Nutrition for Seniors Eat Smart Live Smart (v6)

6.1 Nutritional assessment

營養評估

Nutritional assessment provides essential information which is relevant for planning nutritional intervention.

營養評估提供與設計營養措施相關的基本訊息。

The data collected during nutritional assessment are often similar to the data collected during the screening process, but more in-depth.

營養評估收集的數據與篩選過程中收集的數據相似,但更深入。

Nutritional assessment can be done using the ABCDE methods, which refer to Anthropometric, Biochemical, Clinical, Dietary and Environmental.

營養評估可以使用 ABCDE 方法進行,參考如下,A-人體測量,B-生化評估,C-臨床, D-飲食,E-環境。

Anthropometric assessment 人體測量評估

Common anthropometric measurements include weight, height, BMI and waist circumference.

人體測量評估包括體重,身高,身體質量指數及腰圍。

Body weight 體重

Body weight is a simple measure of total body mass, which provides insights into the individual's nutritional status when compared with previous weight, the usual weight or ideal weight which is based on the weight of healthy populations.

體重是量度身體重量,與以前的體重(正常體重)或理想體重(基于健康人群的體重) 相比較,從而洞悉個人的營養狀況。

Percentage weight change = (current weight – previous weight)/current weight x 100).

體重變化百分比=(當前體重 - 以前體重)除以當前體重乘以 100)

Unintentional weight loss of >5% of usual body weight in one month or >10% over a period of six months or longer is considered as severe and requires attention.

在無刻意減重下,一個月內較正常體重下降超過 5%,或六個月或更長時間體重下降超 過 10%被視為嚴重,須要注意。

The clinical consequences of unintentional weight loss include functional decline, increased use of acute and long-term care facilities and mortality.

非自主體重減輕,臨床後果包括機能下降,增加急症住院或長期護理之使用率,及死亡 率。

Body weight measurement should ideally be standardized to obtain a reliable trend in weight such as measured at the same time of the day and with the same amount of light clothing.

理想情況下，量度體重要標準化，以獲取可靠的體重趨勢，例如每天在同一時間，穿輕便等重的衣服。

Other subjective assessment of visual signs such as loose jewelry, baggy clothes, extra notch in belt, and prominent bony features may also indicate recent weight loss.

其他目測的主觀評估，如首飾呈現寬鬆，衣服寬闊，皮帶扣孔多虛位，及明顯骨骼突出，皆可表明近期體重減輕。

6.2 **Body height 身高**

Body height measurement is required to determine BMI and is usually measured using a stadiometer.

身高是用來計算身體質量指數 BMI，通常使用測距儀進行量度。

In case the older adults are unable to stand upright, height can be measured using indirect methods such as measuring knee height and half arm-span.

如果長者不能站立，則可使用間接方法，如膝蓋高度和半臂的跨度。

For older adults with knee flexion deformity or ankle deformity that make knee height measurement difficult, measuring half arm-span is an alternative to indirectly measure height.

膝蓋屈曲畸形或腳踝畸形的長者，測量膝蓋高度變得困難，另一方法是量度半臂跨度。

Ask the subject to place the nondominant arm in a horizontal position and in line with shoulders.

將量度對象的非優勢臂放水平位置與肩膀成一直線。

After that, measure the distance from the midline at the sternal notch to the tip of the middle finger using a tape measure (Figure 1).

之後用軟尺量度從胸骨至中指尖的距離 (圖一) 。

Height is then calculated by doubling the half arm-span.
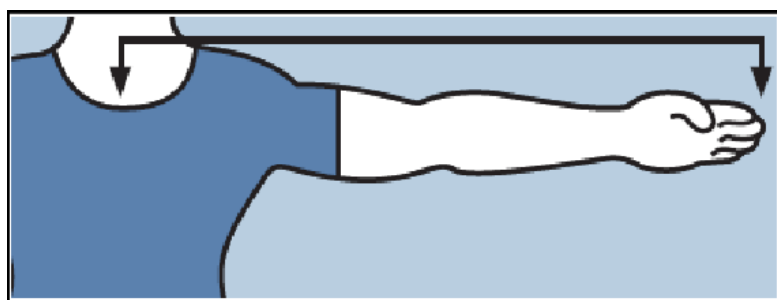
將量得長度乘 2 來計算身高。

Figure 1. Measurement of half arm-span

圖一. 胸骨至中指尖的距離

6.3 **Body mass index　身體質量指數**

BMI can be computed from body weight in kilograms divided by height in meters squared.
身體質量指數 BMI 可以通過以千克為單位的體重除以平方米為單位的身高來計算。

According to the Asian-Pacific cut-off points for adults, BMI values can be categorized into four groups: <18.5 kg/m² underweight; 18.5-22.9 kg/m² normal weight, 23-24.9 kg/m² overweight and ≥25 kg/m² obesity.
根據亞太區成人的分界線，BMI 值可分為四類：少於 18.5 kg/m² 為體重不足；18.5-22.9 kg/m² 為正常體重；23-24.9 kg/m² 為超重；和≥25 kg/m² 為肥胖。

However, emerging evidence shows that the cut-offs may not be appropriate in increasing age.
然而，新興的證據表示隨著年齡增長該分界線可能不適用。
BMI values associated with optimal health outcomes in older adults may differ from the general adult population.
長者在最佳健康時的身體質量指數與一般成年人有異。

Currently, there is no concrete guideline in classifying BMI in older adults.
目前尚無針對長者 BMI 分類的具體指南。

Nonetheless, having some extra weight seems to be protective in older adults.
盡管如此，增加一些體重似乎對長者具有保護作用。

It has been proposed that in older adults the cut-off for underweight, overweight and obese could increase to 23 kg/m², 25 kg/m² and 30 kg/m², respectively.
已經提出，長者體重過輕、超重和肥胖的分界線可以依次增加到 23 kg/m², 25 kg/m² 和 30 kg/m²。

Since intentional weight loss may be accompanied by muscle and bone loss, for overweight and obese older adults, the need for weight loss should be carefully considered.
由于刻意減體重可能伴隨著肌肉和骨骼流失，因此超重和肥胖的長者，應該仔細考慮減體重的必要性。

It should be noted that BMI may be biased by fluid overload and oedemas.
應該注意的是 BMI 可能因體液過多和水腫而產生偏差。

Additionally, BMI does not describe body composition such as fat mass and muscle mass, which may change due to disease, age, physical activity, and diet.
此外，BMI 並未描述人體成份，例如脂肪、肌肉、亦可能由於疾病，年齡，體能活動和飲食而變化。

For instance, an individual may have higher body fat than another individual with the same BMI.

例如，一個人的脂肪可能較另一相同 BMI 的人為高。

To assess body composition, dual-energy x-ray absorptiometry (DXA) and bioelectrical impedance analysis (BIA) are commonly used in clinical practice.

為了測量身體成份，臨床上常用雙能量 X 射線吸收儀（DXA）及生物電阻抗分析法（BIA）。

6.4 Waist circumference 腰圍

Having excess body fat around abdomen (central obesity) increases the risk for cardiovascular disease, diabetes and all-cause mortality.

腹部脂肪過多（中央肥胖）會增加患心血管疾病、糖尿病的風險，所有這些都會致命。

Waist circumference is a useful estimate of central obesity.

腰圍是最佳估計中央肥胖方法。

Similar to BMI, there is no consensus guideline in classifying waist circumference in older adults.

類似 BMI，長者腰圍分類中沒有共識性指南。

Therefore, the recommended sex-specific cut-off points for Asian adults of 90 cm or 36 inches for

因此，亞洲長者通常以 90 厘米或 36 吋（男性）和 80 厘米或 32 吋（女性）為分界線。

men and 80 cm or 32 inches for women are generally used in older adults in usual practice. Waist circumference should be measured directly against the skin and at the halfway between the lowest rib and the top of the hipbone roughly in line with the belly button (Figure 2).

腰圍量度法，以肋骨最低位和髖骨頂部的中間位置，大致在肚臍位置取平衡線（圖二）。

Ensure the subject breathe out normally and the tape is snug without compressing the skin.
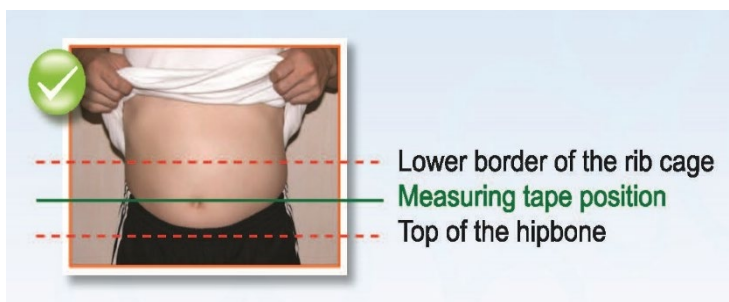
確保量度對象正常呼吸，軟尺緊貼而不會緊箍皮膚。

Figure 2. Waist circumference

measurement

圖二. 腰圍量度法

6.5 Biochemical assessment 生化評估

Biochemical assessment involves laboratory tests such as blood and urine tests.
生化評估涉及實驗室測試，如血液和尿液測試。

These laboratory tests may indicate the abnormalities in metabolism and nutrient levels inside the body, before the clinical symptoms are presented on the outside.
這些實驗室測試，可在出現臨床症狀前驗出體內代謝和營養水平異常。

Commonly used measurement that provide nutritional information includes haemoglobin to assess for iron status, albumin to assess for inflammation or infection, C-reactive protein to assess for inflammation, glycated haemoglobin as indicator of average blood sugar level over a period of time, serum lipids to assess risk of cardiovascular disease, sodium as indicator of hydration status and kidney function, urea to assess for kidney function, vitamin B-12 and vitamin D.
測量營養訊息常用方法，包括血色素評估鐵質狀態，白蛋白評估炎症或感染，C 反應蛋白評估炎症，糖化血色素測量一段時間內平均血糖水平，血脂評估心血管疾病風險，鈉作為身體水份狀態和腎功能指標，尿素評估腎功能，維生素 B12 和維生素 D。

The blood test results may be affected by nutrients, medication or illness, and should be interpreted in conjunction with clinical assessment.
血液測試結果可能受營養、藥物或疾病影響，應結合臨床評估加以解釋。

6.6 Clinical assessment 臨床評估
Clinical assessments include (1) assessment of an individual's clinical history, (2) physical examination, (3) physical function and (4) medications.
臨床評估包括（1）評估個人臨床病史，（2）體格檢查，（3）身體功能，（4）藥物

(1) Clinical history: a subjective and retrospective description of an individual's condition.
臨床病史：個人病情主觀性和回顧性描述。
This include previous medical condition of chronic or acute disease, symptoms of psychiatric illness, presence of conditions that may lead to metabolic stress such as infection, and actual functional capacity and physiological changes such as loss of appetite, inability to chew or swallow that may influence nutritional requirements or body composition.
包括過去慢性或急性病的醫療狀況，精神病的症狀，可能導致新陳代謝壓力例如感染，及身體功能和生理變化例如食慾不振，無法咀嚼或吞咽，可能影響營養需求或身體成份。

(2)   Physical examination: an objective method to detect clinical signs and symptoms of nutritional deficiencies such as night vision impairment, unhealed wounds, loss of body fat and muscle mass, oedema, and assess the tolerance of nutritional support such as diarrhoea.

體格檢查：一種客觀方法用於檢測營養不足的臨床症狀，例如夜視功能受損，傷口未能癒合，脂肪和肌肉流失，水腫，並評估支持營養的耐受性，例如腹瀉，

For examples, loss of body fat is indicated when a hollow look or dark circles under the eyes, obvious ribs or prominent iliac crest were observed.

例如眼框凹陷或黑眼圈，明顯肋骨突出，表明身體脂肪減少。

For muscle wasting, indications include depression of temple, prominent bones of clavicle, ribs or shoulder.

太陽穴凹陷，鎖骨或肩膀突出表示肌肉萎縮。

Oedema can be evaluated for pitting, tenderness, and skin changes.

按壓後皮膚有凹痕，壓痛，皮膚變色可以評估為水腫。

(3)   Physical function: measurements of physical function is increasingly important in nutritional assessment.

身體機能：測量身體機能在營養評估中越加重要。

Muscle function tests are very sensitive to nutritional deficiencies.

肌肉功能測試對測試營養缺乏非常敏感。

Therefore, changes can be noted much earlier than through body composition measurement.

因此比較通過身體成份測量更早察覺到變化。

Handgrip strength measurement and timed walk test can be quickly administered to provide information about muscle function in the clinical setting.

握力測試及定時步行測試，可在臨床上提供肌肉功能的訊息。

(4)   Medication: prescribed medications and nutritional supplements of an individual should be examined to assess potential drug-nutrient interactions and nutrition-related side effects such as gastrointestinal discomfort.

藥物：個人處方藥物及營養補品時應評估藥物營養的潛在相互作用和與營養相關的副作用，例如腸胃不適。

6.7 Dietary assessment 飲食評估

Assessing food and fluid intake is an essential part of nutritional assessment.
食物和液體的攝入量是營養評估的重要部份。

It provides information on the quantity and quality of an individual's diet.
它提供個人飲食的數量和質量訊息。

A balanced diet should include an appropriate proportions of different food groups.
均衡飲食應包括適當比例的不同食物類別。

There are several methods to assess food intake, such as diet history, 3-day food record, 24-hour food recall, food frequency questionnaires and direct observation.
有幾種評估食物攝入量的方法，例如飲食史、3 天食物記錄、24 小時進食回憶，食物頻率問卷及直接觀察。

Each dietary assessment method has its own strengths and limitations.
每種飲食評估方法都有其優勢與局限性。

For example, some methods are subjected to recall bias as of 24-hour food recall, while others are not such as food record, direct observation.
例如，24 小時進食回憶，會產生回憶偏差，而其他方法如食物記錄，直接觀察則沒有。

On the other hand, 24-hour recall pose less burden to the respondents, while diet record pose relatively large respondent burden.
另一方面，24 小時回憶對受訪者的負擔較少，而飲食記錄對受訪者的負擔相對較大。

The results of dietary assessment are compared with recommended intake or dietary recommendations such as Healthy Eating Food Pyramid, and the Chinese Dietary Reference Intake.
將飲食評估結果與推薦攝入量或飲食建議進行比較，例如健康飲食金字塔和中國飲食攝入量參考等。

It should be noted that these are general recommendations for older adults.
應當指出，這些是針對長者的一般建議。

Those with chronic diseases and specific nutritional needs may need to consult physicians and dietitians for individualised dietary recommendations.
患有慢性疾病和特殊營養需求的人，可能需要咨詢醫生和營養師以獲取個別性建議。

6.8 Environmental assessment 環境評估

Environmental assessment includes details about social factors that may affect the nutritional status of the older adults.
環境評估包括可能影響長者營養狀況的社會因素。

For example, living conditions, education level, the ability to purchase, transport and prepare food, financial resources and social support are common social factors.
例如生活條件，教育水平，購買，運輸和準備食物的能力，經濟資源和社會支援是常見的社會因素。

Assessing these social factors helps to identify the strategy such as referral to meal delivery service or community care service, that may improve the nutritional status of the individuals.
評估這些社會因素有助確定可能改善個人的營養狀況策略，如轉介送餐服務或社區護理服務等。