Chapter 4

INTAKE: ANALYSIS OF THE DIET
Objectives

- Define optimal nutrition status
- Explain the reasons and repercussions of being overweight or underweight
- Describe the difference between reliability and validity
- Discuss the difference between screening and assessment
- Explain the components of a useful nutrition screening tool
- Explain the goals of a sound nutrition assessment
- Describe how and why you would take a patient’s history
- Utilize a 3 day diet record, 24 h recall
Intake: Analysis of the diet - The Nutrition Care Process (NCP)
Nutrition status: The degree to which the nutrient needs of an individual are met.

Optimal status: All needs are met and the patient can grow, develop, complete activities of daily living and maintains a strong immune system: a healthy person.
Intake: Analysis of the diet

- Appropriate assessment of intake can detect nutritional deficiencies before serious health consequences manifest.
- Assessments are different for different patient populations e.g. overweight, trauma, cancer, pregnancy, children.
- Once you’ve gathered all your data you can develop a plan.
• Many of the leading causes of death and disability in the US can be attributed to diet

• In 2010, a total of 2,468,435 deaths occurred in the United States. The first two leading causes of death, heart disease (597,689 deaths) and cancer (574,743), accounted for nearly 50% of all deaths. In contrast, the other leading causes accounted for much smaller percentages, ranging from 5.6% (138,080 deaths) for the third leading cause of death, chronic lower respiratory disease, to 1.6% (38,364) for suicide, the 10th leading cause of death. All other causes combined accounted for 25% of the deaths.

QuickStats: Number of Deaths from 10 Leading Causes – National Vital Statistics System, United States, 2010

Weekly
March 1, 2013 / 62(08);155

- Heart disease
- Cancer
- Chronic lower respiratory diseases
- Stroke
- Unintentional injuries
- Alzheimer’s disease
- Diabetes
- Nephritis, nephrotic syndrome, and nephrosis
- Influenza and pneumonia
- Suicide

Causes of death

<table>
<thead>
<tr>
<th>Causes of death</th>
<th>No. of deaths (in thousands)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart disease</td>
<td>600</td>
</tr>
<tr>
<td>Cancer</td>
<td>500</td>
</tr>
<tr>
<td>Chronic lower respiratory diseases</td>
<td>400</td>
</tr>
<tr>
<td>Stroke</td>
<td>300</td>
</tr>
<tr>
<td>Unintentional injuries</td>
<td>200</td>
</tr>
<tr>
<td>Alzheimer’s disease</td>
<td>100</td>
</tr>
<tr>
<td>Diabetes</td>
<td>100</td>
</tr>
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<td>Nephritis, nephrotic syndrome, and nephrosis</td>
<td>100</td>
</tr>
<tr>
<td>Influenza and pneumonia</td>
<td>100</td>
</tr>
<tr>
<td>Suicide</td>
<td>10</td>
</tr>
<tr>
<td>Undernutrition</td>
<td>Overnutrition</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>• Inadequate ingestion (intentional or unintentional)</td>
<td>• Obesity, diabetes, atherosclerotic heart disease, HTN, metabolic syndrome</td>
</tr>
<tr>
<td>• Impaired digestion and/or absorption</td>
<td>• Obesity is associated with low grade inflammation</td>
</tr>
<tr>
<td>• Results in: retarded growth (children): delayed wound healing, weakened immunity, chronic disease development</td>
<td>• Overweight and undernourished</td>
</tr>
<tr>
<td>• 25-50% of hospital patients exhibit some degree of malnutrition- PEM</td>
<td></td>
</tr>
</tbody>
</table>
Intake: Analysis of the diet - Screening

- Screening precedes the NCP
- The purpose of the screening is to quickly identify individuals who are at nutritional risk; referral to RD
- Screening tool should be simple and easy to complete
- Screening tool should be reliable (consistent) and valid (accurate)
The most common screening tools include:

- Hx of wt loss (amount lost and timeframe)
- Need for support
- Current intake
- Skin breakdown
- Chronic use of modified diets
- Goal: to identify individuals who are at nutritional risk or likely to soon be at risk.
Intake: Analysis of the diet - Screening

MUST: Malnutrition Universal Screening Tool

<table>
<thead>
<tr>
<th>BMI Score</th>
<th>Weight loss score</th>
<th>Acute disease effect score</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &gt; 20.0 (&gt;30 obese*) = 0</td>
<td>Wt loss &lt;5% = 0</td>
<td>Add a score of 2 if there has been or is likely to be no nutritional intake for &gt;5d</td>
</tr>
<tr>
<td>BMI 18.5-20.0 = 1</td>
<td>Wt loss 5%-10% = 1</td>
<td>or is likely to be no nutritional intake for &gt;5d</td>
</tr>
<tr>
<td>BMI &lt; 18.5 = 2</td>
<td>Wt loss &gt;10% = 2</td>
<td></td>
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</table>

Overall risk of malnutrition and management guidelines

0
Low risk
Routine clinical care
- Repeat screening
  Hospital: weekly
  Care homes: monthly
  Community: annually for special groups (e.g., those >75 years old)

1
Medium risk
Observe
- Document dietary intake for 3 d if subject in hospital or care home
- If improved or adequate intake, little clinical concern; if no improvement, clinical concern; follow local policy
- Repeat screening
  Hospital: weekly
  Care home: at least monthly
  Community: at least every 2-3 months

≥2
High risk
Treat†
- Refer to diettian, nutrition support team or implement local policy
- Improve and increase overall nutritional intake
- Monitor and review care plan
  Hospital: weekly
  Care home: monthly

*Courtesy Professor Malios Elia, Editor, BAPEN, 2003 ISBN 1 899467 70X. Copies of the full report are available from the BAPEN Office, Secure Hold Business Centre, Studley Road, Redditch, Worcs B98 7LG Tel: 01527 457850.
Intake: Analysis of the diet- Screening

Geriatric Nutritional Risk Index (GNRI)

- Relies on serum albumin and weight change
- Ideal body weight is calculated using the Lorentz formula instead of UBW

Lorenz Formula for IBW
Female: IBW(kg) = H(cm) − 100 −([H(cm) - 150]/2)
Male: IBW(kg) = H(cm) − 100 −([H(cm) - 150]/4)

GNRI = ( (albumin(g/L) X 1.489) + (41.7 X measured weight/IBWLo)
Intake: Analysis of the diet- Assessment

- Comprehensive evaluation by an RD to define nutritional status using medical; social; nutritional; and medication histories, physical examination, anthropometric measurements, and laboratory data
- Gather data to make professional judgment about nutritional status
- First step in the Nutrition Care Process
Goals of Assessment

1. Identify individuals who require aggressive nutritional support
2. Restore or maintain nutritional wellness
3. Identify appropriate medical nutrition therapy
Intake: Analysis of the diet - Assessment Tools

Subjective Global Assessment

SUBJECTIVE GLOBAL ASSESSMENT OF NUTRITIONAL STATUS
select appropriate category with a checkmark, or enter numerical value

A. HISTORY
1. Weight change: Normal weight = # ________ kg IBW = # ________ kg
   Overall change in past 6 months = # ________ kg loss/gain Current weight = # ________ kg
   % change in past 6 months = ________ % loss/gain %IBW = ________ %
2. Dietary intake change (relative to normal)
   ________ No change ________ ↑'d intake ________ ↓'d intake
   Duration of change = # ________ weeks
   If intake ↓'d: Type of change ________ Suboptimal solid diet ________ Full liquid diet
   ________ Hypocaloric liquids ________ Starvation
3. Gastrointestinal symptoms persisting for >2 weeks
   ________ None ________ Nausea ________ Vomiting ________ Diarrhea ________ Anorexia
4. Functional Capacity
   ________ No dysfunction (full capacity) ________ Dysfunction: duration = # ________ weeks
   Dysfunction: ________ Working suboptimally ________ Ambulatory ________ Bedridden
   Specific handicap(s):

5. Disease and its relation to nutritional requirements
   Primary diagnosis:

   Metabolic demand (stress) ________ None ________ Low ________ Moderate ________ High

B. PHYSICAL FINDINGS: 0 = normal 1+ = mild 2+ = moderate 3+ = severe
   ________ loss of subcutaneous fat (triceps, chest) ________ ankle edema ________ ascites
   ________ muscle wasting (quadriiceps, deltoids) ________ sacral edema

C. SUBJECTIVE GLOBAL ASSESSMENT RATING (select one)

A Nourished
B Moderately malnourished
C Severely malnourished
**Intake: Analysis of the diet - Assessment Tools**

### Mini Nutritional Assessment (MNA) - Short form

<table>
<thead>
<tr>
<th>Screening</th>
<th>Mini Nutritional Assessment (MNA) Short form</th>
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<tbody>
<tr>
<td>A. Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?</td>
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<td>B. Weight loss during the last 3 months</td>
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<td>C. Mobility</td>
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<tr>
<td>D. Has suffered psychological stress or acute disease in the past 3 months?</td>
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**Screening score**

- **12-14 points:** Normal nutritional status
- **0-11 points:** Malnourished

For more in-depth assessment, complete the full MNA which is available at [www.mna-sf.org](http://www.mna-sf.org)

**Permission by Nestlé Healthcare Nutrition.**

### Mini Nutritional Assessment (MNA) - Long form

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Histories: Information collected about an individual (or population) usually contains:

1. Health & Medical
2. Medication
3. Social
4. Dietary information
Health & Medical Hx:
- Chief complaint
- Present and past illness
- Current health
- Allergies
- Past or recent surgeries
- Family hx of disease
- Psychosocial information
- Review of health from patients perspective
Medication Hx:

- List of all medications
  - Prescription
  - OTC
  - Herbal

Drug nutrient interactions!
Intake: Analysis of the diet - Assessment: HX

Social Hx:
- Socioeconomic status
- Ability to buy food independently
- Living situation
- Physical or mental handicaps
- Smoking/illicit drug or EtOH use
- Cultural considerations
Intake: Analysis of the diet - Assessment: HX

Nutrition Hx:
- Ageusia: loss of taste
- Dysgeusia: diminished or distorted taste
- Anosmia: Loss of smell
- EtOH intake
- Dentures
- Fad diets (yo-yo)
- Dining away from home
- Religious/cultural influence
- Food allergies
- Ability to feed oneself
Intake: Analysis of the diet - Assessment: HX

Nutrition Hx (con’t):
Diet hx- the best way to get information of usual patterns

Dietary intake data can be obtained via:
- 24 h recall
- FFQ
- Food journal
24-hour recall

- Record the intake of all food and drink from waking the bed the day before.
- Recall of intake over a longer time period is problematic due to the limitations of memory.
- Traditionally the 24-hour recall is undertaken in chronological order of consumption.
- The multiple pass recall (MPR) is a staged approach to the dietary recall; a free and uninterrupted recall of intake, followed by detailed and probing questions about intake (including quantities consumed) and concluding with a review of everything that was previously recalled, allowing for the addition of any items not remembered.
- The interview can be carried out in person, by telephone or increasingly via the Internet.
- The interviewer must maintain a neutral expression/mannerisms throughout - no commenting on diet.
- Sundays are thought to provide the greatest variation in diet.
FFQ

- The Food-Frequency Questionnaire (FFQ) is a dietary assessment tool frequently used in large-scale nutritional epidemiology studies.
- The self-administered FFQ booklet asks participants to report the frequency of consumption and portion size of approximately 125 line items over a defined period of time (e.g. the last month; the last three months). Each line item is defined by a series of foods or beverages.

Food Journal

- Minimum: 1 day- ideal 3 days or longer and includes a weekend day
- Weight management tool: indefinite timeframe
- Record: date, time, food, portion, emotion
- Paper or electronic
- Good for becoming more aware