggression	are physical pain signs (swelling of cheek or gum, broken teeth, ulcers), as well as verbal &/or behavioural signs (pulling at face, not eating, aggression)
Please tick this box if the resident was referred to a dentist after screening <input type="checkbox"/>			TOTAL SCORE _____/16

Source:

Chalmers JM, Spencer AJ, Carter KD, King PL & Wright C 2009. Caring for oral health in Australian residential care. Dental statistics and research series no. 48. Cat. no. DEN 193. Canberra: AIHW.

Annex E International Consultation on Incontinence Questionnaire Urinary Incontinence – Short Form (ICIQ-UI SF)

Many people leak urine some of the time. We are trying to find out how many people leak urine, and how much this bothers them. We would be grateful if you could answer the following questions, thinking about how you have been, on average, over the PAST FOUR WEEKS.

1 Please write in your date of birth:

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
DAY		MONTH		YEAR	

2 Are you (tick one):

Female Male

3 How often do you leak urine? (Tick one box)

never	<input type="checkbox"/>	0
about once a week or less often	<input type="checkbox"/>	1
two or three times a week	<input type="checkbox"/>	2
about once a day	<input type="checkbox"/>	3
several times a day	<input type="checkbox"/>	4
all the time	<input type="checkbox"/>	5

4 We would like to know how much urine you think leaks.

How much urine do you usually leak (whether you wear protection or not)?
(Tick one box)

none	<input type="checkbox"/>	0
a small amount	<input type="checkbox"/>	2
a moderate amount	<input type="checkbox"/>	4
a large amount	<input type="checkbox"/>	6

5 Overall, how much does leaking urine interfere with your everyday life?

Please ring a number between 0 (not at all) and 10 (a great deal)

0	1	2	3	4	5	6	7	8	9	10
not at all										a great deal

ICIQ score: sum scores 3+4+5

6 When does urine leak? (Please tick all that apply to you)

never – urine does not leak	<input type="checkbox"/>
leaks before you can get to the toilet	<input type="checkbox"/>
leaks when you cough or sneeze	<input type="checkbox"/>
leaks when you are asleep	<input type="checkbox"/>
leaks when you are physically active/exercising	<input type="checkbox"/>
leaks when you have finished urinating and are dressed	<input type="checkbox"/>
leaks for no obvious reason	<input type="checkbox"/>
leaks all the time	<input type="checkbox"/>

Thank you very much for answering these questions.

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Annex F 15-item Geriatric Depression Scale (GDS-15)

Please choose the best answer for how you felt over the past week

Date: _____

No.	Question	YES	NO
1	Are you basically satisfied with your life?		
2	Have you dropped many of your activities and interests?		
3	Do you feel that your life is empty?		
4	Do you often get bored?		
5	Are you in good spirits most of the time?		
6	Are you afraid that something bad is going to happen to you?		
7	Do you feel happy most of the time?		
8	Do you often feel helpless?		
9	Do you prefer to stay at home, rather than going out and doing new things?		
10	Do you feel you have more problems with memory than most?		
11	Do you think it is wonderful to be alive?		
12	Do you feel pretty worthless the way you are now?		
13	Do you feel full of energy?		
14	Do you feel that your situation is hopeless?		
15	Do you think that most people are better off than you are?		
Calculate the score by adding up the ticks in the shaded boxes		TOTAL	

Source:

Yesavage J.A., Brink T.L., Rose T.L. et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J. Psychiatr. Res.* 1983; 17: 37-49

Jerome A. Yesavage, Geriatric Depression Scale. *Psychopharmacology Bulletin*, 1988; 24 (4): 709-711

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Self-assessment (MCQs)

After reading the Clinical Practice Guidelines, you can claim one CME point under Category 3A (Self-Study) of the SMC Online CME System. Alternatively, you can claim one CME point under Category 3B (Distance Learning - Verifiable Self Assessment) if you answer at least 60% of the following MCQs correctly. You can submit your answers through the SMJ website at this link: <http://smj.sma.org.sg/cme/smj/index.html> (the link will only be available once the June 2010 issue of the SMJ becomes available). The answers will be published in the SMJ August 2010 issue and at the MOH webpage for these guidelines after the period for submitting the answers is over.

Instruction: Choose “True” or “False.”

- | | True | False |
|---|--------------------------|--------------------------|
| 1. Community-dwelling older adults 60 years and above should be assessed for: | | |
| A) Visual impairment | <input type="checkbox"/> | <input type="checkbox"/> |
| B) Hearing impairment | <input type="checkbox"/> | <input type="checkbox"/> |
| C) Dementia | <input type="checkbox"/> | <input type="checkbox"/> |
| D) Urinary incontinence | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Older adults with the following results should be referred to an ophthalmologist or optometrist for follow-up consultation | | |
| A) Visual acuity 6/12 | <input type="checkbox"/> | <input type="checkbox"/> |
| B) Visual acuity worse than 6/12 | <input type="checkbox"/> | <input type="checkbox"/> |
| C) Visual acuity 6/6 | <input type="checkbox"/> | <input type="checkbox"/> |
| D) Visual acuity worse than 6/9 | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. What is the frequency for hearing assessment for an older adult with a “normal” outcome? | | |
| A) Yearly | <input type="checkbox"/> | <input type="checkbox"/> |
| B) Every 2 years | <input type="checkbox"/> | <input type="checkbox"/> |
| C) Every 3 years | <input type="checkbox"/> | <input type="checkbox"/> |
| D) Every 4 years | <input type="checkbox"/> | <input type="checkbox"/> |

- | | True | False |
|---|--------------------------|--------------------------|
| 4. Concerning the screening of older adults for depression: | | |
| A) Screening for depression is recommended | <input type="checkbox"/> | <input type="checkbox"/> |
| B) GDS-15 has been validated in Singapore | <input type="checkbox"/> | <input type="checkbox"/> |
| C) GDS-15 score of 5 or more should prompt referral to primary care physicians or mental health professionals | <input type="checkbox"/> | <input type="checkbox"/> |
| D) GDS-15 can only be self-administrated | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. The following tools may be used to screen for functional disability in the older adults: | | |
| A) Short Physical Performance Battery | <input type="checkbox"/> | <input type="checkbox"/> |
| B) Berg's Balance Scale | <input type="checkbox"/> | <input type="checkbox"/> |
| C) Abbreviated comprehensive geriatric assessment | <input type="checkbox"/> | <input type="checkbox"/> |
| D) Vulnerable Elderly Survey-13 | <input type="checkbox"/> | <input type="checkbox"/> |

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