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**MANUAL FOR IMPLEMENTING QUALITY CARE FOR CHRONIC CONDITIONS**

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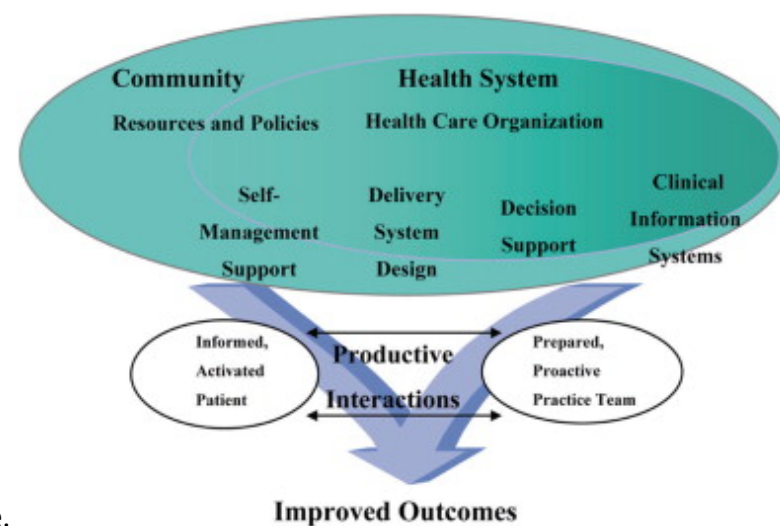
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## Introduction

Care for chronic non-communicable diseases (CNCDs) such as cardiovascular disease, diabetes, cancer, and chronic obstructive pulmonary disease is a global problem. Research demonstrates that the vast majority of people with CNCDs do not receive appropriate care. Only approximately half are diagnosed; and among these patients, only half are treated (1). Of the 25% of persons with CNCDs who do receive care, only half achieve the desired clinical treatment targets. In essence, only approximately one in ten people with chronic conditions are treated successfully. This is chiefly the result of inadequate management, but also the existence

The Chronic Care Model



numerous financial barriers and other factors mitigating access to care.

Several organizational models of the management of CNCD's have been proposed and implemented internationally. Perhaps the best known and most influential is the Chronic Care Model (CCM) (2), which focuses on linking informed, activated patients with proactive and prepared health-care teams. According to the CCM, this requires an appropriately organized health system linked with necessary resources accessed in the broader community.

Implementing integrated evidence-based chronic care continues to be a challenge for most developing countries. PAHO has recently produced a document outlining the most effective strategies to improving chronic care, based on the CCM. One of the most important barriers to improving quality of care for chronic medical conditions is an inadequate capacity of health providers at the first level of care to apply the available evidence-based guidelines. This working group has produced a step-by-step manual on how to implement selected actions designed to improve health care delivery for CNCD's.

## The Purpose and use of the Manual

There are several guidelines published which assist in the treatment of various chronic diseases. For the most part, the guidelines are disease oriented and reflect a reactive approach to the handling of the issue of chronic diseases, offering direction as to how to treat the patient as the problem arises. This manual reflects a more modern, comprehensive, proactive, prevention-focused and population-directed approach to the delivery of care as it relates to chronic diseases.

The manual outlines steps to implement key interventions identified as most likely to impact chronic care delivery. The interventions have been selected based on gaps identified, after situational analyses were conducted and expert advice provided based on the best evidence available.

An attempt has been made to choose key actions and thus develop various interventions from the six different components of the chronic care model. The expectation is that if the key interventions are implemented using the technologies developed (technologies are described below under the *Methodology* heading); the various centres of health care delivery will indeed improve in their capacity to deliver an even higher quality of care for chronic noncommunicable diseases.

**Suggested use:** It is suggested that the various facilities choose interventions which are relevant, applicable, implementable and presumably cost-effective. It is also suggested that one useful intervention from each component of the Chronic Care Model, is identified and implemented at a time, in order to achieve a balance in the quality of chronic care delivered by your facility, resulting in an improvement in patient outcomes as well as process outcomes. There is evidence that none of the components of the CCM is more important than the other, and yet that outcome is greater than the sum of the individual components when interconnected and working in a coordinated manner. Implementation of technologies from various components is therefore recommended.

The manual is meant to be user-friendly, generally applicable (in both resource-constrained and other contexts) as well as dynamic.

It is the intention of the working group that new technologies will be developed in the future (based on further situational analyses); and continuously and systematically, included in the manual over the ensuing years.

Though the manual is predominantly designed around the management of diabetes mellitus and hypertension, (the most prevalent chronic diseases in the region), at the primary care level, it may also be utilized in the management of other chronic diseases and in other clinical contexts.

## Methodology

This manual was drafted after several meetings, consultations, situational analyses and evaluations of various interventions as well as assessments of existing best practices.

Various models of chronic care were explored. The chronic care model was deemed most applicable to the context of chronic disease care in the Americas, Latin America and the Caribbean. This model was used as the template for building strategies for improving chronic care delivery. After several consultations and working group meetings of experts involved in chronic disease care across the region, as well as assimilation of best practices emerging from the application of the chronic care model to chronic care delivery, the most effective strategies and key interventions were selected and chronicled.

Based on these identified key interventions, technologies (step by step guidelines to effect implementation of the particular intervention) were developed.

The PAHO draft format for these technologies was crafted based on various instruments evaluated.

The components of the technologies are :

The *concept* (description of the technology), the *expected effect* of implementing the technology, an *outlining of the steps* involved in implementation of the technologies, *tools* involved in the implementation of the technology , a suggestion of the *responsible personnel* who

should be involved in implementing the technologies, and *tips* for easier implementation based on experience of other groups and recommendations.

Technologies so developed were grouped according to their association with the various components of the Chronic Care Model.

The manual has been so crafted to facilitate further inclusions of technologies in the future .

### **Aim:**

- To provide a step by step instruction for the implementation of actions designed to improve the quality of care for chronic conditions.

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# Health Care Organisation

Health care systems can create an environment in which organized efforts to improve health care for chronic illness take hold and flourish. Critical elements include: a coherent approach to system improvement, leadership committed to and responsible for improving clinical outcomes, and incentives to providers and patients to improve care and adhere to guidelines.

This component of the Chronic Care Model is an important part of the model that encompasses the clinical practice components of the model and refers to the use of leadership and the provision of incentives to improve the quality of care. By including this component, the CCM acknowledges that improvement in the care of patients with CNCD's will occur only if system leader- both private and governmental- make it a priority, and provide the leadership, incentives and resources required for improvement.

## Technology: Practice process and outcome measure monitoring in Diabetes Mellitus

### Concept/Description:

A mechanism for evaluating the quality of health care delivery through assessment of process indicators of diabetic care, while reviewing and measuring clinical outcomes in reference to use of established guidelines. There is evidence that positive change in diabetes care is a good progress toward better health care(4).

### Expected Effect:

1. The use of the guidelines would be increased
2. The health care professionals would be appraised of the impact (improved outcome) of their interventions through use of guidelines
3. An increase in the proportion of persons with good glycaemic control (HB A1c <7% or FBG< 130mg/dl) as well as those meeting other goals
4. Early detection and reduction of diabetic complications. (Eye, foot, kidney and cardiovascular complications )
5. General improvement in health care delivery within health care facilities

Steps	Tools	Responsible	Tips
1.Ensure that clinical practice guidelines have been circulated among the clinical and non-clinical health centre workers.	Selected Guidelines Chronic Care Passport	Administrative Head Specialist Physician	Sensitisation sessions should accompany circulation of guidelines. Wall-placed and pocket guidelines should be posted if available
2. Evaluate the extent of use of the guidelines by clinical staff within 3 months of circulating guidelines with a simple response form determining the extent of use of the guidelines	Question and response form	Administrator	Difficulties in the use of guidelines should be actively obtained.  Annual assessment recommended

3. Review of patient charts looking for evidence of labs and investigations requested and clinical exams conducted : [BMI, HBA1c /FBG, creatinine, calculated eGFR, lipids (LDL and triglyceride), BP, foot exam, eye exams, urine for microalbuminuria, EKG]	Patient Charts and/or PRC	Clinical Head of Chronic Diseases  Nurses	Nurses and nursing assistants should be taught on foot examination for ulcer risk Annual audit (Chart review: one per year) Target sample proportion of at least 10% of patient charts is suggested
4. Review of patient charts to determine if actual results or reports have returned.	Patient Charts	Physicians Clerk	Results should be actively sought if they have not arrived on time
5. Determine the proportion of diabetic smokers	Patient charts	Clerk	Smoking history should reflect past and current use
6. Determine the percentage of smokers who are referred for/enrolled in smoking cessation programmes strategies or who have received counselling re smoking cessation.	Patient Charts Referral Forms Local /MPOWER Tobacco Guidelines	Administrator Physicians Nurses Researcher/Clerk	PHC facilities should be aware of smoking cessation programmes/ and strategies or how to Identify/risk stratify and advise a smoker
7. Determine the proportion of patients who have achieved metabolic control (HBA1c<7%/ FBG<130mg/dl, lipid control LDL<3.4mmol/l, BP<130/80, and absence of complications	Patient Charts	Physicians Nurses Clerks	Target goal of >50% of patients with HbA1c <7% is suggested The results of lab and clinical parameters should be compared to previous years.
8. Calculate the Percentage of patients who are uncontrolled (HBA1c >9%, BP>140/90)	Patient Charts	Physicians Nurses / Clerks	
9. Review of patient charts to determine the percentage of patients with abnormal parameters who have been appropriately referred eg. renal failure to nephrologist	Patient Charts Referral registers	Physicians	There should be posted list of specialists to whom referrals should be made to facilitate referrals

10. Calculate the proportion of patients who are involved in self-monitoring of glucose, and those who have been engaged in a self-management education activity in the previous year.

Simple patient response form

Clerk  
Nurse in Charge

This simple patient response could evaluate

## Technology: Practice process and outcome measure monitoring Hypertension

### Concept/Description:

A mechanism for evaluating the quality of health care delivery through assessment of process indicators of care for the hypertensive patient; while reviewing and correlating clinical outcomes in reference to use of the established guidelines(4).

### Expected Effect:

1. Clinicians' use of the guidelines would be increased
2. The health care providers would be appraised of the impact of their interventions
3. Increase in the percentage of persons achieving blood pressure control (<140/90)
4. Early detection of hypertensive complications. (Renal failure, Heart failure, stroke)

Steps	Tools	Responsible	Tips
1.Ensure that guidelines have been circulated among clinical and non-clinical health workers	Guidelines selected	Administrator	Sensitisation sessions should accompany circulation of guidelines. Wall-placed and pocket guidelines should be posted if available.
2. Evaluate the extent of and challenges with the use of the guidelines by clinical staff .	Question and Response form	Administrator	Difficulties in the use of guidelines should be actively obtained. Annual evaluation should occur.
3. Review of patient charts looking for evidence of labs and investigations requested or clinical exams conducted : [Creatinine, eGFR, lipid (LDL, triglycerides), CXR and EKG]	Patient Charts	Clinical Head of Chronic Diseases  Nurses Clerk	EKG interpretation workshops to improve evaluation and early diagnosis of complications of hypertension. LDL twice yearly  Target of 10% charts is suggested

4. Calculate the proportion of patients who are smokers	PRC CCP	Clerks, Nurses, Physicians	Smoking history should reflect past and current use
5. Determine the percentage of smokers who are referred for/enrolled in smoking cessation programmes/ have been advised on smoking cessation.	Patient Charts Referral Forms MPOWER /Local tobacco guidelines	Administrator Physicians Nurses Researcher/Clerk	PHC facilities should be aware of smoking cessation programmes and strategies or basic advice given to smokers
6. Review of patient charts to determine if actual results or reports have been received.	Patient Charts	Physicians Clerk	Results should be actively sought if they have not arrived on time
7. Determine the proportion of patients who are controlled (BP<140/90)	Patient Charts	Physicians Nurses	Target goal of 50% is suggested. Annual evaluation is recommended and comparisons made to previous years
8. Calculate the percentage of patients with BP>160/100mmHg	Patient Charts		
9. Review of patient charts to determine the percentage of patients with abnormal parameters who have been appropriately referred eg renal failure to nephrologist	Patient Charts	Physicians Nurses Referral Registers	A different parameter can be measured with respect to referrals based on certain abnormal results, with each evaluation
10. Calculate the proportion of patients who are empowered to self-care by using a simple response form determining those who are engaged in self-monitoring of blood pressure, and those who have been engaged in a self management education activity in the previous year	Patient simple response form	Health centre clerk Nurses	The health centre facility should plan and schedule: instructions for self-monitoring of blood pressure; and self- management education

## Technology: Training the Health Care Team to manage chronic conditions

**Concept/Description:** A group of diverse clinical and non-clinical staff who communicate with each other regularly about the care of a defined group of patients and participate in that care while they are trained in educating patients in self-management, and in longitudinal patient-centred care(15).

**Expected Effect:**

1. Improved quality of care and health outcomes.
2. Reduced healthcare costs due to more efficient use of resources
3. An expansion of the skill set of the health workforce to provide effective health care for chronic conditions

Steps	Tools	Responsible	Tips
1. Create the health care team responsible for care of chronic conditions based on available resources and patient profiles	WHO Preparing a healthcare workforce for the 21 <sup>st</sup> century	A clinical professional with decision making powers	Team should include at least a nurse, medical doctor and nurse assistant. Preferably a medical specialist if available. Other professionals: social worker, dietician, pharmacist, physical therapist, psychologist and lay health workers if available

<p>2. Plan monthly continuous education activities to strengthen the team members' competencies.</p> <p>Competencies include:</p> <ul style="list-style-type: none"> <li>• Patient centred care eg interviewing and communicating effectively, supporting self management</li> <li>• Partnering: with patients, providers and community</li> <li>• Quality improvement</li> <li>• Information and community technology</li> <li>• Public health perspective</li> </ul>	<p>Guidelines WHO Preparing a healthcare workforce for the 21<sup>st</sup> century</p> <p>Activities or Courses(with certification or diploma status), on line or face to face delivered by Universities, medical or scientific bodies, MOH or PAHO</p>	<p>Health team leader</p>	<p>Training activities should include courses, clinical sessions, dissemination of clinical guidelines, these should be planned with team members.</p>
<p>3. Assign roles and responsibilities of each of the team members</p>	<p>A list of composition and roles of the team</p>	<p>Health leader responsible for chronic disease care</p>	<p>Delegate responsibilities according to aptitude.</p>
<p>4. Design a coordination mechanism amongst team members to assure quality of care</p>		<p>Medical specialist (may be off site) or Senior Nurse</p>	<p>Meet at least once weekly to discuss different groups of patients.</p>
<p>5. Appoint one team member a representative of the health care team to assist patients in between planned visits as needed</p>		<p>Nurse assistant</p> <p>Any assigned member of the health team</p>	<p>Implement a mechanism for patients to contact the health care team representative; including a defined place and schedule</p>





## Technology: Quality Improvement

**Concept/Description:** Framework for developing, testing, and implementing changes to the way things are done that will lead to improvement. The model consists of two parts that are of equal importance: the 'thinking' and 'doing' parts, based on (PDSA) cycles.(21)

**Expected Effect:**

1. Improved quality of health care delivery using a fairly simple approach
2. A closure of health care delivery gaps identified in the particular health context
3. Successful quality improvement on a small scale with minimization of risk thus creating a template for implementation on a larger scale.
4. An opportunity developed for planning, developing and implementing change
5. The development of a skill set which will be universally applicable

Steps	Tools	Responsible	Tips
1. Determine the specific targets of the improvement strategies	Health Centre Reports on chronic care	The Health Team leaders	Identify few goals of improvement initially by consensus from the health team
2. Set parameters of change and determine how it will be measured.	Quality Improvement Measure	The Health Team leaders	Choose an indicator which is measurable and a true reflection of the status of the element being evaluated. Indicators may reflect patient outcomes or service or the health care process
3. Implement the particular strategies.	PDSA cycle	Health Professional Responsible for Chronic Care	There should be evidence the strategy chosen will result in identified target

<p>4. Remeasure the particular indicator [A comparison before and after implementation should be made, the extent, impact and cause of the difference (if any) evaluated].</p>		<p>Administrative and clinical members of the team</p>	<p>There may be no difference but that too should be evaluated</p>
<p>5. Factors facilitating or impeding the success of a particular strategy should be determined through analysis and strengthened or negated as applicable</p>		<p>Head of chronic care team Senior nurse Administrator</p>	
<p>6. The strategy for improvement should be repeated and the reassessment performed</p>		<p>Head of the chronic care team</p>	<p>Reimplementation of the strategy should be easier.</p>
<p>7. The results of the entire quality improvement exercise should be discussed with the health team and all stakeholders.</p>			<p>Any factors identified which mitigated higher quality of care in the first place or along the process should be identified and documented as one to be actively avoided</p>
<p>8. Repeat the cycle as often as is necessary in order to accomplish the desired target or outcome.</p>			

## PDSA Worksheet

**Aim:** (overall goal you wish to achieve)

*Every goal will require multiple smaller tests of change*

<b>Describe your first (or next) test of change:</b>	<b>Person responsible</b>	<b>When to be done</b>	<b>Where to be done</b>

### Plan

<b>List the tasks needed to set up this test of change</b>	<b>Person responsible</b>	<b>When to be done</b>	<b>Where to be done</b>

<b>Predict what will happen when the test is carried out</b>	<b>Measures to determine if prediction succeeds</b>

### Do

Describe what actually happened when you ran the test

### Study

Describe the measured results and how they compared to the predictions

### Act

Describe what modifications to the plan will be made for the next cycle from what you learned

## The PDSA Cycle



## Technology: Specific Risk Factor Intervention (Obesity)

### Concept/Description: (13)

Obesity is a major and common risk factor for most chronic non-communicable diseases which increases the relative risk of cardiovascular morbidity and mortality, hypertension, diabetes as well as cancers. Recognition of its existence, implementation of exercise prescription and dietary advice are essential to managing this far reaching risk factor.

### Expected Effect:

1. Patients with this particular risk factor will be easily identified through creation of an obesity registry
2. The patients' progress will be tracked
3. Average BMI within the clinic populations will reduce
4. Morbidity and mortality from CNCD's will significantly lower due to reduction in the prevalence of obesity and improved control of chronic diseases
5. Patients will be self-empowered and motivated to reduce their Body Mass Index

Steps	Tools	Responsible	Tips
1. Inform patients of intervention to improve their levels of health through weight management. Ensure patients are ready or agreeable for this intervention.		Senior clinic nurse or physician	
2. Inspect the patient registry, select those patients with BMI of >30 at last visit ( or create an ongoing register of such persons in preparation for this intervention	PRC Patient registry	Nurse, clerical assistant	
3. Contact the relevant persons, invite them to the health centre individually or		Clerk Nurse in charge	

as a group visit or this could be done at the scheduled clinic visit			
4. Assess BMI, waist circumference, obesity stage and complications of excess weight obesity eg osteoarthritis, obstructive sleep apnoea, hypertension, diabetes, fatty liver. Explore drivers of obesity including possible hormonal causes.	Weight and height scale, tape measure, BMI chart	Nurse assistant Nurse in charge Physician	Do BP readings, lipid profile, LDL and triglyceride, hormonal profile eg thyroid function tests as is indicated
5. Group patients according to co morbidities, cardiovascular risk level per WHO risk tables, obesity stage.	BMI chart PRC WHO/ISH risk tables	Weight management specialist	It is useful to have smaller for manageable groups in order to embark on educational task
6. Educate patients about the facts of obesity, the cause, the disease process the impact and risk for CNCD's and complications, possible interventions, the benefits of even modest weight loss, the need for a long term strategy and treatment options	Patient	Behaviour Change Counselor	It is important for patients to understand how lifestyle modification can influence success in weight management
7. Arrive at target BMI goals and arrive at consensus with patient agree they are obese and understand their target BMI goals	BMI charts Chronic Care Passport	Behaviour change counselor Physician	The colour correlation on various BMI charts, helps to reinforce patient self monitoring and target goals
8. Refer for exercise prescription to be made re type, frequency, duration and goal	Exercise prescription	Exercise chronic care specialist	The exercise prescribed has to be affordable, acceptable, accessible. Comorbidities should be considered
9. Refer to Nutritionist for dietary	Referral Form	Nutritionist	*Refer for bariatric surgery to be

management or bariatric surgeon			considered if BMI >40. This while the standard approach is occurring.
10. Patients should be assessed re impact of interventions monthly	PRC	Nurse Assistant	The patient should be interviewed re challenges with the intervention, weighed
11. Advise patient to maintain target BMI by regular physical activity at least 30 minutes daily		Nurse/Physician	Various types of physical activity may be utilized. The patient should be cautioned or supervised on initiation of physical activity
12. Advise patient to maintain target BMI through appropriate nutritional intake including 5 servings of fruits and vegetable daily	(See nutrition technology)		



# Body Mass Index Chart



# BODY MASS INDEX CHART



Applicable for Males and Females Over the Age of 18 years

		WEIGHT – lbs																																
		100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200	205	210	215	220	225	230	235	240	245	250		
HEIGHT Ft & Ins	5'0"	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	1.52	
	5'1"	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	42	43	44	44	45	46	47	1.55		
	5'2"	18	19	20	21	22	22	23	24	25	26	27	28	29	30	31	32	33	33	34	35	36	37	38	39	40	41	42	43	44	45	46	1.57	
	5'3"	17	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	32	32	33	34	35	36	37	38	39	40	41	42	43	43	44	1.60	
	5'4"	17	18	18	19	20	21	22	23	24	24	25	26	27	28	29	30	31	31	32	33	34	35	36	37	38	39	40	40	41	42	43	1.63	
	5'5"	18	17	18	19	20	20	21	22	23	24	25	25	26	27	28	29	30	30	31	32	33	34	35	35	37	37	38	39	40	41	42	1.65	
	5'6"	16	17	17	18	19	20	21	21	22	23	24	25	25	26	27	28	29	29	30	31	32	33	34	34	36	36	37	38	39	40	40	1.68	
	5'7"	15	16	17	18	18	19	20	21	22	22	23	24	25	25	26	27	28	29	29	30	31	32	33	33	35	35	36	37	38	38	39	1.70	
	5'8"	15	16	16	17	18	19	19	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	32	32	33	34	35	36	37	37	38	1.73	
	5'9"	14	15	16	17	17	18	19	20	20	21	22	22	23	24	25	25	26	27	28	28	29	30	31	31	33	33	34	35	35	36	37	1.75	
	5'10"	14	15	15	16	17	18	18	19	20	20	21	22	23	24	25	25	26	27	28	28	29	30	30	32	32	33	34	34	35	36	1.78		
	5'11"	14	14	15	16	16	17	18	18	19	20	21	21	22	23	23	24	25	25	26	27	28	28	29	30	31	31	32	33	34	34	35	1.80	
	6'0"	13	14	14	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	30	31	31	32	33	33	34	1.83	
	6'1"	13	13	14	15	15	16	17	17	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	30	30	31	32	32	33	1.85	
6'2"	12	13	14	14	15	16	16	17	18	18	19	19	20	21	21	22	23	23	24	25	25	26	27	27	28	29	30	30	31	31	32	1.88		
6'3"	12	13	13	14	15	15	16	17	18	18	19	20	20	21	21	22	23	23	24	25	25	26	26	28	28	29	29	30	31	31	1.91			
6'4"	12	12	13	14	14	15	15	16	17	17	18	18	19	20	20	21	22	22	23	23	24	25	25	26	27	27	28	29	29	30	30	1.93		
		45	48	50	52	54	57	59	61	63	66	68	70	73	75	77	79	82	84	86	88	91	93	95	97	100	102	104	107	109	111	113		
		WEIGHT – Kg																																

Underweight (BMI less than 18.5)
Healthy weight (BMI 18.5 to 24.9)
Overweight (BMI 25 to 29.9)
Obese (BMI 30 to 39.9)
Extremely Obese (BMI 40 and above)

Produced by the Caribbean Food & Nutrition Institute - A Specialized Centre of the Pan American Health Organization/ World Health Organization - 2002

## Technology: Nutritional Support

**Concept/Description: Good** Nutrition is a major factor in the prevention of chronic diseases and in the management of diabetes, hypertension and chronic disease

**Expected Effect:**

1. An improvement in the patients self –management capacity with respect to nutrition
2. A decline in the prevalence of obesity
3. An improvement in control of diabetes, hypertension and chronic diseases
4. A reduction in the prevalence of complications of chronic diseases

Steps	Tools	Responsible	Tips
1. Determine the status of the patients re diagnosis ( hypertension, diabetes mellitus insulin or non-insulin dependent) and BMI	PRC BMI chart CCP	Nurse in charge	
2. Ask all patients about eating habits Ask them to do a food diary for a week		Patient	The patient should include snacks
3. Calculate nutritional requirements based on disease profile, BMI, level of physical activity	Protocol for Nutritional Management of Diabetes and hypertension in the Caribbean CCP	Physician or nutritionist if available	If BMI ,19kg/m <sup>2</sup> 30-50calories/kg If BMI 19-24kg/m <sup>2</sup> 30-40calories/kg If BMI>24kg/m <sup>2</sup> 20-25calories/kg
4. Advise them to eat 5 servings of fruits and vegetables per day while advising re			The food wheel provided by CFNI is

proportions for various food types and the nature of the various food types			
5. A meal plan is prepared based on the calorie calculation divided as follows: Breakfast .....30% Lunch .....20% Dinner .....20% 3 snacks (each).....10%	Calculator	Physician, Nurse Educator or Nutritionist	
6. Agree on changing in eating patterns depending on the results of the evaluation from the food diary , calorie calculation and meal planning	Chronic Care Passport		The agreed on meal plan is entered in the passport
7. Various recommendation for available and affordable fruits and vegetables should be made to assist in the decision to adopt the advice			
8. Nutritionist referral if necessary	Referral Form	Nutritionist	

# Delivery System Design

Effective chronic illness care requires more than simply adding additional interventions to an existing system focused on acute care. Rather it necessitates basic changes in delivery system design. Raising expectations for health systems without implementing specific changes is unlikely to be successful. The system itself must be modified in terms of its delivery system design.

## Technology: Risk Stratification, Population Management

**Concept/Description:** A system that classifies or stratifies a patient population by level of risk allowing the most qualified clinical personnel to dedicate more time to those patients with the highest level of risk for complications or severe disease. The risk stratification guides the pyramid of care.

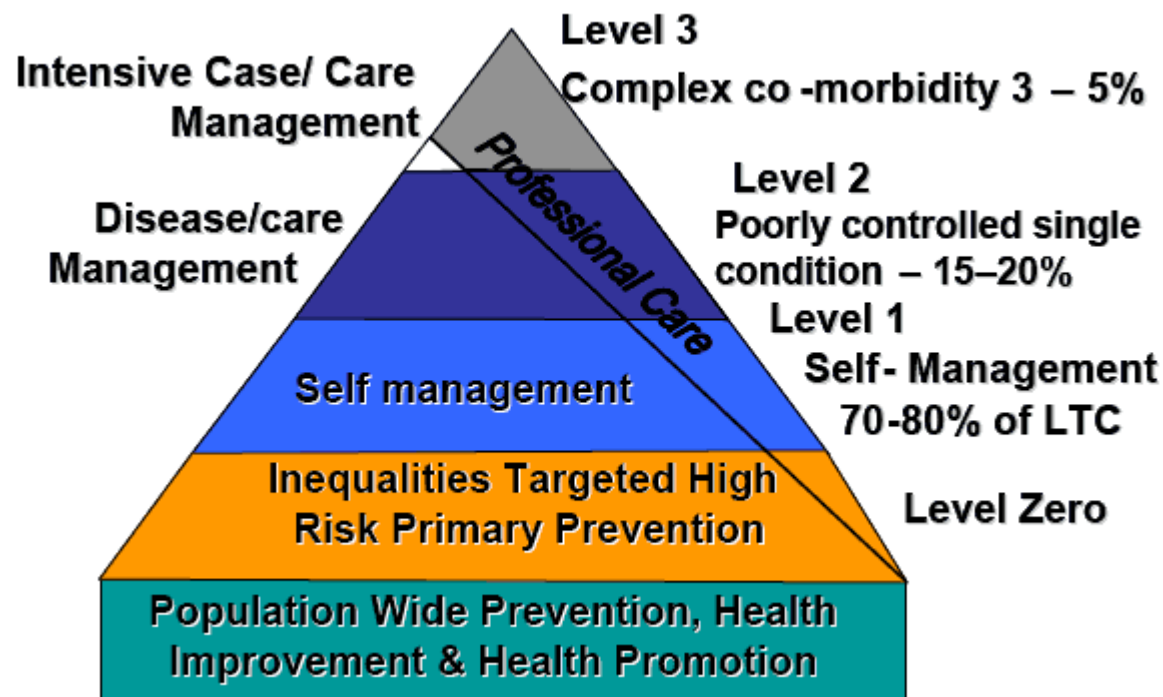
### Expected Effect:

1. Needs or risk-based approach to care for those with chronic diseases.
2. More efficient use of scarce resources (human and physical).
3. Improved self-care support for patients with well controlled stable conditions
4. Regular contact with multidisciplinary team to ensure effective management of patients with fairly controlled conditions.
5. Use of a case-management approach to anticipate, coordinate, and link health and social care for patients with complex conditions

Steps	Tools	Responsible	Tips
1.Organize clinic visits according to risk and available resources.		PHC Team: Nurse or Physician	Define frequency of visits according to resources and CPG. Suggested frequency of encounters:
<b>Level 1.</b> Classify DM /HTN patient as <b>Well Controlled (Usually meeting goals):</b> A1C < 7%/ FBG< 130 mg/dl or BP<130/80 or GCR<10%	Risk Stratification Pyramid Global Cardiovascular Risk Assesment tool	PHC Team: Nurse or Physician	Level 1. Physician/nurse/Patient assistant visit at least once a year. Consider adding one group visit
<b>Level 2.</b> Classify DM /HTN patient as <b>Poorly Controlled ):</b> A1c 7-9% or FBG 130-199 / BB <140/90; GCR<30%		Nurse Physician	Level 2. Physician/nurse visit every three month. Consider alternating with group visits.

<p><b>Level 3.</b> Classify DM /HTN patient as <b>Poorly Controlled or High GCR (Usually not meeting goals):</b> A1C &gt;9%/FBG≥ 200 mg/dl or BP≥140/90 mm HG.</p> <p>There is complex comorbidity and complex psychosocial situations affecting management</p>		<p>Physician Nurse Clerk</p>	<p>Level 3. Physician/nurse visit at least every two months alternating specialist and PHC. Consider adding group visits.</p> <p>Frequency of visit depends on the need of the patient. The patient has to have achieved glycaemic control</p>
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## Risk Stratification Pyramid



Modified Kaiser Permanente Risk Stratification Pyramid

## Technology: Diabetes Annual Evaluation

### Concept/Description:

This is a tool designed for standardizing annual diabetic patient visit irrespective of risk. It is embedded in the clinical practice and is based on the best scientific evidence available (4)

### Expected Effect:

- 1.To facilitate evidence-based clinical practice and reduce inadequate variations in team's performance.
- 2.That each diabetic will be systematically evaluated annually and that no diabetic will be lost to follow up
3. Diabetic complications will be reduced

Steps	Tools	Responsible	Tips
<b>In preparation for the annual medical visit</b>			
1. Request forms must be prepared and distributed to the patients before their visits ( if feasible)	Forms to request clinical exams	Nurse, administrative personnel	Results should be available before the visit to avoid unnecessary cancellation and delay of appointments
These tests will include : FPG,HbA1c, lipid profile, creatinine, eGFR, urine testing for microalbumin (Liver and muscle enzymes if on statins)	Lab forms	Physician/Nurse/Administrative Assistant	Lipid profile may be conducted every 2 years depending on status
2. Ophthalmology referral (Dilated eye exam)	Referral Forms	Ophthalmologist/ Internist physician of nurse	Annual exam
<b>During the annual visit</b>			



<b>Medical History</b>	Standardised forms or checklists PRC	Doctor Nurse	Checklists are created reflecting active symptoms of hyper or hypoglycaemia, complications of DM and compliance with preventive recommendations for other chronic disease.
1. Ask about lifestyle habits (tobacco, alcohol consumption, physical activity, diet)	Standardised forms or checklists PRC	Doctor Nurse	Ask about efforts to modify lifestyle and challenges encountered
2. Symptoms of chest pain, exercise induced shortness of breath, swollen feet, change in urine volume or quality, numbness tingling hands and feet, erectile dysfunction, symptoms of depression	Standardised forms or checklists PRC	Doctor Nurse	Remember diabetics may have silent heart attacks and dyspnea may be an angina equivalent
3. Ask about recommended preventive interventions according to sex and age	Standardised forms or checklists PRC	Doctor Nurse	Eg Breast , Prostate, Cervical Cancer screening per national guidelines
4. Ask about self-monitoring of DM and HTN re capacity and equipment availability and self education		Doctor Nurse	BP machines and Glucometer machines can be calibrated at the annual visit
<b>Physical exams</b>	Standardised forms PRC	Doctor Nurse	Assess the physical exam results and the changes achieved in relation to the proposed goals. Compare to

			standard or to prior measurements
5. Height, weight	Height and weight scale. BMI chart	Nursing Assistant	Assess weight , height, BMI over time
6. Waist circumference	Tape measure. Reference values	Nursing Assistant	
7. Blood pressure	Sphygmomanometer	Nurse Nursing Assistant	
8. Cardiopulmonary Auscultation	Stethoscope	Physician Public Health Nurse	
9. Foot examination , assessment for the risk for ulcers and neuropathy	Cotton wool Monofilament fibre Gloves		Foot exam for ulcer risk can be conducted by trained staff before being seen by the physician
<b>Review clinical exams and labs</b>			
10. Lab reports: HbA1c, lipid profile, kidney function, urine testing	Patient Record Card re target goals Guidelines		The patient should be given feedback as it relates to achievement of target goals
11. Electrocardiogram			
12. Ophthalmology report	Report from eye exam or ophthalmologist	Ophthalmologist or Internist as available	Interval for funduscopy /exam is determined by report
13. Assess cardiovascular risk	Risk Tables WHO		Follow up interval is

	recommended		determined by level of control and level of risk
<b>Review the medication</b>			
14. Review the medicines, including the dose and frequency, that the patient is taking	Algorithm for Mx of Type 1 and Type 2 Diabetes mellitus	Physician Public Health Nurse	Consider the need for change depending on control , side effects and interactions
15. Ask about adverse reactions to the medication	Checklist re adverse drug events	Doctor Nurse	Ask about hypoglycaemic symptoms, in patients on insulin and oral drugs
16. Discuss management plan with the patient	Chronic Care Passport, PRC	Physician Diabetic Nurse Educator	The patient should understand and agree with the plan
17. Evaluate glucose and blood pressure self-monitoring activity	Blood pressure and glucose booklets	Physician Nurse	Instruments should she checked for working glucometer strips and a calibrated blood pressure machine.
18. Register main findings from the annual medical visit	Chronic Care Passport, PRC		
19. Schedule the patient for self-management education session	Chronic Care Passport, PRC	Diabetic Educator Physician	
20. Schedule a follow up clinical visit depending on status of control, complications and level of risk	WHO/ISH risk tables		

# Clinical Information System

Clinical Information Systems organize information about individual patients and entire clinical populations to help identify patients' needs, plan care over time, monitor responses to treatment, and assess health outcomes and are thus at the heart of effective Chronic Disease Management. Clinical information systems should be integrated as much as possible with the general health information system. The system may utilize electronic record keeping or paper – based systems.



## Technology: Education reminders and patient support interventions for diabetes

### Concept/Description:

Cell phone texting is a very accessible means of communicating with patients en masse or individually. Weekly clinical reminders and specific educational foci will bridge the interval between scheduled appointments (14)(15)

### Expected Effect:

1. The patients will feel a greater sense of support if being contacted weekly
2. Compliance rate re medication, attendance and self-monitoring will improve
3. The patients will increase their knowledge with thus improving compliance
4. Greater glycaemic, metabolic, blood pressure and weight control will be achieved.
5. Complication rates will reduce thus decreasing morbidity and mortality

Steps	Tools	Responsible	Tips
1. Create a diabetic registry or list of all diabetics registered along with their contact information including cell numbers	Computer or pen and paper PRC's	Clerk Nurse in charge	Alphabetical listing improves efficiency
2. The patients should then be grouped according to risk or existing complications	Diabetic registry Risk stratification tables	Nurse in Charge Physician	
3. Create the telephone listings	Cell phone or computer dedicated to the health centre	Clerk Nurse in Charge	Include cell numbers of some point members of staff for quality control purposes
4. Make a schedule of weekly reminders*	Clinical reports	Health team	Various weeks will send different reminders*

5. Decide on educational material to be shared	Diabetic updates	Diabetic educator Nurse in Charge Physician	Should be simple, based on group visits, related to access to meds or material or latest diabetic updates which are patient relevant
6. Include a special cell phone text messaging recognizing patients' birthdays	Diabetic registry	Clerk	May or may not include a personal reminder depending on the workload of the members of the team operating the system
7. Conduct a test run of the diabetic text messaging intervention			Ask patients and members of the health team to provide feedback
8. Roll out the cell phone texting diabetic intervention			

### Addendum: Examples of Clinical reminders and educational focal points

Clinical Reminders:	Educational Foci
Remember to take your medications every day at the same time	Foot examinations reduce the risk of amputations
Remember to examine your feet daily	Aspirin (nor blood thinners like warfarin) should not be used if there is a bleeding blood vessel in the eye
Remember to do your blood pressure before and after you take your medication	Excessive alcohol may cause your blood pressure to rise and your blood sugar to fall
Remember to measure your blood sugar and record the readings	Heart attacks may be silent and only present as worsening fatigue or shortness of breath on exertion
Remember to your blood tests 2 weeks before your appointment so the results can come back in time for your appointment	Low blood sugar may present with strange behavior, if it gets worse you may lose consciousness
Remember keep your appointment with the eye doctor	
Remember to come for your clinic appointment	











## Technology: Patient Record Card (PRC)

### Concept/Description:

The PRC is a page-sized form kept in the clinic for each patient. The PRC contains patient information: identifying, disease status and goals; results of physical exams complications, as well as labs requested and the management plans. It also contains instructions for completing the form and guidelines for patient care(22)

### Expected Effect

1. Patient information is regularly updated, securely stored and accessible
2. Patient visits, test results and treatment plans are tracked.
3. A medical team which has an available reminder of the basic care plan for people with diabetes and/or hypertension.
4. A means of easily measuring the effectiveness of care for chronic diseases.
5. Systematic identification of patients or groups of patients with abnormal test results if facilitated

Steps	Tools	Responsible	Tips
1. Review the attached PRC and compare to the standards of care.	PRC, CPG	PHC team/ nurse/ physician	Standards of care and treatment outcomes based on practice guidelines should be posted in the PRC and in the health centres.
2. Have new PRC available at the clinic/center reception desk	PRC	Administrator	
3. Write health center and physician's name as well as patient's name, age and gender, DOB, home address	PRC	Receptionist	Keep the PRC in a box organized by alphabetically
4. Add information on existing diseases and complication as well as the date they were diagnosed if known.	PRC	PHC team/ nurse/ physician	Complications could possibly be identified by coloured stickers

5. Add results of laboratory test as soon as they arrive from the lab.	PRC Lab results	PHC team/ nurse/ physician	Reference ranges should be available to easily identify abnormalities
6. Mark with a red pencil patients with diabetes and A1c>7% or FBG>130 mg dl	Red Pencil PRC	PHC team/ nurse/ physician	Call patient immediately if FBG >250 mg dl
7. Mark with a red pencil patients BP $\geq$ 140/90 mm Hg	Red pencil PRC	PHC team/ nurse/ physician	
8. Mark with a red pencil patients with cholesterol >200 mg dl	Red Pencil PRC	PHC team/ nurse/ physician	
9. Identify cards with red marks	PRC	Nurse or nurse assistant	Discuss with health teams the proportion of patients not achieving goals. Review as well how many red marks a particular patient has. This is an indicator of increase level of risk.
10. Call patients to visit the clinic if they have dangerously abnormal results.		Receptionist	Use phone, letter, e-mail or mobile phone texting
11. Classify and state the patient's level or risk		Physician	Use the risk stratification system agreed on









### INSTRUCTIONS:

1. Write the unit or clinic as well as the physician's and nurse's names.
2. Write the patient's name, gender, date of birth and home address.
3. Make a check mark (✓) if the patient has these complications, if not listed write the complication the patient has. Write the date of diagnose of complications if known.
4. Write the date of the visit or encounter.
5. Inquire on tobacco and alcohol use; if positive answer write T+ or A+ in the corresponding box
6. Measure patient's blood pressure, height and the weight and ascertain the BMI.
7. Ask the patient to remove shoes and socks and examine patient's feet.
8. Examine retina after dilating pupils or refer the patient to the ophthalmologist once per year.
9. Review and write the results/ (or request new) fasting blood glucose test, A1c and lipid profile.
10. Explain to patient his/her educational goals as per the protocol for the non pharmacological treatment of diabetes mellitus. Make a check mark (✓) in the corresponding box if diet and exercise education are provided. Using codes in parenthesis, write what other educational subjects are discussed with the patient i.e. (1) General knowledge of diabetes; (2) Administration of medications and related risks; (3) Relation between diet, exercise, and blood glucose and other metabolic indicators; (4) Foot care; (5) Use of medical and community services; (7) Negative consequences of risk behaviors such as smoking and alcohol use, and ways of eliminating these behaviors.
11. Ask and write the name of all medicines and doses that the patient is taking.
12. Write the date of Influenza or Pneumococcal vaccination, and if EKG results.

#### Standards of Diabetes Care

	Component	Frequency	Description
<b>MEDICAL VISITS</b>	Blood Pressure	Each visit	<130/80mmHg
	Eye Exam	Annual	Ophthalmologist/ Optometrist
	Dental Exam	Every 6 months	Teeth and gum exam
	Brief Foot Exam	Each visit	Remove shoes and socks
	Complete Foot Exam	Annual	Visit the podiatrist if high risk

	Flu vaccine	Annual	If available (optional)
LABORATORY	Hemoglobin A1c	Every 3-6 months	<6.5%
	Triglycerides	Annual	<150 mg/ dl (1.7mmol/l)
	Cholesterol total	Annual	<200 mg / dl (5.0mmol/l)
	LDL Cholesterol	Annual	< 100 mg/ dl (<2.2mmol/l)
	HDL Cholesterol	Annual	>40mg/dl (> 1.0mmol/l) men; >50mg/dl (1.1mmol/l) women
	Proteinuria/ albuminuria	Annual	<30 µg/mg
	EKG	Annual	Normal pattern
EDUCATION	Treatment Goals	Each visit	Discuss with patient
	Self Blood Glucose Monitoring	Individualized	Recommend based on patient's control goals
	Healthy Eating	Each visit	Recommend always
	Physical Activity	30", 5 times/ week	Recommend always

# Decision Support

Decision support promotes clinical care that is consistent with scientific evidence and patient preferences. The implementation of decision support to strengthen or to change practice: is embedded in routine practice supported by timely reminders, feedback, standing orders, effective provider education, and appropriate input and collaborative support from relevant medical specialists. The involvement of supportive specialists in the primary care of more complex patients is an important educational modality.

## Technology: Mailing printed bulletin with a single clear message containing systematic review of evidence

**Concept/Description:** This strategy of contacting several health care providers at a time is termed mass mailing (via printed bulletin, email or texting). The content mailed summarises a systematic review of evidence, in a single clear message and is shown to improve evidence based practice.(12)

**Expected Effect:**

1. Motivation of health care providers with respect to improving the quality of health care delivery even in the context of primary care
2. Increase in the knowledge base of a particular aspect of clinical care, of an identified/named chronic disease by a broader population of health care providers
3. Clinical practice will be escalated in response to the implementation of the single message selected.
4. Indicators of health will improve.

Steps	Tools	Responsible	Tips
<ol style="list-style-type: none"> <li>1. Identify the topic or focus to be circulated through gap analyses conducted or review of current literature</li> </ol>	<ul style="list-style-type: none"> <li>• Journals</li> <li>• World Wide Web</li> <li>• Departments of Epidemiology/Surveillance</li> <li>• Connection Readiness Survey (Assessment of the State of Preparation for Chronic Care)</li> </ul>	<ul style="list-style-type: none"> <li>• Epidemiologist</li> <li>• Researcher</li> <li>• Clinical Head of the Facility</li> <li>• Administrative Head</li> </ul>	<p>The topic chosen should reflect a need in the particular context and be consistent with current standards of care</p>

2. Create the message			
2.1 Identify the target population	Sources of evidence	Physician Administrator	The literature should help to identify the health worker involved in the particular action
2.2 identify the objectives of the message (the impact which will be achieved if the message is adopted)	<ul style="list-style-type: none"> <li>• Journals</li> <li>• World Wide Web</li> <li>• Departments of Epidemiology/Surveillance</li> <li>• Connection Readiness Survey (Assessment of the State of Preparation for Chronic Care)</li> </ul>	Physician Nursing Administrator	The evidence of impact should be documented and referenced
2.3 Develop the single clear message which should include : a. The desired message b. The benefit for the patient (achieved by the altered practice) c. Evidence to support the desired change in practice	Preexisting educational material	<ul style="list-style-type: none"> <li>• Health Educators</li> <li>• Health Administrators</li> <li>• Physicians</li> <li>• Communication Specialists</li> </ul>	The message should be culturally relevant
3. Determine the communication channels (Printed Bulletins, E mail, text messages, social media etc)		<ul style="list-style-type: none"> <li>• Health Educators</li> <li>• Health Administrators</li> </ul>	Suggest multiple channels to increase success of this activity

which will be used		<ul style="list-style-type: none"> <li>• Physicians</li> <li>• Communication Specialists</li> </ul>	
4. Design the relevant media		Communication Specialists/Graphic Artist	Media used should be culturally acceptable.
5. List the recipients	PHC contact lists Medical Association	<ul style="list-style-type: none"> <li>• Communication Specialists</li> <li>• Health Educators</li> <li>• Health Administrators</li> </ul>	Persons listed for contact should be relevant to effect change ie decision makers as well as those who will effect the actual work!
6. Send the message using the predetermined channels	Personal Computer Mail	<ul style="list-style-type: none"> <li>• Communication Specialists</li> <li>• Health Educators</li> <li>• Health Administrators</li> </ul>	An operating centre should be used to centralize the activities

### Examples of single clear messages containing systematic review of message

<p><b>1. Foot examination: Check for pulses, ulcers, infection, deformities and do the monofilament test. Comprehensive foot care program reduces amputation by 45-85% (19).</b></p>
<p><b>2. Help your patient quit smoking. Brief clinical intervention, when a doctor takes 10 minutes or less to deliver and advice about quitting has proven effective by 1-3% points, in patients who want to quit(20)</b></p>

## Technology: Embed evidence-based guidelines into daily clinical practice (foot examination in diabetics)

**Concept/Description:** Evidence-based guidelines provide the basis and the path towards improved health care. The parts of selected guidelines can be adapted to the particular context

### Expected Effect:

1. The clinical staff will be empowered by increase knowledge of the contents of the guidelines
2. Patient care will be standardized
3. An improvement in clinical outcomes.(In this case reduction in amputation rates).

Steps	Tools	Responsible	Tips
1. Select appropriate guidelines agreed on by the health authorities	Local or international guidelines as agreed on eg WHO, ADA or IDF	Clinical Director The clinical team	Guidelines chosen should be properly evaluated and agreed on by the team
2. Select the appropriate part of the guideline to be implemented		The clinical team	The part selected should be clear in its directions
3. Foot sticker placed on front of chart for all patients with diabetes	Foot-shaped stickers	Front Desk staff	This is done at registration or at the time of diagnosis
4. Determine the date of the last foot exam	Clinical chart or PRC	Nurse doing vital exams	The method and results of the last exam should be determined

5. Have patient remove shoes and socks if foot exam is due and place monofilament on the chart if available	Monofilament	Medical Assistant doing the vitals	The reason for the foot exam should be explained to the patient
6. Determine risk for ulcer and amputations: history of foot ulcer, amputations, symptoms of peripheral artery diseases, physical or visual difficulty in self-foot-care.	Patient records	Medical Assistant Nurse Physician	Clinical Team should be clear on the relevant symptoms
7. Examination of footwear	Footwear	Diabetic foot care specialist/Nurse/Doctor	Appropriateness and safety of the footwear should be discussed with the patient
8. Physical exams- check for deformities which increase risk of ulcers eg bony prominences, trophic changes, calluses, nail deformities		Diabetic foot specialist/Nurse/Doctor	
9. Examine for neuropathy by 10g monofilament, a 128 Hz tuning fork or non-traumatic pinprick	Monofilament Tuning Fork Non traumatic pin for testing	Doctor	The examination depends on resources
10. Palpation for foot pulses (dorsalis pedis and posterior tibial).		Doctor	The patient should be given feedback



11. Implement appropriate line of management eg management of superficial infection, footwear change recommendations, foot-care team referral or secondary care referral as deemed necessary		Doctor	Blood glucose control is fundamental to reduction of risk for foot ulcers and amputations
12. Foot-care education and foot-care plan with appointment for review of foot exam made		Foot care specialist Nurse	

# Self Management Support

Effective self-management support helps patients and families cope with the challenges of living with and caring for chronic conditions in ways that minimize complications, symptoms and disability. Successful self-management programs rely on a collaborative process between patients and providers to define problems, set priorities, establish goals, create treatment plans and solve problems along the way. The availability of evidence-based educational skill training and psychosocial support interventions are key components of a delivery systems self-management support structure

## Technology: Group Visits – Drop-in group medical appointments

**Concept/Description:** There are many different ways that group visits can be conducted. This technology describes one model, drop-in group medical appointments. This type of group visit brings patients who have the same chronic condition together with a health care provider or team of providers. A group of 8-12 participants meet weekly or monthly) for about 90 minutes. During the group visit patients have their vital signs taken and discuss issues they are facing with their health management. Both patients and providers can identify topics for discussion. Providers also meet individually with each patient during the visit. (6)

### Expected Effect:

1. Greater efficiency is achieved both in terms of time and cost; providers are able to speak at one time to a large group.
2. There are more planned visits with clinicians
3. Enhanced chronic disease management and self-management support.
4. Greater emotional and social support from peers .
5. Increased exposure to a wider array of health professionals.

### Steps

1. Create groups 8-12 persons large based on risk, gender, disease or disease complication (as applies).
2. Schedule sessions of 90 minutes each, meeting monthly ( or as convenient)

### Tools

The *Group Visit Starter Kit: Improving Chronic Illness Care*  
[www.improvingchronicillnesscare.org](http://www.improvingchronicillnesscare.org)

Paper /Digital record of the schedule

### Responsible

Project Manager  
Assigned Clinician

### Tips

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3. Assign roles to members of the health team according to competence and availability		Team lead	A mix of health team members should be chosen
4. Establish a group facilitator		Senior member of the health team	This role can be rotated
5. The team lead and providers decide on terms of reference of the group eg location, possibility of reimbursement for providers; schedule group visits	<a href="http://www.improvingchronicillnesscare.org">www.improvingchronicillnesscare.org</a>	Health Team	
6. The team should decide on the topics to be addressed	<a href="http://www.improvingchronicillnesscare.org">www.improvingchronicillnesscare.org</a>		
7. Identify community and stakeholder support		Community liason	
8. Write rules of engagement eg family members be able to attend group meetings at the invitation of the members			
9. Review the process and the outcome after 6 months		Group facilitator	

## Technology: Blood Pressure Self –Monitoring

**Concept/Description:** High blood pressure is a major risk factor for CNCD's and complications thereof. Readings vary according to position, time of day, location (home vs doctor's office), temporal relation to taking medication. The ability for the patient to monitor the blood pressure will provide a more realistic profile of blood pressure levels thus facilitating more appropriate care.

**Expected Effect:**

1. Increased compliance with medication as patients become more involved in self management
2. Patients understand better the dynamics of blood pressure levels
3. Blood pressure control will improve
4. A reduction in vascular complications of diabetes including kidney failure and heart attacks and strokes
5. Reduced cardiovascular complications eg heart failure(7)(16)

Steps	Tools	Responsible	Tips
11. Educate the patient individually initially about the concept of high blood pressure and its measurement		Health educator Nurse	Emphasise the benefit of blood pressure on current and future health status
12. Demonstrate the differences between aneroid and mercury sphygmomanometers	Sphygmomanometer Stethoscope	Nurse/Patient/Doctor	
13. Assist the patient to acquire a reliable machine which is calibrated	Sphygmomanometer	Nurse/Patient/Doctor	The educator should ensure machine accuracy before instructing the patient

14. Teach the patient how to measure the blood pressure*	Sphygmomanometer	Patient educator Physician Nurse	Give the patient written tips for BP measurement*
15. Assess the accuracy of the patient's ability to measure his blood pressure	Sphygmomanometer Instructional Sphygmomanometer	Patient educator Physician Nurse	The patient should be asked about difficulties in blood pressure self-monitoring
16. Advise re timing of BP measurements *	Stethoscope Sphygmomanometer	Nurse	
17. Have follow-up sessions 2 weeks to 1 month after initial training sessions to demonstrate the patient's retention of capacity to accurately take blood pressure		Nurse	
18. Schedule frequent calibrations		Nurse Assistant	Every 6 months

\*Expanded Tips for the patient:

1. The patient should take blood pressure in a warm comfortable place 5 minutes after sitting, > 2 hours after coffee, alcohol, medications; in the morning lying and the standing, then just before retiring.
2. Any symptom experienced at the time of the Blood pressure entry, should be documented eg, dizziness, chest pain, shortness of breath headache
3. The patient should be clearly taught to identify the brachial artery and the lower border of the cuff , placed 3-4cm above the elbow crease.

## Technology: Patient Educational Intervention using the 5 A's for reducing Smoking

### Concept/Description:

The 5 A's model a series of 5 steps assess, advise, agree, assist and arrange which are easy to remember and can be used to develop self-management plans for patients. It is meant to be integrated into normal professional practice, not to stand alone(19)(23)

### Expected Effect:

1. Increase in the proportion of smokers who have entered smoking cessation programmes
2. General improvement in health of the population
3. Reduction in the use of tobacco within the population
4. Decrease in the complication rate of CNCD's
5. Reduction in tobacco related diseases

Steps	Tools	Responsible	Tips
1. <b>Assess</b> the current and past smoking pattern, assessing the degree of nicotine dependence, places where smoking occurs, triggers for smoking, personal belief about smoking, how cigarettes are obtained, family history of smoking.	Clinical history	Nurse in charge smoking cessation programme Physician	All patients should be asked about present and past history of tobacco use
2. <b>Advise</b> Specific information about health risks of smoking and benefits of change is provided (Including multiorgan cancer and cardiovascular disease). Advise smokers to quit	MPOWER guidelines(WHO)	Nurse in charge smoking cessation programme Physician	Advice should be provided with interaction (clarification and questions asked by the patient)
3. <b>Agree</b> on set goals based on patient preferences preferably on a plan to quit			Should be mutually negotiated, achievable and specific . Alternatives to smoking should also

			be agreed on
<b>4. Assist</b> patients on a plan to quit including setting a quit date and provide information on specialist and non-specialist support	MPOWER guidelines	Behaviour change counselor Physician	The programme should involve exercise, healthy eating, and weight control
<b>5. Arrange</b> referral to specialist support if necessary or effective medication (NRT's) or bupropion as well as follow-up.	List of specialists, pharmacies, facilities which may provide nicotine replacement therapy	Behaviour change counselor Physician	Contact should be made by the health team and follow up carried out to reduce the risk of lack of follow through.



# Community Resources and Policies

The performance of health care systems can be improved if linkages are made to community resources relevant to effective chronic care. These linkages may be made through resource directories, referral paths and joint programs. Community that support care for chronic diseases, including both governmental programs and programs of community-based voluntary organizations, are needed to augment health care services, but health care organizations are often poorly organized to make use of existing community programs or to stimulate their development

## Technology: Peer-Led Self-Management Training

**Concept/Description:** Self-Management training programs aim to provide information and promote behavioral skills that will help patients carry out the tasks necessary to live as well as possible with chronic illness. They may be led by either peers or professionals and may be disease-specific or provide more general information and strategies for developing problem solving skills regardless of the chronic condition. This technology focuses on how to implement peer-led self management training for patients with different chronic conditions. (8)(9)

### Expected Effect:

1. Improved chronic disease outcomes.
2. Development of disease-affected peers as effective leaders for self-management programs.
3. Increased opportunities for sessions to be held outside of normal working hours
4. Sustained improvement in health behaviors due to increased follow-up contact.
5. Affected patients develop relationships and community based support

Steps	Tools	Responsible	Tips
<ol style="list-style-type: none"> <li>1. Decide on the format of the program –(typical class sizes of peer led programs range from 10-15 participants and include patients’ family members and friends, some meet weekly for a 2 hour session over 6 weeks ).</li> </ol>	<p>The Chronic Disease Self-Management Program (CDSMP) or Tomando Control de Su Salud ( the Spanish version) :  <a href="http://patienteducation.stanford.edu">http://patienteducation.stanford.edu</a></p>	<p>A staff person ( to provide overall leadership to the program)</p>	<p>The structure is modified according to local situation</p>
<ol style="list-style-type: none"> <li>2. Develop patient materials including interactive exercises to build self efficacy and coping skills                      Topics will include:                      Managing Negative Emotions                      Dealing with side effects of medications                      Relating to Health Care Providers                      Fighting Fatigue through exercise and diet                      Best practices to get through the day</li> </ol>	<p><a href="http://patienteducation.stanford.edu">http://patienteducation.stanford.edu</a></p>	<p>Trainer of the program</p>	

3. Identify special privileges which the peer leader will have eg secured parking, reimbursement, official title, recognition by the health authority		Administrator Trainer	
4. Find community location to offer program	List of possible community sites provided by the municipality	Community Health Aid liason Administrative Staff	Churches and Community Centres are possible sites
5. Recruit and train peer leaders Peer leaders are recommended from among the patient population or respond to advertisements			Having 2 trained peer leaders teaching the program increases the success of the program
6. Start the peer led sessions		Peer leader Staff person	Staff person will 67rganize the meeting schedule, prepare the meeting room and deliver materials to the room
7. Hold periodic special events to recognize the programme		Administrator	
8. Review the programme after 3 months then periodically		Administrator Peer leader	

## Glossary

CPG	Clinical Practice Guidelines
BMI	Body Mass Index
BP	Blood Pressure
CCM	Chronic Care Model
CXR	Chest XRay
eGFR	Estimated Glomerular Filtration Rate
EKG	Electrocardiogram
Expected Effect	The outcomes anticipated based on the intervention being applied
FBG	Fasting Blood Glucose
HBA1c	Glycated Haemoglobin
LDL	Low Density Lipoprotein
PDSA Cycle	Plan-Do-Study-Act Cycle of change implementation
PRC	Patient Record Card
Responsible	Human Resource personnel who will have the particular task
Steps	The sequential order in which the intervention will be effected
Technologies	The set of description, expected effects, tools tips and named persons crafted around
Tips	Any suggestions based on experience evidence which would improve the success and ensure the integrity of the particular technology
Tools	Any instrument, document, guideline or resource necessary in implementing the intervention
Staff Persons	A staff person ( to provide overall leadership to the program) and obtain buy-in from organizational leaders. Staff person should take care of organizational tasks such as scheduling, delivering materials to the class site, and setting up room
CPG	Clinical Practice Guidelines
GCR	Global Cardiovascular Risk

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