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Protocol for the Nutritional Management of Obesity, Diabetes and Hypertension in the Caribbean

Caribbean Food and Nutrition Institute
Jamaica

PAHO/WHO Office of Caribbean Program Coordination
Barbados

2004

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Preface

The Pan American Health Organization (PAHO), through the Caribbean Food and Nutrition Institute (CFNI) and the Caribbean Program Coordination, has been actively promoting good nutrition practices in the Caribbean Region. This commitment to encourage a healthy approach to eating has brought the recognition that, while a preventive approach to health care is key to maintaining health, proper management of diseases is an important aspect of the health care continuum.

Chronic non-communicable nutrition-related diseases are the main causes of disability, illness and death in the Caribbean. Their management needs to be given priority, even as the fight against communicable diseases continues. With the increasing cost of hospitalization, treating complications, loss of productive capacity and the impact on quality of life, more emphasis needs to be placed on the pivotal role of nutrition in the effective management of these diseases at the primary care level.

The nutritional management of obesity, diabetes and hypertension has been selected as a first step for which nutritional guidelines ought to be established for management in the primary care system, since success in the management of these diseases may well prevent the onset of other debilitating chronic diseases.

Nutritional management is a cost-effective approach to health care. Sensitive consideration must, therefore, be given to the role of nutrition in reducing costs, especially those associated with certain medications, morbidity, length of hospital stay and mortality. This can be achieved through adequate, practical and effective nutrition intervention based on scientific facts.

Throughout the Caribbean region there is limited availability of dietitians and nutritionists to provide the level of professional care needed. The protocol is designed to assist other members of the health care team to provide a standard level of basic nutritional care. Notwithstanding, this should not detract from the need to increase the number of nutrition professionals in the region.

The information provided in this document represents guidelines for standardizing nutritional care at the basic level. The correct use of the information contained in the document will require setting goals for individual clients, determining priorities and undertaking on-going monitoring to review and tailor these objectives to their health status.

While the protocol addresses the nutritional management of obesity, diabetes and hypertension at the primary care level, it provides basic principles and techniques that can be applied to other kinds of chronic diseases. Training in its use is an essential step in its implementation and it has been designed with both trainer and trainee in mind.

The protocol provides guidelines which may be used by health care professionals such as nurses, nutrition assistants, and dietetic assistants who are involved in offering nutritional care to clients at the primary care level. When implementing aspects of the protocol, it is advisable that whenever possible the involvement of the nutritionist/dietitian/doctor be sought as members of the management team. It is important to note that the document does not address dietary modifications relevant to persons who have complications of diabetes and hypertension. Such persons should be referred for specialist nutritional care.

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Introduction

Non-communicable diseases (NCDs) have gradually displaced communicable diseases as the main causes of mortality in the Caribbean. Nutrition-related chronic Diseases NCDs such as obesity, diabetes and hypertension are major contributors to disability, illness and death in the sub-region. Of concern is the fact that while the prevalence and mortality rates of these diseases are highest in the elderly, they are not restricted to any one age group. Hypertension and diabetes rank as the two leading chronic disorders among Caribbean populations and are also major risk factors for other diseases such as cerebrovascular disease (stroke) and coronary heart disease.

Interventions to control risk factors for these disorders and their complications include the adoption of healthy lifestyles, especially regular physical activity, avoidance of smoking and alcohol along with healthy food choices. An intersectoral approach to facilitating the behaviour change needed is a key strategy in NCD prevention and control. Interventions in various settings such as workplaces, schools, clinics and hospitals, are crucial for success.

The critical role of nutrition in the prevention of disease, health promotion and chronic disease management is undisputed. Nutrition intervention is a low cost and effective way to promote health – everybody eats – and with guidance and attention to what they eat, people can improve their nutrition and health status. Maintaining optimal nutritional status at any age is important and can contribute to preventing some chronic diseases, less frequent episodes of illness, shorter and less expensive hospital stays, fewer complications and a higher survival rate.

The burden of these diseases (obesity, diabetes and hypertension) on health is astronomical. The costs in loss of productive time, lost opportunities, decreased quality of life and money spent on health care are significant. Much of the burden, however, can be prevented. The cost of treating one patient in hospital per admission could well cover the cost of treating several individuals in the primary care setting if effective preventive management strategies were employed. Effective management strategies include establishing programmes aimed at preventing, as well as managing, the targeted nutrition-related chronic diseases at the primary care level.

There is much evidence to suggest that effective management is very important for persons already diagnosed with these NCDs:

- The International Obesity Task Force (IOTF) has stated that weight loss in over-weight and obese individuals improves physical, metabolic and endocrinological complications.

- The 1999 WHO/ISH[1] Guidelines have confirmed positive and continuous relationship between blood pressure levels and the risk of major coronary heart disease events, including death and non-fatal myocardial infarction.

- The Diabetes Control and Complications Trial (DCCT) has stated conclusively that the risk of development and progression of retinopathy, nephropathy and neuropathy is reduced 50-75% by intensive treatment regimens when compared with conventional treatment regimens in patients with type 1 diabetes.

- The United Kingdom Prospective Diabetes Study (UKPDS) has also demon-strated conclusively that improved blood glucose control in patients with type 2 diabetes reduces the risk of developing retinopathy and nephropathy and possibly reduces neuropathy. The UKPDS also showed that aggressive control of blood pressure significantly reduced strokes, diabetes-related deaths, heart failure, micro-vascular complications and visual loss.

This Nutrition Management Protocol is intended to serve as a resource document for nutrition and dietetic personnel and other health professionals involved in the management of clients with the selected chronic diseases – obesity, diabetes and hypertension – in the primary health care setting. It is not intended to be a comprehensive technical and clinical care document and individual clients, who will differ in their personal, medical, social, ethnic and cultural characteristics, may require referral for more specialized care.

The Protocol recognizes that there is limited availability of specialized nutrition and dietetic professionals in the Caribbean setting. However, it is not a replacement for the specialized professional services of nutritionists and dietitians. The Protocol should provide a framework for Nutritional Care which will guide standard care using a set of core Nutritional Care parameters. It should serve as a practical

[1] World Health Organization/International Society of Hypertension

management tool, with timely referral of the client to the appropriate health professional for care beyond the knowledge, training and skills of particular members of the multi-disciplinary health care team.

The document provides:

- Goal and objectives of the protocol
- An overview of the targeted chronic diseases: obesity, diabetes and hypertension
- General nutrition management process
- Nutritional management for the specified diseases
- Indicators for referral

It is anticipated that the Protocol will be reviewed and updated periodically as new scientific information is made available.

RISK FACTORS STRONGLY ASSOCIATED WITH OBESITY, DIABETES AND HYPERTENSION

Risk Factors*	**Obesity**	**Diabetes**	**Hypertension**
Excess energy intake	▲	▲	▲
Excessive alcohol intake			▲
High sodium intake			▲
Age		▲	▲
Stress			▲
Sedentary lifestyle	▲	▲	▲
Smoking			▲
Genetic factors	▲	▲	▲
Excess body weight	▲	▲	▲
Medical history		▲	▲

*Other risk factors may also be present but not as strong as the ones shown in the table

Goal of the Protocol

To facilitate standardized nutritional management of persons with selected nutrition-related chronic diseases (obesity, diabetes and hypertension) at the primary care level in the Caribbean.

Objectives

- To provide guidelines to health professionals at the primary care level for the nutritional management of obesity, diabetes and hypertension.

- To facilitate documentation of the nutritional management process, main-streaming it into the medical records.

- To provide a framework in which to set treatment goals for nutritional management of selected chronic diseases in the primary care setting.

- To define the nutrition referral process for the selected NCDs.

Overview of the Nutrition Management Process

While the indicators for success and the outcome will be different, the principles of nutritional management of persons with chronic diseases are the same as those for management of any business or establishment. The process of nutrition management includes:

Assessment – involves the gathering of information and analysis of data. This provides information (historical data) on the person before nutrition intervention begins.

Planning – involves the interpretation of findings from the assessment and translating these to achievement targets. This process outlines the strategies and activities to be used to achieve these targets and how success will be evaluated. Planning includes information for the education process.

Implementation – is the actual process through which the plan is put into action.

Coordination – involves communication as well as documentation. All aspects of Nutritional Care should be communicated to other health care team members to facilitate reinforcement of the nutrition strategies by other team members. Achieving desired health outcomes is dependent on integrating Nutritional Care with other aspects of medical management.

Evaluation – is the process of examining the implementation to determine if the process is achieving the set targets and yielding the desired results by comparing actual results with set goals. This also involves observation of the client's behaviour to determine if he/she is ready to accept a greater level of self- care. Evaluation may reveal unexpected findings, both positive and negative, which can be used to improve the care plan.

Managing NCDs demands effective allocation and use of resources. The health team offering Nutritional Care must focus its management skills to facilitate successful outcomes. Resources such as time, information, money and materials must all be carefully managed to ensure effective and efficient use for the benefit of the patients.

SECTION I

The Nutritional Care Process

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The Nutritional Care Process

Proper Nutritional Care is integral to the successful management of obesity, diabetes and hypertension. Compliance with the nutrition and meal planning principles, however, remains one of the most challenging aspects of care. The conceptual framework in Figure I identifies the steps necessary for successful management.

Assessment

An important first step in initiating Nutritional Care is evaluating the nutrition status of the individual. Nutrition assessment must be completed for every person with obesity, diabetes or hypertension who presents for initial care. Nutritional assessment is an important tool for identifying existing or potential problems and identify clients needing a more comprehensive screening.

Assessment generates the information needed for a comprehensive approach to nutrition intervention. Some parameters will need to be assessed each time the individual presents for care. These include weight, blood pressure, dietary intake and blood glucose (only for diabetes). In defining the level of nutrition intervention for the targeted diseases, a total review of historical data is important. This will set the framework for all the problems/illnesses that must be targeted as part of the nutrition intervention process.

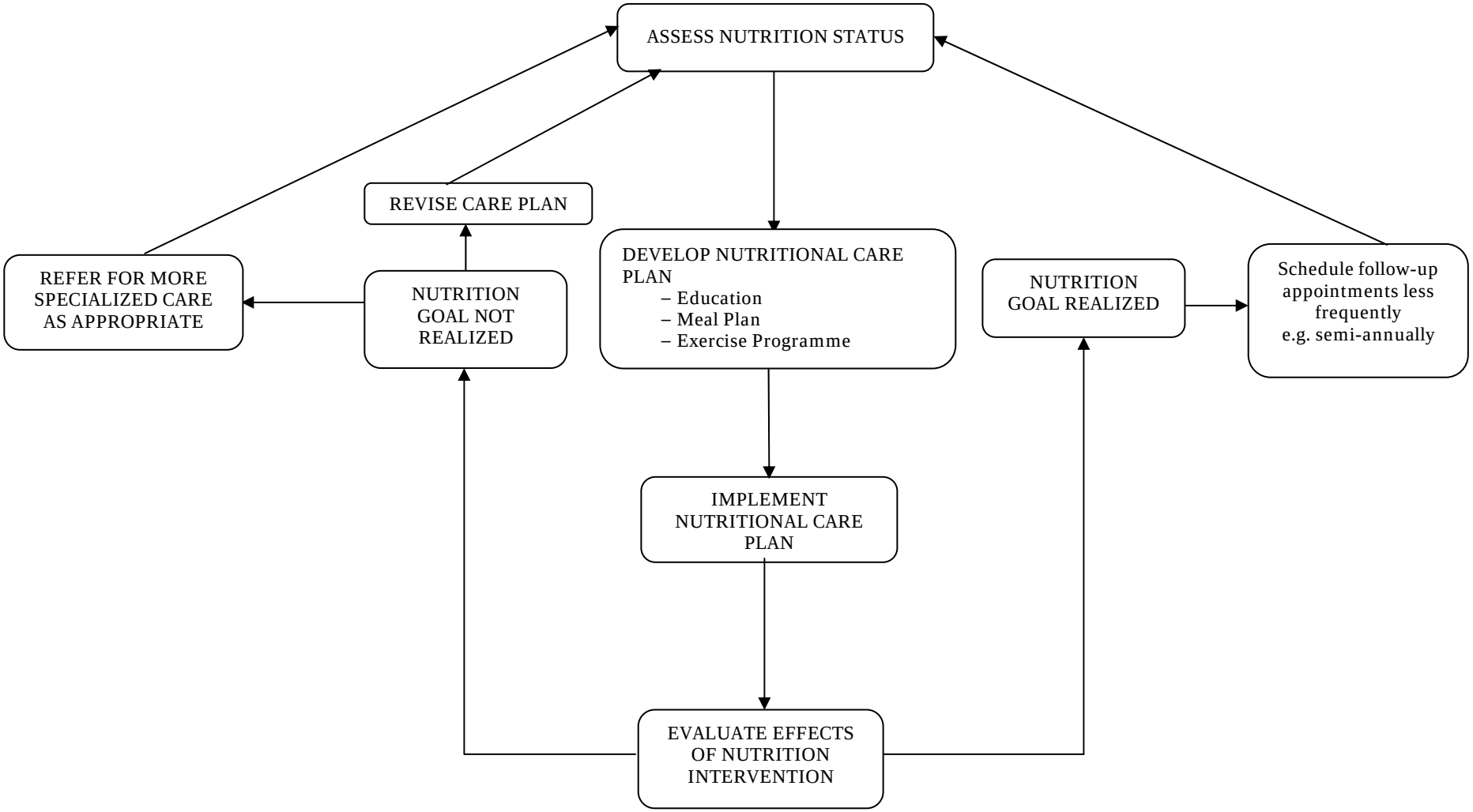
Indicators of Nutritional Risk

These indicators include:

1. Dietary intake – quality and/or quantity
2. Decreased absorption of nutrients
3. Decreased utilization of nutrients
4. Increased nutrient losses
5. Increased nutritional requirements

FIGURE I

A CONCEPTUAL FRAMEWORK FOR THE TEAM APPROACH



Page for Figure 1

The Assessment Process

The assessment process is the systematic process of collecting objective information about the client, his/her environment and the support system. Results of assessment gives some insight into some of the challenges the client may face and the resources that are available to cope with them includes:

1. Review of historical data
2. Careful data collection
   - Anthropometric
   - Biochemical
   - Clinical
   - Dietary
3. Determination of exercise/activity level
4. Assessment of client's ability and readiness to participate in care plan
5. Assessment of client support network – home/community
6. Interpretation of data
7. Use of the data to provide appropriate care

Review of Historical Data

Historical data will provide an insight into any relevant past illnesses or circumstances that may directly or indirectly impact on the client's nutrition needs and health status.

Important historical data to be reviewed include:

- ***Health history*** – explore health factors and/or family history that may influence the client's nutrition status.
- ***Drug history*** – review medications (prescription and over the counter, nutrient supplements, and illegal drugs that may affect nutrition status).

- ***Socio-economic history*** – Check for environmental, personal and all religious, social and economic factors that can influence food availability, food needs, food intake and nutrient needs and dietary intervention.

- ***Diet history*** – identify possible nutrient imbalances and eating patterns.

Sources of historical data include medical records, family members and/or significant others and the client.

Data Collection

This is an important phase of the assessment and involves various parameters which will be detailed below. (Appendix I provides a form which can be used to guide data collection for the assessment phase.)

A. Anthropometric Data

This is a measurement of body size, weight and proportions. These measures are non-invasive and are used to evaluate nutrition status, to monitor the effects of nutrition intervention and to provide information about the body's stores of fat and muscle. Anthrometric measurements include:

- Height and weight
- Circumferences – waist, hip, arm

Information from the measurements is then used to calculate indicators of nutritional status.

(i) Height

Height is the most frequently misreported value. It is useful to ascertain height by standard measurements in the clinic using a stadiometer or other reliable method to the nearest centimetre or half inch.

Height measurement should be recorded as a basic initial screen for all clients presenting for care.

Height measurements are useful for calculating:

- Appropriate weight for height
- Body mass index (BMI)
- Basal energy expenditure (BEE)

(ii) Weight

Weight is a sensitive indicator of nutritional status. The Body Mass Index (BMI), a standard which relates height and weight mathematically, is often used to determine health risk (BMI = weight in kg/height in metres^2) (see Appendix X and XI).

(iii) Waist-hip Ratio

Waist-to-hip ratio is a way of measuring where body fat is stored. It is an indirect indicator of intra-abdominal fat. A high waist-to-hip ratio indicates an increased risk of obesity-related health problems.

Waist-to-hip ratio is calculated by dividing the measured waist circumference by the measured hip circumference.

$$\frac{W}{H} = \text{waist-to-hip ratio (WHR)}$$

Indicators of risk

Women: WHR Greater than 0.85*

Men: WHR Greater than 1.0*

(iv) Waist circumference

Waist circumference is an indicator of intra-abdominal fatness and is a good indicator of abdominal fat. A high waist circumference is associated with an increased risk for type 2 diabetes, high cholesterol, high blood pressure and cardiovascular disease.

Indicators of risk

Men: Waist Circumference Greater than or equal to 102cm*

Women: Waist Circumference Greater than or equal to 88cm*

*Obesity: preventing and managing the global epidemic. Report of a WHO Consultation. WHO technical report series 894 (1999: Geneva Switzerland).

B. Biochemical Data

- Blood sugar levels
- HbA_1c
- Blood lipids
- Serum protein
- Serum creatinine
- Serum potassium
- Serum sodium
- Urinary ketones

C. Clinical Data

- Signs and symptoms of the disease(s)
- Diagnosis and treatment information
- Problems relating to intake, e.g. chewing, swallowing
- Gastrointestinal problems
- Blood pressure

D. Dietary Data

Obtaining an accurate diet history is an important component of the assessment process and is part of the overall nutrition history. The diet history provides valuable information about the client's past and current food behaviours. Details of which are presented in Appendix II.

Nutritional Care Plan

GOALS OF NUTRITION THERAPY

- To maintain near-normal blood-glucose levels by balancing food intake with insulin or oral medication and physical activity levels.

- To provide adequate calories to attain and maintain reasonable weights for adults, normal rates of growth and development in children and adolescents, increased metabolic needs during pregnancy and lactation or recovery from catabolic illnesses.

- To control blood pressure
- To achieve optimal blood lipid levels.
- To prevent, delay or treat acute insulin-related complications such as hypoglycaemia, short-term illness and exercise-related problems.
- To prevent, delay or treat long-term complications of obesity, diabetes or hypertension. These include, but are not limited to, renal disease, neuropathy and cardiovascular disease.
- To improve health through optimal nutrition.

Develop the Care Plan

The nutrition recommendations that are integrated into the overall management plan for the client are based on:

- Nutrition assessment
- Desired treatment outcomes
- Modification of lifestyles including eating behaviours

An essential component of the Nutritional Care process is the measurement and documentation of outcomes. An evaluation of the medical, clinical, biochemical, educational and psychological outcomes provide information on the effectiveness of nutrition therapy in the overall management plan.

The client's long and short-term nutritional needs should be clearly identified in a plan of action based on findings from the assessment. The Nutritional Care Plan should outline:

- Objectives for meeting nutrition and educational needs
- Content of the counselling sessions
- Time frame for achieving the objectives

The individual's nutrient requirements, their sources and the strategies for meeting them should be considered. The plan should be discussed with the client and his/her

family. The final plan should be achieved in discussion with the other members of the healthcare team. Seek the assistance of Nutrition/Dietetic personnel in developing the plan. Counselling sessions should then be planned to provide instructions and recommendations for the client. The counselling process may require several sessions to address the care plan, the diet and to evaluate the client's understanding as well as responses to the plan.

IMPLEMENTING THE NUTRITIONAL CARE PLAN

Meal planning

Meal planning is the use of foods, food groups and nutrients to facilitate variations for individual/group preferences, cultural habits, health status and socio-economic factors to achieve specific objectives. It is an interactive process between the client and the health care provider.

Meal planning is a focal point in the management of obesity, diabetes and hypertension. The meal planning process requires input from the client, including financial, religious and cultural considerations.

Purpose of meal planning

- To control weight, blood pressure and/or blood glucose
- To ensure that the right types and amounts of food are eaten
- To control the specific nutrients that are appropriate to the targeted disease
- To improve overall quality of life.

The principles which govern meal planning include:

- **Nutritional adequacy** – Providing adequate amounts of all the essential nutrients, energy and fibre to maintain health while ensuring any required nutrient modification specific to the disease.
- **Caloric control** – Managing the amount of energy consumed without over- or under-eating.
- **Nutrient density** – Choosing foods that give a good variety of nutrients for a small number of calories.

- **Variety and Balance** – Selecting foods from each of the food groups in proportion to each other thus preventing nutritional risks.

- **Individuality** – Using the information from the assessment to meet individual needs.

- **Flexibility** – Allowing clients to choose foods within a practical and creative setting. Meal plans that are rigid do not encourage compliance.

Developing a Meal Plan

The meal plan should be tailored to the needs of the individual while targeting the disease. There are many meal planning options, but, generally, the exchange system is used in the Caribbean. A food exchange is a measure or portion of one type of food that may be eaten instead of another type of food and provides similar nutrients and calories (see Appendix III).

The meal plan should be evaluated periodically and altered if necessary to achieve the goals of improved disease control and general good health.

Determining calorie needs of the individual

Note: It is advisable to ask the nutrition/dietetics personnel on the health team to undertake this task *(*see Appendix IV).

1. Assess current food intake and eating pattern using a 24-hour recall. Categorize usual food intake into exchange amounts based on portions and foods consumed at each meal and snack. Using the exchange amounts for each food item, translate into calories.

2. Determine caloric prescription based on age, gender, height, weight, and activity level (see Appendix V).

3. Subtract calories if weight loss is desired. Generally, 500 or 1000 kcal per day can be subtracted from current intake to produce a 0.5-1.0 kg (1-2 lb) per week weight reduction.

4. Calculate the grams of carbohydrate, protein, and fat from the exchanges and determine percentages of total calories contributed by each macro-nutrient

$$\frac{\text{grams of carbohydrate} \times 4 \times 100}{\text{total calories}}$$

$$\frac{\text{grams of protein} \times 4 \times 100}{\text{total calories}}$$

$$\frac{\text{grams of fat} \times 9 \times 100}{\text{total calories}}$$

5. Adjust exchange as needed to reach goal percentages for each macronutrient.

6. Distribute the foods from exchanges among meals and snacks based on usual eating pattern, activity, medication regimen, and targeted diet modification.

Implementing the Nutritional Care Plan involves providing both the appropriate meal plan and education. This process includes follow-up appointments to ensure timely incremental understanding, motivation and compliance.

Utilize data from assessment process to provide nutrients/calories to meet client needs, guide food choices and preparation techniques

- Involve client and family in setting goals
- Ensure that care plan fits into the overall management plan for the client
- Develop strategies to achieve goals
- Counsel client and significant others
- Refer to other members of the health team where appropriate

Evaluate Nutritional Care

Evaluation is usually a statement of the efficiency and effectiveness of the intervention and should be done at regular intervals, the frequency depending on the client's status. All the strategies that were implemented must be evaluated. The client's nutrition status and needs may change as his/her situation changes. The

client's participation in developing the plan and his/her compliance will influence whether or not goals will be met. It is possible that more flexibility will be required and different strategies and techniques may be needed to achieve desired results. The plan may also need to be revised because the client has achieved short-term goals and is ready to move on to the next level or because his/her socio-economic situation has changed. It is usually done through follow-up appointments and includes the following actions:

- Re-assess client's progress
- Revise care plan or develop new plans as needed
- Implement interventions
- Monitor progress

Expected Outcomes of Nutritional Care

- Improved nutrition status
- Improved food and nutrient intake
- Improved knowledge
- Positive behaviour change
- Improved laboratory values, weight, blood pressure
- Risk factor reduction
- Prevention or delay of complications
- Ability to identify and access available community resources
- Reduced hospital admissions
- Improved self management
- Improved quality of life

To achieve the expected outcomes outlined above:

- Involve the client, family members (including siblings) and caregivers in all management discussions.

- Individualize the approach to Nutritional Care.
- Provide culturally appropriate information and educational materials.
- Involve the client in the development of realistic plans, which include a variety of foods which are liked, available and fit his/her schedule and self-care regimen.
- Facilitate follow-up visits and modification of goals when necessary.
- Schedule on-going education, reviews, support and dialogue to improve acceptance and compliance.
- Give general information about the targeted chronic disease – risk factors, prognosis, treatment and its side effects.
- Suggest workable strategies for positive behaviour change and the adoption of healthy lifestyles.

Documentation of Care

There are specific factors that should be included in the documentation and captures information from the assessment process. Documentation is an essential component of the Nutritional Care process. All interventions of Nutritional Care including initial nutritional assessment must be documented in the client's medical records. The medical record is a permanent legal document that records the client's history, assessment and diagnosis (see Appendix VI for details).

Documentation of care should be continuous and serves to:

- Establish a record of the Nutritional Care process.
- Maintain a strong professional communication network to inform all members of the health care team of the client's status, plans and actions taken.
- Provide a framework/indication for intervention, re-assessment or follow-up care by other members of the care team.
- Facilitate continuity of care, thus contributing to accuracy and better quality management.

- Provide a reference point for evaluating the impact of medical nutrition therapy on medical and clinical outcomes and client's quality of life by linking assessment with goals, intervention and strategies.
- Provide data for establishing cost-benefit and cost-effectiveness of medical nutrition therapy.
- Provide information on referral for other services.

Nutrition information which should be documented includes:

- Evaluation of current diet
- Nutrient assessment data
- Planned medical nutrition therapy
- Counselling and education
- Acceptance and tolerance level
- Appetite
- Planned follow-up
- Referrals
- Response to therapy
- Any data relevant to client's health/nutritional status

Continuing Care

Continuing care is an essential component of management and allows for evaluation and reassessment. Follow-up facilitates achieving behaviour change. Effective Nutritional Care requires more than one visit. The visits provide opportunities to sustain progress and control of the conditions, to review problems, observe the effect of treatment and re-design the management plan and intervention strategies if necessary. Follow-up visits can help to provide the motivation to succeed as well as to establish good relations with the client and reinforce education messages.

Frequency of Visits

Clients starting nutrition therapy may initially need weekly visits until there is reasonable progress. As goals are met and there is improvement in management, visits may be less frequent. If goals are not being met, the management plan needs to be revised and goals re-assessed (see Figure I)

Frequency of visits may be influenced by any of the following - degree of obesity; severity of hypertension; type of diabetes; changes in treatment regimen; level of compliance.

Appendix VIII provides details of determinants of visits.

The following chart outlines the type of care which should be undertaken at specific visits.

Monitoring Nutritional Care

Activity	Frequency of care	
	Initial visit	Follow-up Care
Physical examination	▲	Annually
Weight	▲	Monthly or every regular visit
Blood Pressure	▲	Every regular visit
Other concurrent abnormalities	▲	Every regular visit
Laboratory	▲	Quarterly – more often if there are complications
Fasting and/or 2 hr pp blood glucose	▲	1. Quarterly If treatment changes or if client is not meeting goals 2. Twice per year if stable
Fasting lipids		Annually, unless abnormal
Micro-albuminuria	▲	Semi-annually

Self-Management

Self-management is aimed at assisting clients to take responsibility for the everyday management and control of their health conditions. Clients therefore need to be provided with relevant knowledge and skills. Training the client in self-management is an important strategy in achieving the levels of Nutritional Care that will result in improved health.

Self-management training should be tailored not only to the client's specific health condition, but also to his/her life circumstances and state of readiness.

Referrals

An important aspect of the nutritional management of clients in the Primary Care System is recognizing the need for timely referral for specialist care. It takes an active health team to provide care for a client with chronic diseases (Appendix IX sets out responsibilities of health care team members in the Nutritional Care of clients). The chart below provides guidelines for referral of clients to specific members of the health care team.

Indications for Referral to Health Care Team Members

Indicator	Team member to whom client should be referred
Development of Meal plan	Nutritionist/Dietitian
Inter-current illnesses	Physician/Family Nurse Practitioner
Recurrent hypoglycaemia	Physician/Family Nurse Practitioner
Poor self-management	Management team
Infections	Physician/Nurse/Family Nurse Practitioner
Poor appetite or client not eating	Physician/Nutritionist/Dietitian
Vomiting	Physician/Nurse/Family Nurse Practitioner
Clients whose medication has finished	Physician/Nurse/Family Nurse Practitioner
Clients who express difficulty following any treatment regimen that must be handled beyond your level of competence or expertise	Doctor, Nurse, Family members, Nutritionist/Dietitian

Indicator	Team member to whom client should be referred
Clients who have difficulty maintaining treatment targets, e.g. acceptable blood pressure, blood sugar or weight goals	Physician/Nutritionist/Dietitian, Family Nurse Practitioner
Change of treatment, e.g. from diet only to oral hypoglycaemic agents or a shift to insulin	Nutritionist/Dietitian, Nurse/Family Nurse Practitioner, Physician/Pharmacist

Summary of the Nutritional Care Process

Activity	Visit	Obesity	Diabetes	Hypertension
Nutritional assessment	Initial (as necessary on follow-up)	▲	▲	▲
Laboratory Evaluation	Initial and then periodic, as indicated	▲	▲	▲
Review medical history	All	▲	▲	▲
Set treatment goals	Initial (review as necessary)	▲	▲	▲
Develop care plan	Initial	▲	▲	▲
Implement	All	▲	▲	▲
Set short term goals	Initial	▲	▲	▲
Plan follow-up care	Initial Ongoing	▲	▲	▲
Evaluate progress/outcomes	All follow-up visits	▲	▲	▲
If goals are met, • reinforce good points, • frequency of visits may be reduced depending on the degree to which goals are being met	If goals are not met: • re-assess/encourage client • revise management plan			
Document	All	▲	▲	▲

SECTION II

Nutritional Management of Obesity

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Nutritional Management of Obesity

Effective weight management involves a careful balance of nutrient intake, physical activity, behaviour modification and a positive attitude toward achieving appropriate body weight. The overall aim should focus on achieving good health. The same eating and exercise habits that support a healthy lifestyle often achieve appropriate body weight.

During weight loss, approximately 20 kcals/kg (10 kcals/lb) of current weight is needed to spare lean body tissue while losing fat. A weight loss of 0.5-1kg (1 – 2 lbs) per week is usually recommended. In order to achieve desirable, practical weight loss which can be maintained, a reduction of 500 kcals/day from present caloric intake is recommended. At the end of one week, this should achieve a reduction of 3500 kcals, which translates to 0.5 kg (1 lb) of fat. It usually takes about three months to see the real effects of this intervention.

The causes of obesity are multifactorial. Metabolic, genetic, environmental, cultural, sociological, psychological and behavioural factors offer some explanation, but the complete aetiology remains unknown. Some key factors contributing to obesity include dietary intake, sedentary lifestyle and changes in diet, particularly increased intake of fat and simple sugars. Consumption of refined, processed, and "fast" foods has been increasing, while the use of indigenous foods such as ground provisions, peas, beans, vegetables and fruits has not kept pace. Obesity results when more food energy is consumed than expended over a period of time.

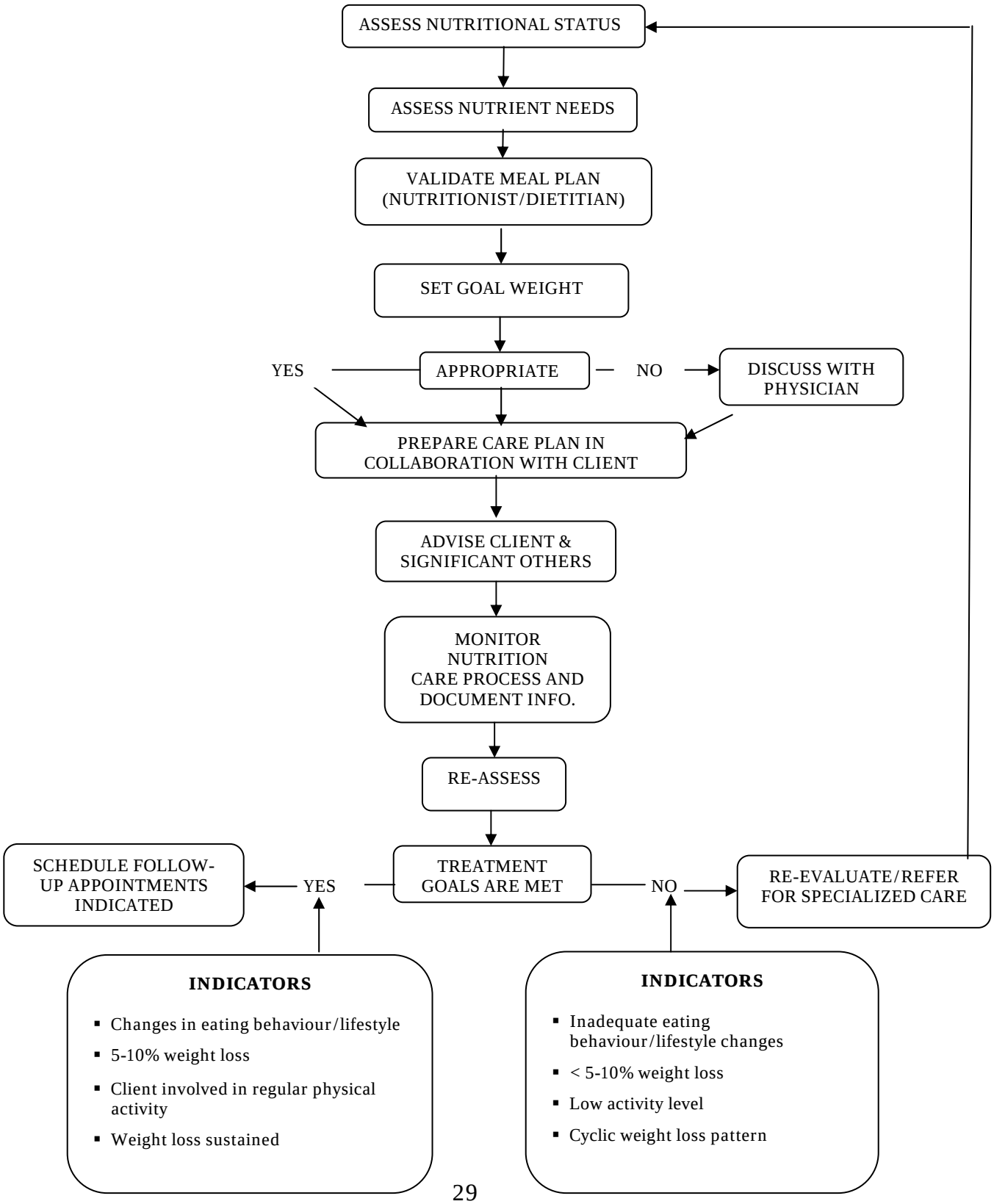
Achieving weight loss in the obese individual is not usually easy. Additionally, only a small percentage of those who lose weight are able to maintain the weight loss. There are no consistent criteria that will categorize the type of people who will successfully lose weight.

The objectives of nutritional management of obesity are to:

1. Achieve and maintain healthy body weight.
2. Provide optimum Nutritional Care through a nutritionally balanced decreased calorie diet which will achieve healthy weight loss of 0.5-1kg (1-2 lb) per week.
3. Prevent or control complications such as high blood pressure, diabetes, heart disease and elevated uric acid levels.
4. Avoid or correct unhealthy eating behaviour.

Figure II outlines the Critical path for the nutritional management of overweight and obese persons.

FIGURE II: CRITICAL PATH FOR THE NUTRITIONAL MANAGEMENT OF OBESITY



Recommended Treatment for Obesity

1. Determine the level of obesity and the specific intervention needs of the client, e.g. elevated blood lipids. See classification for overweight and obesity, Appendix X and XI).

2. Set realistic goals. Assist the client to set his/her own short, medium- and long-term goals. A realistic goal is loss of 5-10% of initial body weight at a rate of 0.5-1 kg (1-2 lb) per week. There is no magic food that will achieve and maintain weight loss.

3. Distribute calories over approximately six meals for the day, including snacks, to prevent over-eating. Where this is not possible, work within the client's schedule of activities.

4. Provide adequate fluids to aid excretion – at least 8 glasses of water per day.

5. If there is fluid retention, decrease sodium intake.

6. Increase the fibre content of the diet to encourage longer chewing, create more bulk and increase satiety. Include fibre-rich foods like fruits, vegetables and legumes.

7. Decrease the intake of high caloric foods such as fats (9 Kcal/g) and alcohol (7 Kcal/g). Recommend low-calorie alternatives to high-calorie foods in the diet.

8. Avoid severe dietary restrictions, since very low calorie diets may lead to reduced Resting Energy Expenditure (REE) and affect the rate of weight loss. Caloric intake less than 1200 kcalories will require strict clinical supervision.

9. Schedule follow-up appointments to monitor progress and monitor weight using the same scale.

10. Encourage regular physical activity according to doctor's recommendations and client's preference as part of weight loss plan.

11. Ensure that nutritional counselling is highly individualized.

12. Closely monitor obese persons who quit smoking. There is a tendency to gain weight due to increased caloric intake from craving for sweets. It may be

necessary to decrease intake by 100-200 kcalories per day just to maintain weight.

13. Encourage the client to participate in a support group and facilitate family involvement.

14. Encourage client to record fluid intake daily to be able to verify reduction of calories through fluid.

Guidelines for Promoting Self Management

1. Develop a weight loss programme with the input of the client. This therapy may take time, as weight loss is a slow process.

2. Provide guidance to client on how to maintain a proper diet. Provide tips on how to choose foods that are lower in calories, portion control, eating out and methods of food preparation.

3. Encourage changes in eating behaviour and general lifestyle behaviour to facilitate weight loss. These include:

   - Keeping food diaries including food choices, situations that encourage unhealthy eating. This is useful in identifying triggers and sources of excess calories
   - Monitoring and recording body weight on a monthly basis
   - Participating in moderate physical activity for most days of the week for at least 1 hour each day
   - Avoiding situations that may contribute to over-eating and discuss triggers with care provider
   - Modifying the time meals are eaten
   - Reducing portion sizes
   - Eating slowly
   - Using smaller plates and eating utensils
   - Choosing different foods and methods of preparation
   - Substituting low calorie alternatives for high calorie foods
   - Chewing food well

4. Encourage aerobic exercises to increase energy output.

5. Discourage fad dieting which can lead to a weight loss/weight gain pattern that may demotivate the client and make weight loss more difficult.

6. Promote food label reading so that persons will be able to make appropriate food choices, avoiding foods which are excessively high in calories.

7. Suggest non-caloric sweeteners to provide a useful alternative to sugar.

PHYSICAL ACTIVITY

Regular physical activity is an essential component of any weight management programme and complements dietary measures. While exercise does not necessarily reduce body weight, body fat is reduced and basal metabolic rate is increased during and after exercise. Persons are more likely to exercise if the activity is enjoyable. The type, duration and frequency should be tailored to individual ability and health status, but may include swimming, brisk walking, jogging and playing games, such as soccer and cricket. Joining with friends and family to exercise should also be encouraged.

SECTION III

Nutritional Management of Diabetes Mellitus

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Diabetes Mellitus

Diabetes mellitus is a metabolic disorder characterized by elevated blood glucose levels resulting from defects in insulin secretion and/or uptake. It develops when insulin is absent, not secreted in adequate amounts or there is diminished tissue response, (that is, so that insulin is not used properly by the target tissues). There may also be a combination of these factors. As a result, the body cannot properly metabolize the macro-nutrients (carbohydrates, fats and proteins) in the normal way to effectively convert glucose into energy. High levels of glucose accumulate in the blood and spill into the urine. This can result in several complications involving long-term damage, dysfunction and failure of various organs including the eyes, kidneys, nerves, heart and blood vessels.

Several symptoms can indicate the presence of hyperglycaemia (elevated blood glucose). These include frequent urination, increased thirst, weight loss, sometimes increased hunger, blurred vision, itching and susceptibility to certain infections. In children, there may be growth impairment. Some persons experience no symptoms and are diagnosed at health screening sessions or when they seek medical care for other problems. Some acute life-threatening consequences are associated with diabetes and include hyperglycaemia (high blood sugar) with ketoacidosis or the non-ketotic hyperosmolar syndrome, both of which can lead to coma.

TYPES OF DIABETES

Diabetes mellitus can be grouped into three main categories: Type 1, Type 2 and Gestational.

Type 1

Type 1 diabetes results from an autoimmune destruction of beta cells of the pancreas. The rate of beta-cell destruction varies and is quite rapid in some persons (mainly infants and children) and slower in adults. Type 1 diabetes is more common in younger persons but can occur at any age. There is little or no insulin secretion, therefore individuals with this type of diabetes must rely on external sources of insulin for survival. Clients with type 1 diabetes are usually prone to accumulation of ketone bodies (ketoacidosis) and have an increased risk of developing very fine blood

vessel (microvascular) and large blood vessel (macrovascular) complications. Some clients, particularly children, may present with ketoacidosis at diagnosis. Beta-cell destruction is determined genetically and is also related to some environmental factors, which are not clearly defined. Clients with type 1 diabetes are rarely obese, however, the presence of obesity is not incompatible with the disease. Some forms of type 1 diabetes have no known cause.

Type 2

Type 2 diabetes refers to a condition characterized by insulin resistance and relative rather than absolute insulin deficiency. Most persons with this type of diabetes do not need insulin treatment to survive but some may require short-term insulin therapy to stabilize the disease especially in periods of stress, pregnancy and surgery. For many persons with Type 2 diabetes, especially those who are obese, diet and exercise to achieve weight loss are the main lines of therapy. Medications should only be introduced when these measures do not achieve desired results. Approximately 90-95% of all persons with diabetes have type 2 and it is more common among adults. Recently, a number of children are being diagnosed with type 2 diabetes. These children are usually obese.

Hyperglycaemia develops gradually and may not be diagnosed for several years. The specific aetiologies are not known but there is no autoimmune destruction of beta cells. Persons with type 2 diabetes are not usually prone to ketoacidosis but are at increased risk for macrovascular and microvascular complications. Obesity, age, lack of physical activity and genetic pre-disposition, increase the risk of developing type 2 diabetes. It occurs more frequently in women with previous history of gestational diabetes. Weight loss and/or pharmacological treatment of hyperglycaemia may improve insulin resistance.

Gestational Diabetes

This is defined as a degree of glucose intolerance which begins or is first recognised in pregnancy. Women who are markedly obese, have a personal history of gestational diabetes or glycosuria or a strong family history of diabetes are especially susceptible.

Diagnosis of Diabetes Mellitus

The criteria for diagnosing diabetes have been revised for standardization. The new criteria suggested by The World Health Organization (WHO) Expert Committee on the Diagnosis and Classification of Diabetes Mellitus (2000) outlines three ways to diagnose the disorder.

Criteria for the diagnosis of diabetes mellitus

1. Symptoms of diabetes plus random (casual) plasma glucose concentration > 200mg/dl (11.1mmol/L). Casual is defined as any time of day without regard to time since last meal. The classic symptoms of diabetes include polyuria, polydipsia, and unexplained weight loss

or

2. Fasting Plasma Glucose (FPG) > 126 mg/dl (7.0 mmol/L). Fasting is defined as no caloric intake for at least 8 hours

or

3. 2-hr PG $\geq$ 200mg/dl (11.1 mmol/L) during an Oral Glucose Tolerance Test (OGTT). The test should be performed as described by WHO, using a glucose load containing the equivalent of 75g anhydrous glucose dissolved in water.

Each test must be confirmed, on a subsequent day, by any one of the three methods.

Nutritional Management for Diabetes

Nutrition therapy is an integral component of successful diabetes management and has remained one of the most challenging aspects of care due to the complexity of nutrition issues. Input from the client in developing intervention is extremely important in ensuring that the plan is appropriate to the individual's lifestyle and cultural practices. All nutrients play an important role in diabetes management, moderation in intake is usually the key. Figure III provides the critical path for the nutritional management of Diabetes.

The major goals of therapy are to achieve metabolic control and to prevent or delay the macro-vascular and micro-vascular complications of diabetes. Overall therapy for diabetes includes:

- Education
- Nutrition Therapy
- Physical activity and exercise
- Blood glucose monitoring
- Behaviour modification and self-care
- Management of medication (if required)

Objectives of Nutrition Therapy for Persons With Diabetes

1. Achieve and maintain near normal blood glucose levels:

   Fasting – 80-120mg/dL (4.4-6.7 mmol/l)

   2 Hr.pp – 100-180 mg/dL (5.6-10 mmol/l)

   Bedtime – 100-140mg/dL (5.6–7.8 mmol/l)

   HbA_{1C} – <7%

2. Provide a nutritionally adequate diet:

   A structured individualized meal plan

   Regular mealtimes

   Snacks as necessary to balance peak insulin activity and exercise

   Tailored to individual requirements

   Appropriate distribution of calories[♦]

   - Carbohydrates 50-60%
     Added sugars 10%
   - Protein 15-20%
   - Total fat <30%
     Saturated fat < 10%

3. Achieve and maintain healthy body weight

4. Prevent and minimize complications

[♦] CFNI Recommended Dietary Allowances for the Caribbean. Report of the Committee of the Experts group on Caribbean Food and Nutrition Surveillance Systems. Revised 1993

5. Provide appropriate nutrition therapy:
    - Nutrition assessment
    - Goal setting
    - Nutrition intervention
    - Monitoring
    - Evaluation
6. Facilitate normal growth and development in children and adolescents
7. Facilitate a healthy pregnancy outcome for pregnant women who have diabetes.
8. Integrate planned activities
9. Maintain desirable blood lipids

Nutrition therapy for persons with type1diabetes should include an **individualized meal plan** based on usual food intake interrelated with **exercise** and **insulin regimens.** For persons on conventional insulin therapy, care must be taken to ensure consistency in the timing and amount of food eaten and the time and action of the insulin used. Individuals should be educated to monitor their blood-glucose levels and adjust insulin where necessary.

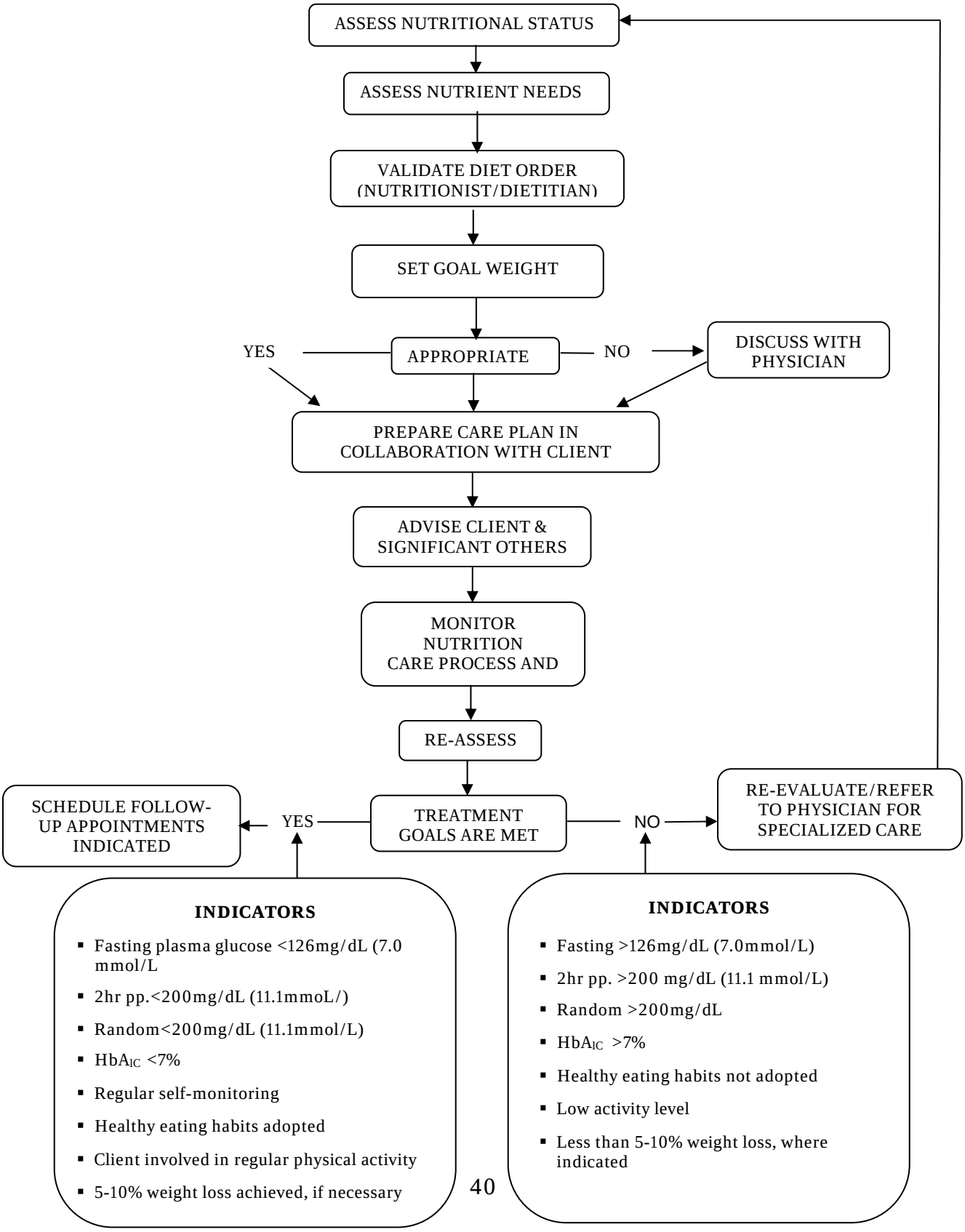
The aim of nutrition therapy in type 2 diabetes is to achieve glucose, lipid and blood sugar control. Many persons with type 2 diabetes are overweight, therefore a weight loss diet usually improves short-term blood glucose control. For long-term control, several strategies in addition to weight loss can be implemented to achieve and maintain near-normal control. Dietary recommendations should be based on a nutritionally adequate diet determined by individual assessment with a reduction in fat, especially saturated fat, and an increase in physical activity.

Recommendations for Physical Activity

Benefits of physical activity are greatest in the early progression of the disease. Nevertheless, regular physical activity is encouraged for all persons with diabetes. Overall persons living with diabetes should be asked to:

- Undergo detailed medical evaluation before embarking on an exercise regime.
- Engage in aerobic physical activity daily.
- Pay careful attention to hydration status during and after exercise.

FIGURE III: CRITICAL PATH FOR THE NUTRITIONAL MANAGEMENT OF DIABETES MELLITUS



Nutritional Recommendations for Type 2 Diabetes

1. Assess diet history, physical activity.
2. Determine appropriate caloric level based on height, weight, age, sex, activity level, height, weight.
3. Distribute calories appropriately:
4. Time meals appropriately, keeping mealtimes constant from day to day.
5. Provide three (3) main meals per day plus snacks as appropriate to balance the peak activity of insulin and exercise
6. Encourage intake of complex (higher fibre) carbohydrate foods such as corn, brown rice, yam, green bananas, cassava and ground provisions.
7. Limit the intake of simple sugars. Approximately 5-10% of total calories may be included as simple sugars.
8. Control intake of salt. Salt intake should be limited to no more than 6 g (1 tsp) per day. In the presence of hypertension, more severe restriction may be necessary.
9. Recommend less fried and high fat foods, cholesterol and saturated fats. Total dietary fat intake should be less than 30% of total calories.

Additional Concerns

A. The Obese Person With Diabetes

1. Conduct nutrition assessment to determine nutrition status and diet prescription.
2. Develop a care plan outlining management procedure.
3. Determine BMI and level of weight loss necessary.
4. Set weight goal (short and long term), with input from client (see procedure for achieving weight loss and determining energy requirements in section on obesity).

5. Develop weight-reducing meal plan with input from client. The carbohydrate component should be distributed throughout the day.
6. Counsel the client and significant others.
7. Suggest behaviour modification/lifestyle changes.
8. Schedule regular exercise as part of the plan according to doctor's recommendations.
9. Monitor progress:
    - Weight
    - Compliance
    - Individual's understanding
    - Additional needs
    - Treatment goals
    - Blood sugar levels
    - Blood lipids – cholesterol, triglycerides
    - Blood pressure
    - Renal status
10. Document care in client's medical records.
11. Schedule follow-up appointments as indicated.
12. Refer for additional or specialized care as needed.
13. If there is no progress with blood glucose control after three monthly visits, hypoglycaemic medications may be indicated.

B. Diabetes in Pregnancy

Clients who have diabetes and become pregnant will require some re-assessment and modification in their management. The aim is for the diet to achieve appropriate weight gain or control measures and match age needs, thus contributing to a healthy outcome. Usually a total weight gain of about 11.8 kg (26 pounds) is recommended. Approximately 0.9–1.8 kg (1-2 lbs) should be gained during the first trimester and not more than 1 kg (2.2 lbs) every fortnight thereafter. It is important

to monitor blood glucose levels, urine ketones, appetite and weight and make adjustments to the meal plan throughout the pregnancy to achieve desired results.

C. Gestational Diabetes

Gestational diabetes is a type of diabetes that can occur in pregnant women who have not been known to have diabetes before. Gestational diabetes usually subsides during the early post-partum period, however, it may recur in subsequent pregnancies. Women who have had gestational diabetes are at greater risk of developing type 2 diabetes later in life. Factors relating to diabetes in pregnancy will also apply to gestational diabetes.

Guidelines for Self-Management

The management of diabetes rests heavily with the individual and his/her ability to cope with the challenges of living with diabetes. One important management tool is education. Clients who understand what to do and why it should be done are more likely to be motivated to participate in achieving and maintaining good health outcomes. The following are useful guidelines to assist the client with self management.

1. Ensure that the client understands what is diabetes, types, signs and symptoms, the causes and management of:
   a) hypoglycaemia
   b) hyperglycaemia
   c) ketoacidosis
2. Discuss the role of diet, medication and physical activity in controlling diabetes
3. Emphasize the role of blood glucose monitoring and use of the results
4. Explain conditions under which exercise is not appropriate
5. Train clients to detect and manage complications
6. Discuss how/where to access information and resource persons in the community

7. Teach nutrition label reading – recognizing ingredients that mean sugar or carbohydrate
8. Explain managing the diet in special circumstances e.g. travel, parties, eating out, illness.

9. Demonstrate the use of Foods and food groups and their use in formulating meal plans

10. Explain the importance of self care in achieving optimal results

SECTION IV

Nutritional Management of Hypertension

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Hypertension

Hypertension is a major health problem affecting a large percentage of the adult population in most Caribbean countries. The risk of cardiovascular complications and organ damage in persons with high blood pressure is increased when other risk factors such as smoking, obesity, elevated cholesterol and diabetes are also present. Untreated hypertension can result in a number of problems such as stroke, congestive heart failure, renal disease and myocardial infarction.

ESTABLISHING THE DIAGNOSIS

Diagnosis must be established by a doctor, medex or nurse-practitioner.

1. If the initial systolic reading is between 120 and 139 and/or diastolic reading between 80-89 mm Hg, and there is no evidence of end organ damage (see Appendix XII Table 3), repeated BP measurements over six months are necessary. Here the diagnosis is **pre-hypertension.**

2. If initial diastolic readings are between 90-100 mm Hg, and there is no evidence of end organ damage, repeated BP measurements over three months are necessary. The diagnosis of high blood pressure in this group is established by a persistent systolic value ≥140 mm Hg or diastolic value ≥90 mm Hg **(Stage 1).**

3. If initial BP readings are ≥160/100 mm Hg **(Stage 2)** and there is no evidence of end-organ damage, BP measurements should be repeated on at least one other occasion within one month. A diagnosis of hypertension is made if BP is consistently ≥140/90mm Hg.

4. If initial readings are ≥180/110 mm Hg **(Stage 3)** and there is no evidence of end-organ damage, the patient should be re-examined within one week. In some cases therapy should be started, if the risk level assessment so warrants (see Appendix XII, Table 3).

5. Labile hypertensives' will show fluctuation of BP from normal to Stage 1 or higher hypertensive ranges and such patients should be monitored regularly. Persistence of diastolic readings above 90 mm Hg will usually indicate established hypertension.

6. Diagnosis can be established on the basis of a single diastolic pressure >100 mm Hg, **if there is evidence of target organ damage.** The patient should be classified as hypertensive with specific target organ disease, risk level assessed (see Appendix XII, Table 3) and treatment begun.

7. Isolated systolic hypertension is diagnosed when there is an average of four readings ≥ 140 mm Hg on two occasions with a diastolic BP <90 mm Hg (JNC 7 criteria). Isolated systolic should be carefully re-evaluated at intervals.

8. "White-coat hypertension" may occur in patients whose BP is raised only in the clinic but not at other times. A White-coat effect may further raise BP in a patient with hypertension.

9. Ambulatory BP Monitoring (ABPM) over 24 hours is warranted for evaluation of White-coat Hypertension or White-coat effect or for evaluation of patients with resistant hypertension, i.e. hypertension uncontrolled by triple therapy.

TREATMENT

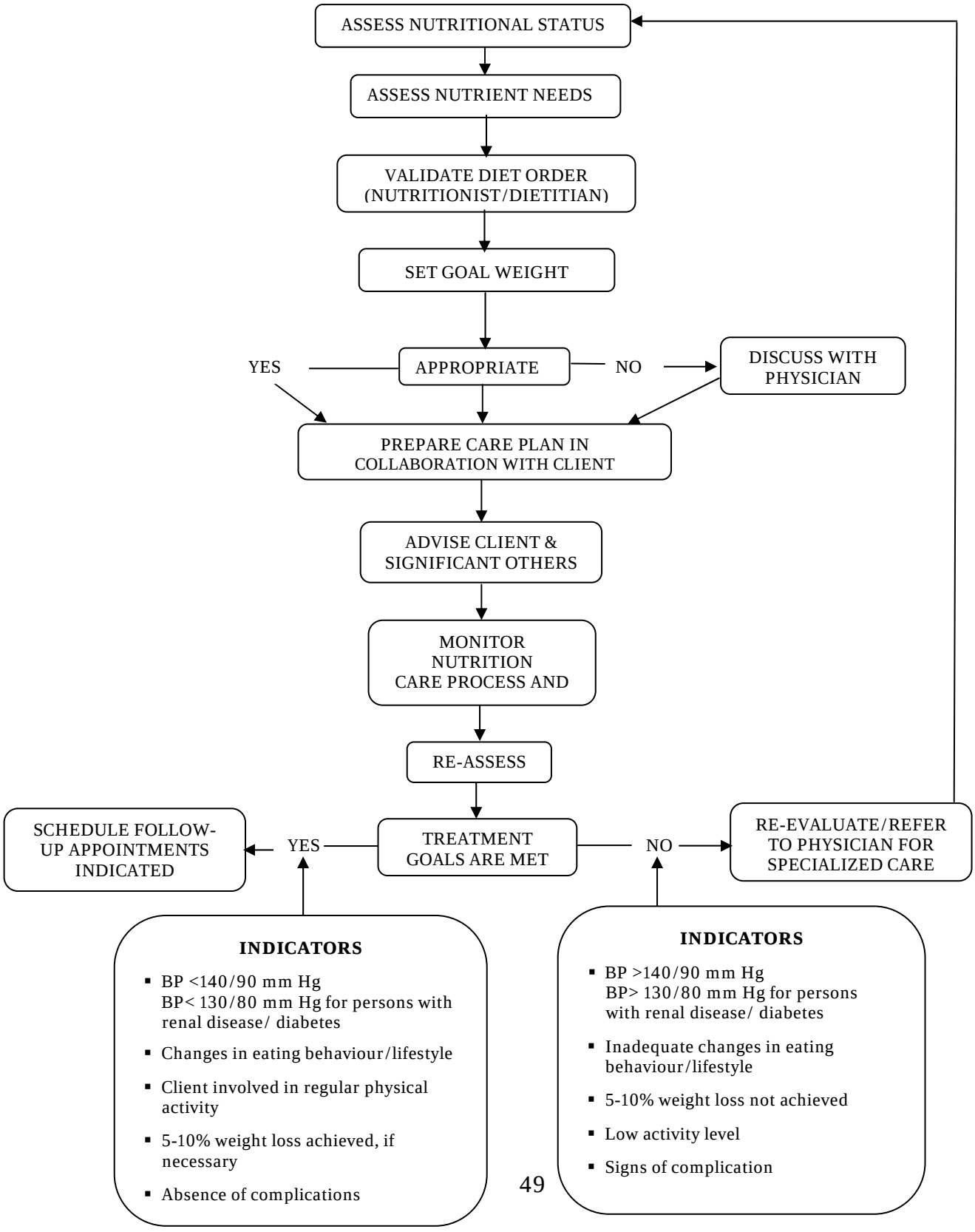
Managing hypertension efficiently is important in achieving maximum reduction in the total health risk of cardiovascular morbidity and mortality. All risk factors and co-morbid conditions must be identified and treated. These include smoking, obesity, hypercholesterolaemia, diabetes and other clinical conditions.

A comprehensive nutrition assessment and review of historical and laboratory data will provide a good indication of need for nutrition intervention. Laboratory data should include determination of haemoglobin, serum sodium, potassium, creatinine, fasting blood glucose and lipid profile. Urine examination should include microscopy and analysis for blood and protein.

Unless hypertension is at an urgent level, life-style modifications should initially be employed and form the cornerstone of treatment at all stages of high blood pressure. These include weight loss in the overweight or obese, regular physical activity, reduction in dietary sodium and reduced consumption of caffeine and alcohol. If these modifications do not achieve treatment goals or if there are signs of target organ damage, medication should be added to the treatment regimen.

Hypertension is both a cause and a consequence of renal disease. In hypertensive patients with type 1 or type 2 diabetes who have micro-albuminuria or clinical albuminuria, treatment must be effected to delay progression from albuminuria to overt nephropathy. Such individuals should be referred to medical and nutrition specialists.

FIGURE IV: CRITICAL PATH FOR THE NUTRITIONAL MANAGEMENT OF HYPERTENSION



Objectives

1. Control blood pressure at a safe level to prevent damage to target organs e.g. heart, kidneys, brain, thereby reducing the likelihood of congestive heart failure, renal failure and stroke

2. Achieve weight loss in the overweight or obese client.

3. Reduce excessive intake of sodium, alcohol and caffeine.

4. Increase in take of potassium and calcium.

5. Educate the client on the role of nutrition in the prevention and control of hypertension.

6. Recommend a nutritionally adequate diet, balancing food intake with physical activity to achieve optimum results.

7. Address risk factors present e.g. cigarette smoking.

Steps in the Nutritional Management of Persons With Hypertension

1. Set treatment goals with input from clients

2. Prepare Nutritional Care plan

3. Provide needed care

4. Evaluate care

5. Take necessary corrective action

6. Reassess nutrition status

7. Provide necessary follow-up care

8. Document in medical records

Recommendations for Treatment

1. Conduct thorough review of clinical history and physical examination to identify factors which may impact on blood pressure levels.

2. Determine severity of hypertension and specific intervention needs of patients e.g. reduced sodium intake, weight loss, increased potassium intake, need to lower blood lipids.

3. Determine caloric/nutrient needs to facilitate weight loss if necessary **(see section on Obesity).**

4. Monitor blood pressure levels, weight management programme and laboratory values.

5. Provide a nutritionally balanced diet with a variety of foods from all the food groups to meet the individual diet prescription.

6. Monitor sodium intake. For all clients on diuretics, a diet containing 2g of sodium per day is usually sufficient. A normal diet of 2-4 g sodium daily is usually a practical guide, but must be monitored closely and modified to meet the needs of the individual client.

7. Limit consumption of caffeine and alcoholic beverages. Decaffeinated beverages may be substituted for caffeinated ones.

8. Modify behaviour to include healthy lifestyle practices.

9. Include a regular physical activity programme agreed on with the doctor.

Guidelines for Self-Management

1. Discuss hypertension, its causes, risk factors and complications.

2. Explain the role of good nutrition in the context of hypertension control.

3. Teach persons to read food labels. This will help to avoid excessive intake of sodium in the diet.

4. Encourage clients to use alternatives such as herbs and spices to flavour foods instead of salt. Suggest that they taste food before adding salt and to avoid adding salt after the food has been cooked.

5. Explain the role of food intake and physical activity in achieving weight loss and in lowering blood pressure.

6. Discuss sources of caffeine, e.g. coffee, cola beverages, tea and chocolate.

7. Explain that it takes time to see the results of nutrition intervention so patients will be more patient in expecting results.

8. Discuss the possible effects of sodium on blood pressure.

9. Discuss role of self-monitoring, recording and using the information to improve management of hypertension.

APPENDICES

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Appendix I

ASSESSMENT OF NUTRITIONAL STATUS

PERSONAL DATA

NAME: DATE OF BIRTH AGE: SEX:

DATE: HEALTH CENTRE: RECORD No:

Marital status: S [ ] M [ ] W [ ] D [ ] CL [ ] Religious Denomination: _____

DIAGNOSIS: _____

MODIFIED DIET: No [ ] Yes [ ]

MEAL PLAN _____

HEIGHT: _____ cm PRESENT WEIGHT: _____Kg USUAL WEIGHT _____Kg

DESIRABLE WEIGHT _____ Kg %IBW: _____ BMI:_____

WAIST CIRCUMFERENCE _____

RECENT WEIGHT CHANGE? No [ ] Yes [ ] By how much? _____Kg Time span: _____

Was weight change planned? No [ ] Yes [ ]

SOCIAL HISTORY

OCCUPATION: _____

EDUCATION: Primary [ ] Secondary [ ] Post Secondary [ ]

LITERACY: Good [ ] Fair [ ] Poor [ ] Comments: _____

LIFESTYLE: Work hours: _____ Sleep/rest hours _____

Smoking: _____ Alcohol: _____

Exercise: _____

Leisure activities: _____

_____

HOUSING: Lives alone [ ] Lives with family/relatives [ ] Single family home [ ] Room [ ] Apartment [ ]
Number in household: Adults: _____ Children: _____ Infants/toddler _____

NUTRITION HISTORY

FOOD SOURCE: Purchases [ ] Home garden [ ] Donations [ ] Obtained by: Self [ ] Other [ ]

Amount spent on food (approximate/average): $ _____weekly/monthly
Who does the shopping? _____

COOKING FACILITIES: _____
Who does most of the cooking? _____ # of persons in household? _____

Are meals eaten: alone [ ] with family [ ] with friends [ ]

FOOD STORAGE FACILITIES: _____

PREVIOUS DIET(S): (1) _____

Home remedy [ ] Over the counter [ ] Own prescription [ ] Doctor's prescription [ ] Duration [ ]
Outcome: _____

(2) _____

Home remedy [ ] Over the counter [ ] Doctor's prescription [ ] Duration: _____

MEALS PER DAY: _____ Where: _____

FOOD DISLIKES: _____

FOOD INTOLERANCE/ALLERGIES: _____

MEALS EATEN AT HOME: _____

MEALS EATEN AWAY FROM HOME: _____

APPETITE: Good [ ] Fair [ ] Poor [ ]

SUPPLEMENTS/TONICS (type and frequency): _____

RECENT ILLNESSES:_____

LAXATIVES (type and frequency): _____

BOWEL REGULARITY: _____ CONSISTENCY: _____

FLUID INTAKE: _____

DENTAL CONDITION: _____ SIGHT: _____

Laboratory data: (to be retrieved from dockets)
Blood Glucose [ ] BUN [ ] Cholesterol [ ] TG [ ] Calcium [ ] Sodium [ ]
Potassium [ ] Total Protein Albumin [ ] Hct [ ]

Evaluation/Plan: _____

_____

_____

Interviewed by: _____ Title: _____ Date: _____

Reviewed by: _____ Title: _____ Date: _____

Appendix II

TAKING A DIET HISTORY

Obtaining an accurate diet history is an important component of the assessment process and is part of the overall nutrition history. The diet history provides valuable information about the client's past and/or current food behaviours.

Diet – What the person usually eats or drinks. The health worker must be skilled at collecting data, as often clients will omit important information and may reveal what they eat but not what they drink. Beverages can be significant sources of calories and nutrients.

History – Recording, analyzing, correlating and explaining past events.

- How many meals the individual eats
- Food groups represented
- Quantity eaten
- Meal preparation methods
- Snacks eaten
- Social and family history

Taking a diet history involves interviewing the client. The interview serves two important purposes:

- It helps to build a relationship between the client and the health worker so that he/she can express his/her feelings honestly without judgment.
- It generates the information needed to develop a realistic meal plan.

Components of the diet history are:

- Collecting data
- Recording data
- Analyzing data
- Integrating the information to develop client profile

Preparing for the interview:

- Obtain client profile by reviewing medical records.
- Schedule the interview.
- Find a location that is conducive to confidentiality, concentration, care and comfort. If the client thinks that confidentiality is compromised, he/she will be less likely to tell the truth.
- Avoid distractions.
- Both the interviewer and the client need to be comfortable.

Ideally, the interviewer should be seated at a level similar to the client so that eye contact can be established.

The interviewer must demonstrate a caring personality and should avoid reacting to information given by the client. Both verbal and non-verbal communication can influence the client's reaction.

INTERVIEWING SKILLS

Several interviewing skills have been developed and tested by experts in communication and counselling:

Verbal skills

These include **listening** and **sharing**.

- Listening reassures the client that he/she is being heard. Listening responses include exploratory clarification and empathy. Exploratory responses are passive and are regarded as information sharing, while empathy and clarification seek to inform the client that he/she is heard and understood.
- Sharing responses allow the counsellor to share his/her thoughts and feelings with the clients.

Non-verbal skills

- Silent eye contact
- Gentle touch

Silence on the part of the caregiver can allow the client time to gather his/ her thoughts. Be careful about invading the client's space.
The gentle touch conveys empathy.

Roadblocks to communication

- Ordering rather than discussing
- Moralizing
- Lecturing
- Judging or ridiculing

Initiating the interview

- Introduce yourself
- Inform the client about the purpose and benefits of the interview.
- Start the interview – use open-ended questions which allows the client to express him/her self without prejudice

Closing the Interview

Nearing the end of the interview, inform the client of the available time left for the session and ask him/her for any additional information. At this time, pointed/ probing questions may be asked to obtain missing information. Make plans for follow-up.

METHODS OF OBTAINING A DIET HISTORY

1. 24 hour recall

Provides information on food intake of the previous 24 hours.

Advantages

- A quick and easy method
- Writing and reading skills are not required by the client
- Does not influence the usual eating pattern of the client

Limitations

- Client may not tell the truth
- Requires the client to recall foods (memory dependent)
- May not represent usual intake
- Requires a skilled interviewer

2. Typical or usual intake

Advantages

- More representative of the usual intake than the 24 hour recall quick and easy method

Limitations

- Requires client to recall the usual pattern (memory dependent) requires a skilled interviewer

3. Food frequency

A list of foods or food groups in which the client selects the frequency with which foods are eaten.

Advantages

- Easily standardized
- Beneficial when used with the 24 hour recall
- Provides a picture of food consumption over a period of time with an overall picture of key nutrients
- Does not influence the usual diet

Limitations

- Reading and writing skills are required unless the client is interviewed
- Does not provide specific information on quantities consumed or on meal pattern
- Food list may not be representative of all the foods in the client's diet
- Knowledge of portion sizes may be required

4. Food Record/Diaries

Provide 3 to 7 day records of actual food intake.

Advantages

- Eliminates errors of recall
- A record of the type and amount of food eaten and the time of consumption

Limitations

- Reading and writing skills are required
- Requires the client to be knowledgeable about portion sizes
- Food intake may be influenced and therefore changes during the period of recording
- Requires a recording period of at least 3 days (one weekend day should be included)

5. Additional data

Data about an individual's general health, food habits and eating patterns include:

- Living conditions
- Food purchasing capabilities
- Meal planning and preparation
- Usual meal pattern
- Snack consumption
- Place in which meals are eaten
- Likes/dislikes
- Allergies
- Previous dietary restriction
- Use of vitamin, herbal, nutritional and or mineral supplements
- Taste changes/aversions
- Use of non-prescription drugs
- Weight changes
- Diet information (diet history)
- Bowel habits
- Level of activity/exercise

Appendix III

THE SIX CARIBBEAN FOOD GROUPS

1. STAPLES	2. FOODS FROM ANIMALS	3. LEGUMES
Bread	Chicken	Almonds
Bammy	Ham	Dried Peas and Beans
Biscuits	Liver	Green peas
Noodles	Fish	Baked Beans
Cornmeal	Shrimps	Peanuts
Breakfast Cereals	Cheese	Textured vegetable Protein
Breadfruit	Goat	
Sweet Potato	Beef	
Irish Potato	Pork	
Green bananas	Egg	
Yams	Milk	
Rice	Yogurt	
Pasta		
4. VEGETABLES	**5. FRUITS**	**6. FATS & SUBSTITUTES**
Cabbage	Grapefruit	Margarine
Cucumber	Orange	Avocado
Lettuce	Banana	Ackee (Jamaican)
Okra	Guava	Peanuts
Tomato	Mango	Olives
Carrot	Papaya	Butter
Pumpkin	Watermelon	Oil
Onion	Apple	Salad Dressing
String Beans	Peaches	Lard
		Shortening
		Coconut

Appendix IV

THE EXCHANGE SYSTEM

The basic premise of the exchange system is that foods are grouped together with other foods of similar nutrient composition so that foods on each list can be substituted or "exchanged" with other foods on the same list. Within each food list, one exchange in the serving size described (measure) is approximately equal to another in calories, carbohydrate, protein or fat.

The exchange list should be used in consultation with a nutrition professional who would individualise the treatment plan after reviewing the nutrition and health history and calculate the appropriate amount of calories and carbohydrate required.

The list in this appendix is divided into:

1. **The Carbohydrate Group** which includes the staples foods, vegetables and fruits. Foods from this list can be interchanged in the meal plan since each group contains roughly equal amounts of calories and carbohydrate.
2. **The Meat and Meat Substitute Group** which includes sources of protein from legumes and nuts as well as foods from animals.
3. **The Fat Group** which includes familiar fat sources and is divided into list of unsaturated and saturated fats.

STAPLE FOODS	MEASURE/EXCHANGE
Bread, Rice and Cereal Substitutes	
Bread/toast, shop, sliced	½ slice (10 cm x 10 cm x 2 cm)
Bread/toast, shop, sliced	1 slice (10 cm x 8½ cm x 1 cm)
Bread/toast, homemade	1 thin slice
Bread, hard dough	1 thin slice
"Hops" bread	½ large
Bammy	¼ small (15 cm diameter, 1½ cm thick)
Hamburger bun	½ medium

STAPLE FOODS	MEASURE/EXCHANGE
Bread, Rice and Cereal Substitutes (cont'd)	
Hot dog roll	1 small
Biscuits, small, round, water type	6 only (3 cm diameter)
Biscuits, cream cracker type	3 only (5 cm diameter or square)
Biscuits, saltines	6 only (5 cm squares)
Roti, Sadha type	¼ (20½ cm diameter) made from 1 cup flour
Roti, Dhalpuri (very thin)	¼ (23 cm diameter) made from 1 cup flour)
Ryvita/Vita Wheat	2-2½ biscuits
Bake/Johnny Cake (baked only)	¼ bake (made from 1 cup flour) 1 small (round)
Rice, cooked	½ cup
Rice and Peas, cooked	½ cup
Noodles, boiled	½ cup
Macaroni, boiled	½ cup
Spaghetti, boiled	½ cup
Cornmeal porridge, medium consistency	½ cup (cooked with water)
Oatmeal porridge, medium consistency	½ cup (cooked with water)
Cream of Wheat porridge, medium consistency	½ cup (cooked with water)
Arrowroot, medium consistency	½ cup (cooked with water)
Sago, medium consistency	½ cup (cooked with water)
Arrowroot/Cornflour/Cornstarch	2 tbsp
Flour (dry, uncooked): wheat/plantain/yam, etc.	2 tbsp
Dumpling made from 2 tbsp flour/cornmeal	1 only
Corn-on-cob (15 cm long)	½ only
Canned Corn, Whole kernel	½ only
Cornflakes	¾ cup
Weetabix	1 only
Bran cereals such as Bran Buds, All Bran	1/3 cup

STAPLE FOODS	MEASURE/EXCHANGE
Starchy Fruits, Roots and Tubers	
Breadfruit	2 pieces (5 cm x 2½ cm wedge) or 60 g
Cassava	1 piece (5 cm x 3 ½ cm) or 60 g
Dasheen	1 slice (5 cm x 6½ cm x 1½ cm) or 60 g
Eddoe/Coco	1 medium or 60 g
Green Banana/green fig	1 medium
Irish Potato, boiled or baked	1 medium or 90 g
Irish Potato, mashed	½ cup
Peewah	2 medium
Plantain (ripe)	1 piece (5 cm)
Sweet Potato	1 slice (5 cm x 6½ cm x 1½ cm) or 60 g
Tannia	1 small or 60 g
Topee Tambu	6
Yam/Yampie	1 slice (5 cm x 6½ cm x 1½ cm) or 60 g

LEGUMES/NUTS	MEASURE/EXCHANGE
Almonds (shelled)	10
Channa/Chickpea	¼ cup
Chataigne/breadnut	2-3 seeds
Dahl, medium consistency	½ cup
Dried peas and beans (1 tbsp. dry) cooked	¼ cup
Green peas, canned	½ cup
Green Pigeon/Gungo Peas, broad beans	¼ cup
Stewed Peas	¼ cup
Baked Beans (canned without molasses and pork)	2 tbsp
Peanuts (salted or unsalted, roasted and shelled)	16
Cashew nuts (salted or unsalted, roasted and shelled)	7

DARK GREEN LEAFY, YELLOW AND OTHER STARCHY VEGETABLES	MEASURE/EXCHANGE
Green Leafy and other Low Calorie Vegetables	
Baghi	Vegetables such as those listed in this group may be used as desired if raw, as they do not have much energy. When cooked use only 1 cup. You may use these vegetables at each meal in **addition** to your other vegetable allowance.
Bamboo shoots	
Cabbage	
Callaloo bush (Dasheen leaves, Aramanthus)	
Carailli	
Cauliflower	
Celery	
Chives/green seasoning	
Christophene/Chocho	
Cress/Criches/Cressles	
Cucumber	
Kale	
Lettuce	
Melongene/Egg Plant/Aubergine/Baigan	
Mustard greens	
Okra	
Pak Choy/Patchoi/Chinese Cabbage	
Pawpaw, green	
Spinach	
Squash (Cucumber type)	
Tomato	
Yellow and Other Vegetables	
Beetroot	½ cup
Bodi	¾ cup
Carrot	½ cup
Chow Mein (Chinese vegetables)	½ cup
Mixed vegetables, canned	½ cup
Onions	1 medium or 2 small or ½ cup
Pumpkin	½ cup
String beans, salad beans (immature pod)	¾ cup
Turnip	½ cup

FRUITS	MEASURE/EXCHANGE
Citrus Fruits and Juices	
Grapefruit	½ (9 cm diameter)
Grapefruit juice, fresh	½ cup
Grapefruit juice, canned, unsweetened	½ cup
Orange/Ortanique	1 small (5 cm diameter), 1 medium; ½ large
Orange juice, canned, unsweetened	½ cup
Portugal/Tangerine/Potigal	1 medium
Other Fresh Fruits	
Banana, ripe	½ medium (15 cm banana) or 1 small
Cashew, fruit	1 large
Cherries (West Indian)	20
Coconut water	¾ cup
Dunks/Jujube/Coolie Plum	12
Figs, ripe (small banana)	1 small
Figs, silk (small)	1 only
Figs, Sucrier (small)	2
Guava	1 medium
Guineps/Ackee*/Chennette	10
Mammie Apple	½ cup
Mango, ripe	1 small
Pawpaw/Papaya	½ cup cubed or ½ small (solo)
Pineapple, raw	1 slice (1½ - 2 cm) thick
Pineapple, juice, unsweetened	1/3 cup
Pineapple and Orange juice, mixed, unsweetened	1/3 cup
Plums	10 small or 6 medium
Pommecythere/Golden Apple/June Plum/Jew Plum	1 medium (7½ cm x 5 cm)
Pommegranate	1 small
Pommerac/Otaheite Apple	1 medium
Sapodilla/Naseberry	1 medium
Soursop, pulp	½ - ¾ cup
Soursop, juice (unsweetened)	1/3 cup

FRUITS	MEASURE/EXCHANGE
Other Fresh Fruits	
Star Apple/Caimit	1 medium/small
Sugar Apple/Sweet sop	1 small
Watermelon	1 cup cubed
Imported Fresh Fruits	
Apple	½ medium or 1 small
Grapes	14 medium
Pear	1 small
Canned Fruits	
Apricot	2 halves
Fruit cocktail	1/3 cup
Grapefruit segments	5
Pears	2 halves
Peaches	2 halves
Pineapple	1 ring or 1/3 cup pieces
Dried Fruits	
Dates	2 only
Figs, dried	1 only
Prunes	2 medium only
Raisins, Currants	1½ tbsp

FOODS FROM ANIMALS	MEASURE/EXCHANGE
Lean Meats − and Poultry with skin removed	
Chicken	1 small drumstick
Chicken breast sliced	2 slices (3½ cm x 7½ cm)
Chicken wing	1 small
Chicken necks	2 small
Chicken backs	½
Ham, lean, thin slice**	5 cm x 7½ cm
Rabbit, thin slices, game meat	4 small cubes or 30 g cooked
Liver	3½ cm x 5 cm x 1½ cm, match box size
Kidney (stewed)	1 tbsp
Heart, ox, slices	5 cm x 7½ cm
Heart, sheep/calf	½ small
Fresh Fish	1 small piece (6½ cm x 5 cm x 1½ cm)
Flying Fish	1
Lean Meats − Fish	
Salted Fish**	1 small piece (6½ cm x 7½ cm) or ¼ cup flaked)
Shrimps, Prawns	5 medium
Oysters	3 medium
Lean Meats − Cheese	
Cottage	2 tbsp
Grated Parmesan	2 tbsp
Medium Fat − Meat and Poultry	
Goat (boneless)	1 tbsp or 4 small cubes (30 g)
Beef (trimmed) regular, sliced thin (1/8" thin)	6½ cm x 7½ cm (30 g)
Beef, stew (boneless)	4 small cubes/1 tbsp (30 g)
Pork chops (fat trimmed)	½ small

FOODS FROM ANIMALS	MEASURE/EXCHANGE
Medium Fat − Fish: Canned and Drained	
Tuna fish, salmon, mackerel**	¼ cup
Sardine (oil drained)	1 large or 2 small
Medium Fat − Eggs	
Egg (whole)	1 medium
High Fat	
Mutton or lamb (trimmed)	1 tbsp or 4 small cubes (30 g)
Chicken wing	1 small
Pork, regular, sliced (trimmed)	6½ cm x 7½ cm or 30 g (1 ounce)
Pork spare ribs	30 g (1 ounce)
Beef ribs	30 g (1 ounce)
Minced meat (regular)	2 tbsp
Sausages**	1 small or ½ large
Luncheon meats**	1 slice 6 cm, diameter, ½ cm thick
Bologna	1 slice
Salt meat (fat trimmed)**	5 cm x 7½ cm
Salami	2 thin slices
Oxtail (fat trimmed)	1 piece 5 cm x 1½ cm
Corned beef**	30 g (1 ounce)
Pig tail**	1 small piece
Pig trotters**	2 pieces 5 cm x 2½ cm
Lamb chop (trimmed)**	1 small
Lamb, sliced thin	6½ cm x 7½ cm
High Fat − Cheese	
Cheddar and American type**	2½ cm cube (30 g)
Skim and very low fat milk	
Milk, liquid, skim	½ cup
Milk, powered skim (before adding liquid)	2 tbsp
Yogurt (plain low fat)	60 g (2 ounces)

FOODS FROM ANIMALS	MEASURE/EXCHANGE
Low Fat Milk	
2% Milk	½ cup
Yogurt made with 2 % milk	60 g (2 ounces)
Whole Milk	
Milk, fresh cow's	½ cup
Milk, evaporated whole (before adding liquid)	¼ cup
Milk, powered whole (before adding liquid)	2 tbsp
Yogurt, plain (whole milk)	60 g (2 ounces)

FATS AND SUBSTITUTES	MEASURE/EXCHANGE
Unsaturated Fats	
Margarine	1 tsp
Avocado	1/8 (10 cm diameter)
Ackee (Jamaica)	2 seeds
Peanut butter	1 tsp
Peanuts	10 only
Cashew Nuts	4 only shelled
Olives, green**	5 small
Almonds (dry roasted)	6 whole
Oil (corn, cottonseed, safflower, sunflower, olive, soybean, peanut)	1 tsp
Salad dressing, mayonnaise type	1 tsp
Salad dressing (all varieties)**	1 tbsp
Salad dressing (reduced-calorie)***	2 tbsp
Saturated Fats	
Butter	1 tsp
Lard	1 tsp
Shortening	1 tsp
Ghee	1 tsp

FATS AND SUBSTITUTES	MEASURE/EXCHANGE
Saturated Fats (cont'd)	
Bacon, streaky without rind	Small rasher
Bacon fat**	1 tsp
Chicken fat	1 tsp
Pork salted**	2½ cm cube
Cream cheese	1 tbsp
Coffee whitener powder	4 tsp
Oil (coconut and palm)	1 tsp
Coconut (dried, grated)	2 tbsp

Note:

*Not Jamaican Ackee

**If two or more portions are eaten, these foods would contribute significant quantities of sodium and should be restricted for those on low sodium diets.

***Two tablespoons of low-calorie salad dressing is a free food.

Appendix V

DETERMINING ENERGY NEEDS

There are several methods used to determine energy needs. The Harris Benedict Equation for Basal Energy Expenditure (BEE) which is often used to estimate the minimum amount of energy needed by the body at rest (basal energy), uses age, height and weight.

For men:

BEE (kcals/day) = 66.5 + (13.8 x W) + (5.0 x H) – (6.8 x A)

For women:

BEE (kcals/day) = 655.1 + (9.6 x W) + (1.8 x H) – (4.7 x A)

W = weight in kilograms H = height in centimeters A = age in years

Another method for estimating energy needs is calculation of Resting Energy Expenditure (REE).

For men:

REE (kcals/day) = 1.0 x W x 24

For women:

REE (kcals/day) = 0.95 x W x 24

BEE and REE are multiplied by an activity factor to estimate total energy expenditure.

ENERGY NEEDS BASED ON WEIGHT AND ACTIVITY LEVEL (kcal/kg)

	Sedentary	**Moderate**	**Active**
Overweight	20-25	30	35
Normal weight	30	35	40
Underweight	30	40	45-50

Example:

A 75 kg male who is 1.8 m tall doing moderate level activity would require how much energy daily?

$$\text{BMI} = \frac{\text{Wt}}{\text{Ht}^2} = \frac{75}{1.8} = 23$$

This person is in the normal weight range and since he is doing moderate activity then according to the table above his daily energy requirements are:

Energy multiplier (taken from table above) x weight

Therefore 35 x 75 = 2,625 kcals/day

Appendix VI

GENERAL GUIDELINES FOR DOCUMENTING

- Client records are legal documents, therefore all entries should be written in ink.
- All entries should be accurate, complete, clear and concise.
- If the information is not documented or if it cannot be read, it can be argued that the service was not provided.
- Entries should be made immediately after the service is provided or as soon as possible thereafter. Any late entry should be identified as such.
- Each page of the medical record should be identified by the client's name and record number. The type of service, e.g. nutrition, date and time should be documented.
- Only standard abbreviations should be used (see Appendix XIV)**.**
- All entries should be signed at the end. Signature should include first name initial, complete surname and status, e.g. J. Brown, RN
- Entries made by interns should be co-signed by the clinical instructor, thereby sharing responsibility and authenticity of the information.
- Information in the record should follow agreed-on standards for documentation.
- The record should never be used to argue personal positions or cast doubt on the professionalism of others.

S – Subjective information

Information provided by client, family or caregiver. The client with the identified chronic disease may express perceptions of symptoms, e.g:

- Headache
- Excessive thirst
- Hunger
- Frequent urination

- Dizziness
- Weakness
- Response to therapy
- Knowledge
- Weight gain or weight loss

  Significant nutritional history

  Socio-economic/cultural information

  Level of physical activity

  Current dietary intake

O – Objective

Objective, reproducible information

This includes data from medical records:

- Clinical signs and symptoms from medical exams
- Biochemical data – blood glucose, lipids, electrolyte status
- Diagnostic report
- Treatment plans
- Anthropometric data – height, weight, healthy body weight, body mass index (BMI)
- Diet history
- Lifestyle factors
- Environmental factors
- Pertinent medications
- Age
- Current diet prescription
- Nutritionally pertinent medication
- Desirable weight/realistic goal

A – Assessment

Use the subjective and objective data to make opinion judgement:

- Assess client's nutritional status, nutrient and calorie needs imposed by the disease and/or medication
- Assess adequacy of intake
- Assess tolerance to the prescribed diet and its effect on appetite, food habits and supplements
- Assess projected weight gain or loss
- Assess comprehension and motivation if appropriate
- Identify challenges and/or barriers for implementation of plan

P – Planning

The plan outlines the course of action to be taken to manage the specific disease. The plan should form part of the comprehensive care plan and should include diagnostic, clinical or educational intervention as well as referrals. The diet prescription and use of any supplements should be outlined in the plan.
Plan for follow-up care.

I – Implementation

Implementation is the action taken to effect the plan. It may involve providing supplements, resources and any special tools to be used.

Client education is an important component.

- Education Process
- Referral Process

Appendix VII

CHECKLIST FOR DOCUMENTATION OF NUTRITIONAL CARE

ITEMS		YES	NO
Format: Used proper place for notes. Recorded date, time, signature			
S.	Included diet history information		
	As appropriate included patient statements.		
	Included diet followed at home (if any), e.g. symptoms, food habits.		
	Statement about recent appetite, nausea.		
	Checked for eating problems, chewing difficulties, swallowing.		
O.	Ht., Wt., and IBW ISF MAC, MAMC Blood Pressure, BMI		
	Lab data.		
	Diet order stated.		
	Weight changes.		
	BMR factors – fever, tachycardia, exudates BEE, protein and kcal needs for age, sex, etc.		
	Calorie counts or estimated intake.		
A.	**Acceptable Body Weight or % usual weight.**		
	Nutrient deficiencies in diet as ordered.		
	Evaluation of diet history		
	Client acceptance/tolerance of diet		
	Client understanding of diet instructions.		
	Verification of diet as appropriate for client.		
	Recommendations for anticipated problems.		

ITEMS		YES	NO
P.	**Instructions/Recommendations**		
	Consult/refer to other professional/agency		
	Obtain weight; obtain calorie counts		
	Recommend snacks/supplements		
	Request change in diet		
	Indicate short-term and long-term goals.		
I-E	**Nutritional breakdown of calculated diet or other modification recorded.**		
	Meal plan written handouts given to client or significant other.		
	Stated plans for continued nutritional care.		

Appendix VIII sheet

Appendix VIII

DETERMINANTS OF VISITS

	WEEKLY	MONTHLY	QUARTERLY	SEMI ANNUALLY	ANNUALLY
N.B. Children newly diagnosed with diabetes and adults requiring insulin are usually hospitalized for initial care.	• Clients beginning treatment with nutrition therapy and not yet competent to undertake self-management programme	• Clients with multiple risks e.g. any combination of diabetes, obesity, hypertension, coronary heart disease, dyslipidaemia. • Renal impairment or signs of complications. • Clients on intensive insulin therapy. • Pregnant women • Obese clients • Clients recently discharged from hospital for diabetes, hypertension, obesity or related illnesses. • Clients referred to other team members for problems if necessary. • Clients with BP systolic 160-179, diastolic 100-109 mm Hg.	• All clients who have not yet achieved treatment goals. • Clients in whom any abnormalities have been identified who may need to have nutritional or disease study re-assessed for intervention children with diabetes, obesity or hypertension. • Clients with blood pressure reading: systolic 140-159, diastolic 90-99 mm Hg.	• Re-evaluation of client's understanding of the disease process. • Review of self-management. • Review and update of clients support system. • Re-assessment of nutritional status for children and clients with onset of complications.	• All clients: comprehen-sive nutritional assessment. • All clients: re-evaluation of Nutritional Care Plan.

Appendix IX

RESPONSIBILITIES OF HEALTH CARE TEAM MEMBERS IN NUTRITIONAL CARE

The importance of a team approach to health care has been magnified, in view of the multi-faceted nature of many diseases. The combined efforts, knowledge, attitudes and skills of the team can help to ensure safe and effective Nutritional Care, particularly in the Caribbean where the availability of nutritionists and dietitians is limited. Team members also learn about the contribution of other team members and learn how to delegate and/or refer responsibilities to the most appropriate members of the team. The fact that the client is a very important team member should not be overlooked.

The following are responsibilities of different members of the health care team in the nutritional management of persons with chronic diseases. The list should not be considered exhaustive.

The Physician

- Diagnoses medical problems
- Performs medical procedures
- Co-ordinates and prescribes therapy
- Assumes overall supervision of the team
- Reviews/approves guidelines and clients' management protocol
- Refers clients for specialized Nutritional Care.

Nurse Practitioner

- Diagnoses medical problems
- Co-ordinates client management
- Refers clients for specialized Nutritional Care

Nutrition Personnel

- Takes responsibility for Nutritional Care
- Assesses nutrition status

- Determines nutrient needs
- Recommends appropriate diet therapy
- Prepares care plan in collaboration with client
- Instructs client on the diet and care plan
- Monitors Nutritional Care process
- Evaluates effectiveness of nutrition intervention
- Provides training and nutrition intervention for the other members of the health care team
- Refers clients to other members of the health care team as indicated
- Documents all relevant details in client's medical records.

Note: In the absence of trained nutrition personnel, the physician, nurse practitioner and nurse will:

- coordinate instructions and ensures that any written information regarding diet/nutritional care is explained and sent home with clients
- provide basic nutrition information to clients

The Nurse

- Assumes a central role in overall care and communicates with relevant members of the health care team
- Communicates with clients/care-givers on relevant aspects of Nutritional Care and explains procedures and plan. Ensures that other nurses assume their roles in the Nutritional Care of the client
- Ensures documentation of all relevant information

The Pharmacist

- Recommends appropriate drug therapy
- Acts as a liaison to identify and inform the team, as well as the client and significant others, about possible drug-nutrient interactions and side effects of medications
- Educates the client on appropriate procedures for taking certain drugs e.g. before or after meals, or avoiding certain foods while taking the medication

The Community Health Aide

- Visits Clients at home
- Monitors client's self-care
- Refers client from community to health centre

Appendix X

STANDARD CLASSIFICATION OF OVERWEIGHT IN ADULTS BY BMI (WHO)

CLASSIFICATION	BMI KG/M²	RISK OF CO-MORBIDITIES
Underweight	<18.5	Low
		(but risk of other clinical problems increased)
Normal range	18.5–24.9	Average
Overweight	≥ 25	
Pre-obese	25–29.9	Increased
Obese class I	30.0–34.9	Moderate
Obese class II	35.0–39.9	Severe
Obese class III	≥ 40.0	Very severe

Source: Obesity: preventing and managing the global epidemic: report of a WHO consultation. WHO technical report series; 89, Geneva 2000

Appendix XI

BMI CHART

How to use the BMI Charts

Appendix XII

TABLE 1: DEFINITION AND CLASSIFICATION OF BLOOD GLUCOSE LEVELS

CATEGORY	GLUCOSE LEVELS	
	(mg/dl)	**(mmol/1)**
NORMAL	<100 (FPG) <140 (2-h post load OGGT)	<5.6 (FPG) <7.8 (2-h post load OGGT)
IMPAIRED FASTING GLUCOSE (IFG)	≥100 /<126	>5.6/< 7.0
IMPAIRED GLUCOSE TOLERANGE (IGT)	≥140/< 200 (2-hpostload (OGGT)	≥7.8/< 11.1 (2-h post load OGGT)
DIABETES	≥126 (FPG) ≥200 (2-h post load (OGGT)	≥7 ≥11.1
GESTATIONAL DIABETES	≥95 (FPG) ≥180 (1-h post load OGGT) ≥155 (2-h post load OGGT)	≥5.3 (FPG) ≥10.0 (1-h post load OGGT) ≥8.6 (2-h post load OGGT)

Source: American Diabetes Association 2004 – Guidelines of Care

TABLE 2: CLASSIFICATION AND MANAGEMENT OF BLOOD PRESSURE FOR ADULTS

BP Classification	SBP* MMHG	DBP* MMHG	Lifestyle Modification	Initial Drug Therapy	
				Without Compelling Indication	With Compelling Indications
Normal	<120	and <80	Encourage	No anti-hypertensive drug indicated	Drug(s) for compelling indications.‡
Prehypertension	120-139	or 80-89	Yes		
Stage 1 Hypertension	140-159	or 90-99	Yes	Thiazide-type diuretics for most. May consider ACEI, ARB, BB, CCB, or combination.	Drug (s) for the compelling indications.‡ Other anti-hypertensive drugs (diuretics, ACEI, ARB, BB, CCB) as needed.
Stage 2 Hypertension	≥160	or ≥100	Yes	Two-drug combination for most† (usually thiazide-type diuretic and ACEI or ARB or BB or CCB).	
Stage 3 Hypertension	>180	> 110	Yes	Three drug combination	

DBP, diastolic blood pressure, SBP, systolic blood pressure.

Drug abbreviations: ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; BB, beta-blocker; CCB, calcium channel blocker.

* Treatment determined by highest BP category

† Initial combined therapy should be used cautiously in those at risk for orthostatic hypotension.

‡ Treat patients with chronic kidney disease or diabetes to BP goal of <130/180 mmHg.

Source: Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure – 7th Report 2003.
CHRC/PAHO 2004 Managing Hypertension in Primary Care in the Caribbean- Working Document

TABLE 3: STRATIFICATION OF RISK TO QUANTIFY PROGNOSIS OF HYPERTENSION

	BLOOD PRESSURE (mmHg)		
Other Risk Factors & Disease History	**Grade 1** (mild hypertension) SBP 140-159 or DBP 90-99	**Grade 2** (moderate hypertension) SBP 160-179 or DBP 100-109	**Grade 3** (severe hypertension) SBP ≥180 or DBP ≥110
1. No other risk factor	**LOW RISK**	**MED RISK**	**HIGH RISK**
2. 1-2 risk factors	**MED RISK**	**MED RISK**	**V HIGH RISK**
3. 3 or more risk factors or TOD1[2] or diabetes	**HIGH RISK**	**HIGH RISK**	**V HIGH RISK**
4. ACC2[3]	**V HIGH RISK**	**V HIGH RISK**	**V HIGH RISK**

[2]TOD = Target Organ Damage

[3]ACC = Associated Clinical Conditions, including clinical cardiovascular disease and renal disease.

Source: Adapted from 2003 European Society of Hypertension – European Society of cardiology guidelines for the management of arterial hypertension. Guidelines Committee Journal of Hypertension 2003

Appendix XIII

TIPS FOR NUTRITION COUNSELLING

1. Listen, allow client to speak freely

2. Avoid actions that may prejudice responses you may receive from client e.g. nodding, frowning, facial expressions, exclamation, preaching or authoritarian approach

3. Support and suggest ideas/make recommendations

4. Role play

5. Use active learning, hands-on approach

6. Teach food label reading

7. Suggest guidelines for shopping appropriate to meal plan

8. Use appropriate educational aids e.g. food models, common household measures, videos, posters, handouts

9. Use foods which are available to client, well liked, culturally appropriate and within their economic resources

10. Involve significant others or person preparing meals where possible

11. When counselling children, try to involve the entire family. Siblings can make a difference

12. Monitor progress:
    - nutrient intake
    - adherence to plan
    - weight
    - blood pressure
    - blood sugar

13. Congratulate clients who have made positive changes and encourage continued improvement.

14. Refer to other team members as indicated

15. Set follow-up goals with clients

Appendix XIV

SAMPLE SIMPLIFIED NUTRITION SCREENING FORM

Basic Anthropometry: Height: _____ Weight _____

[ ] Weight change: lost 10 lb/4.5 kg or more in the last 6 months

Dietary Problems (tick all that apply)

[ ] Poor appetite
[ ] Difficulty chewing
[ ] Difficulty swallowing
[ ] Pain in mouth, teeth or gums
[ ] Gastrointestinal problems
[ ] Unable to obtain or prepare food
[ ] Consumes more than 1 alcoholic drink/day (female)
[ ] Consumes more than 2 alcoholic drinks/day (male)

Living Conditions (tick all that apply)

[ ] Income level is low
[ ] Lives alone
[ ] Is homebound
[ ] Limited cooking equipment
[ ] No refrigerator

Functional Status (tick all that apply)

[ ] Cooking assistance needed
[ ] Feeding assistance needed
[ ] Assistance needed to buy food
[ ] >50% of time in bed

Evaluation: One or more check marks may be indicative of nutritional risk. Refer patient for further assessment.

Appendix XV

SOME COMMON ABBREVIATIONS

AA	Amino acid
Abd	Abdomen
Alb	Albumin
Amts	Amounts
ARF	Acute renal failure
ASHD	Atherosclerotic heart disease
BEE	Basal energy expenditure
BF	Breast feeding, breast feeder
BMR	Basal metabolic rate
BP	Blood pressure
BS	Blood sugar
BSA	Body surface area
BUN	Blood urea nitrogen
BW	Body weight
c	Cup (s)
C	Coffee
CA	Cancer
Ca++	Calcium
CHD	Cardiac disease/coronary heart disease
CHF	Congestive heart failure
CHI	Creatinine- height index
CHO	Carbohydrate
Chol	Cholesterol
Circum	Circumference
Cl, Cl^-	Chloride
CNS	Central nervous system
CO_2	Carbon dioxide
CVA	Cerebrovascular1 accident
Dec.	Decreased
Decaf.	Decaffeinated
Def.	Deficiency
DM	Diabetes mellitus
dx	Diagnosis
EAA	Essential amino acid
ECG	Electrocardiogram
EEG	Electroencephalogram
EFA's	Essential fatty acids
Elim	Eliminate, elimination
EN	Enteral nutrition
ESRD	End- stage renal disease
ETOH	Ethanol/ethyl alcohol
Fe, Fe++	Iron
F&V	Fruits and vegetables
FTT	Failure to thrive
g	gram(s)
GA	Gestational age
GA	Gestational age
Gest	Gestational
gluc	Glucose
GTT	Glucose tolerance test
HBV	High biological value
HBW	Healthy body weight
HDL	High-density Lipoprotein
HbA_1C	Glycosylated haemoglobin level
HLP	Hyperlipoproteinemia/ hyperlipidemia
HPN, HTN	Hypertension
ht	Height
hx	History
I & O	Intake and output
IBW	Ideal body weight
IU	International units
jc	Juice
K K+	Potassium

Kcal	Food calories
Kg	Kilogram (s)
L	Litre (s)
lb	Pounds (s)
LBM	Lean body mass
LBV	Low biological value
LBW	Low birth weight
LDA	Low-density lipoprotein
LGA	Large for gestational age
LI	Large intestine
M	Milk
MAC	Mid-arm circumference
MAMC	Mid –arm muscle circumference
MCT	Medium chain triglycerides
MI	Myocardial infarction
Mg, Mg++	Magnesium
mg	Milligrams
*u*g	Micrograms
mm	Millimetre
MODS	Multiple organ dysfunction syndrome
MUFA	Monounsaturated fatty acids
N&V	Nausea and vomiting
N	Nitrogen
Na+	Sodium
NCEP	National Cholesterol Education Programme
NPO	Nil per os (nothing by mouth)
Oz	Ounce
P	Phosphorous
PG	Pregnant, pregnancy
pp	Post Prandial
Prot	Protein
PUFA(s)	Poly unsaturated fatty acid(s)
PVD	Peripheral vascular disease
RBC	Red blood cell count
RDAs	Recommended dietary allowances
REE	Resting energy expenditure
RQ	Respiratory quotient treatment
Rx	Treatment
SFA	Saturated fatty acids
SGA	Small for gestational age
SIDS	Sudden infant death syndrome
SOB	Shortness of breath
sub	Substitute
Sx	Symptoms
Tsp	Teaspoon (s)
Tbsp	Tablespoon (s)
TF	Tube feeding , tube -fed
TIBC	Total iron binding capacity
TLC	Total lymphocyte count
TPN	Total parenteral nutrition
Trig	Triglyceride
TSF	Triceps skinfold
UTIs	Urinary tract infections
UUN	Urine urea nitrogen
WBC	White blood cell count
SI	Small intestine
WNL	Within normal limits
Zn	Zinc

Glossary

Autoimmunity – Disorder of the body's defence system in which antibodies are produced against certain components or products of its own tissues, treating them as foreign material and attacking them.

Ketoacidosis – A condition in which acidosis is accompanied by ketosis such as occurs in diabetes mellitus. Symptoms include nausea, vomiting, abdominal tenderness, confusion or coma, extreme thirst or weight loss. It is a life threatening condition.

Ketosis – Raised levels of ketone bodies in body tissue. Ketone bodies are normal products of fat metabolism and can be oxidised to produce energy. Elevated levels arise when there is an imbalance in fat metabolism such as occurs in diabetes mellitus and starvation

Microvascular – Involving small vessels.

Orthostastic Hypotension – Low blood pressure found in some patients when they stand upright.