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"SSmart Care": The Development of Disease Management Programs Within An Integrated Health Care Network

Carol E. Oberaitis

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THE DEVELOPMENT OF DISEASE MANAGEMENT PROGRAMS WITHIN AN INTEGRATED HEALTH CARE NETWORK

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An Abstract Presented to the Faculty of the Graduate School of Lindenwood University in Partial Fulfillment of the Requirements for the Degree of Master Of Science in Health Management.

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ABSTRACT

This cumulative project paper will focus on the development of disease management programs by SSM Health Care - St. Louis, an integrated health care delivery network. This paper will detail the process used by the network to prepare for this project, the key roles and functions of the staff and physicians, the design phase and implementation phase of the project. The rationale for the project, the literature review, the barriers to the project and the outcomes will be included in this paper.

The purpose of this project paper is to share with other networks or individual hospitals the experience of this network to increase their level of knowledge as they develop their own or evaluate their process. There was much new knowledge gained by the SSM Health Care - St. Louis Network by doing this project as well as knowledge gained from others as the project progressed. It is the hope that this shared knowledge will be of benefit to others.

The author of this project paper was the project was the project manager for the medical management department of the SSM Health Care- St. Louis that developed the disease mangement programs referred to in this project paper. In that role, the author was responsible for

the facilitation of all three of the disease management program design teams referred to in this project. The author was also the creator, author and co-author of many of the pages in the program manuals. The author supervised, coordinated or assisted others in the creation of other parts of the programs represented in the manuals. The contents of the Appendices are many of the pages from these manuals, but not in their entirety. The forms developed for use in the program and for use in the program manuals were copyrighted by the SSM Health Care Corporation. A copyright page was placed in all manuals. (Appendix I page 51).

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INTRODUCTION

Background

The American health care system has had many revolutions in delivery of care, systems of payment, and technological advances. As we approach the millennium, we are in the middle of yet another revolution. Many factors have contributed to the new changes, including increasing demands by the stakeholders for both cost containment in health care and proof of quality and value. In addition, advances in computerized centralized databases have facilitated better provider and consumer decisions. Due to of these changes, we are within reach of significantly changing the way we approach health promotion, disease prevention, and treatment. (Frist xx)

For most of the 20th century, health care has emphasized acute medical treatment. Reimbursement has favored hospitalization and physician visits and has decreased payment to most long-term care, home health, and preventive services. Billing for individual services has been done separately. Patient care has been given in a fragmented, component-style system of individual providers and payers. The traditional components of this type of delivery system have included

physician office visits, outpatient treatment, inpatient hospitalization, home care, etc. Even though each component of this system tries to deliver cost-effective care, providers did not consider or address the long-term cost of care across the complete continuum of care. More importantly, the patient's quality of life was not necessarily improved.

Richard Kipp summarizes the situation well in *Financial and Actuarial Issues:*

> As with most major changes in health care over the past few decades, primary motivator in the evolution toward disease management has been cost. That is because health expenditures have risen far faster than general inflation. Between 1965 and 1993, U.S. health care costs rose from $41.6 billion to $884.2 billion -- a 2,206 percent increase -- whereas the consumer price index increased only 358 percent. This caused health care's share of the gross domestic product to rise from 5.9 percent to 13.9 percent. In 1993 employers paid 31.2 percent of the nation's health care bill. Between 1970 and 1990, although wages grew just 1 percent ($116 in 1989 dollars). In 1995 General Motors incurred an expense of $5.4 billion, or an average of about $1,200 per vehicle assembled in the United States, that could be attributed to the cost of health benefits. (87)

Health care professionals and policy makers are realizing that the component management approach to patient care serves the industry poorly for several reasons. In *A New Paradigm in Health Care Delivery: Disease Management*, Mark Zitter, MBA summarizes these reasons in five points:

1. It emphasizes medical treatment over prevention, thus

skewing priorities for both how health care is delivered and how much is paid to whom, leading to a system that is more "sickness care" than "health care."

2. It reimburses disproportionately for the most expensive services in the most expensive settings (that is, acute inpatient care), thus encouraging over treatment in costly settings and under treatment elsewhere.
3. It lacks incentives for providers to understand and treat the entire disease process, because each provider can only affect -- and be reimbursed for events within a given setting or budget category.
4. It leads to an uncoordinated delivery system that lacks care continuity for patients. It fails to recognize the interrelation of health services and total health costs -- for example, how mental health care or pharmaceutical resources may improve overall health and thus reduce other expenses.
5. It frequently pits patient-focused providers (who may want to provide or prescribe treatment beyond their component) against budget-oriented managers (who are reluctant to provide services for which they will not be reimbursed). (3)

The Disease Management Approach

Another concept of health care delivery is emerging in this country. It is generally referred to as disease management and is commonly defined as a comprehensive, integrated approach to care and reimbursement based on a disease's natural course. The goal of disease management is to address the illness or condition with maximum effectiveness and efficiency regardless of treatment setting or reimbursement pattern. According to Mark Zitter, " This approach emphasizes management of a disease in a manner that focuses both clinical and non clinical interventions when and where they are most likely to have the greatest positive impact" (4).

Ideally, disease management prevents occurrences or worsening of a disease and the use of expensive resources, making prevention and proactive case management two important areas of emphasis in most disease management programs. A disease management program for asthma might involve lifestyle and medication education for patients and families to minimize acute episodes and in another instance, prevention-oriented education and peer counseling might be key to an AIDS program. For most chronic diseases, patient behavior is often the main determiner of a condition worsening or improving. When noncompliance with therapy is a major risk factor, a disease management program will provide the needed education and incentives to comply with the plan of care as determined by the patient's physician (Zitter 8-9).

If disease management programs are developed in the hope of improving care and reducing long-term costs, this means that successful programs must identify those patients who are most likely to generate expenses for the system and target them for intervention. These programs are designed just for these particular populations. How these populations are defined and identified has been an evolutionary process.

Early disease management programs focused on one high cost issue. For example, one program sponsored by a pharmaceutical manufacturer used telephone reminders to encourage all hypertensive patients to refill their prescriptions. By zeroing in on medication compliance, a major

issue in controlling blood pressure, the program demonstrated savings in physician and hospital visits and overall treatment costs (Sclar 30-35). This program was limited to hypertensive patients receiving medication and therefore, patients were not targeted by severity of illness, appropriateness of treatment was not considered, and only cost of mediations claims were measured and no health outcomes.

The next phase of disease management programs targeted the sickest patients and/or those at greatest risk of generating high costs, and these programs designed and proposed intervention where the impact would be the greatest. For example, a program for depression would educate primary care physicians about detecting and diagnosing depression, educate the depressed patients regarding the importance of medication compliance and follow up in a proactive way with patients after their illness had been diagnosed and treated for their first episode. This type of program would address recurrences before they become catastrophic (Zitter 22).

The next phase of disease management fully integrates care and reimbursement methods. These programs are truly population based in that they identify and include all patients suffering from or at risk for a given disease. These patients are then stratified according to the severity of their illness or health risk. The intervention of care will then be

determined according to the risk and cost profile of each patient. All the components of care across the continuum are addressed, and coordinated across each care component. An example might be an asthma program that would categorize all asthmatic patients into mild, moderate, and severe groups. All patients receive education, a written care plan, and basic treatment, but the severely ill spend one-on-one time with a health educator, keep an electronic journal of peak flow readings that is tied into a provider office, and receive home visits from a care manager on a regular basis. These visits might include an environmental analysis of the home to find factors that might exacerbate the illness. This kind of program uses health and cost measures to track results and calculate cost-benefit on an ongoing basis (Friedman).

Disease management can and should evolve into population-based health management. Despite the universal references to health care, health insurance and health benefits, the United States has a medical care system focused on the diagnosis and treatment of idsease and not a health system that addresses the needs of the healthy. Today, as cost pressures force changes in the fragmented medical care system, comprehensive approaches to population health management as well as the continued treatment of the sick must be adopted. In essence, there must be management of health risks as well as medical care costs.

Author Kent Peterson M.D. claims:

> Disease management can and should evolve into population based health management. Disease management is part of the overall health management process, which takes the concept of disease management to the next level. Whereas disease management is focused on diseases, complications, and specific interventions, health management integrates all components for a physiologic system or the whole patient or population. Health management can be defined as the optimization of clinical, financial, and quality-of-life outcomes accomplished by management of the entire range of health risk for a population (305).

As suggested by this definition, the objectives of health management include:

A. Optimizing functional health and well-being

B. Minimizing health risk factors

C. Preventing specific diseases in at-risk populations

D. Facilitating the early diagnosis of disease

E. Maximizing clinical effectiveness and efficiencies

F. Avoiding preventable disease-related complications

G. Eliminating or minimizing ineffective or unnecessary care

H. Measuring outcomes and providing continuous assessment and improvement

Most of the health care organizations are not reaching this optimum level of health management. Most of the efforts at managing a population are still focused on managing or minimizing the disease rather than focusing on prevention and optimizing functional health and well-being.

Current Disease Management Program Models

Disease management programs provide this management of a disease through many kinds of programs. Most of the programs that have been developed consider their population to manage one that has already been identified by a disease state. The disease identifies the population, not their geographic, ethnic, or age related grouping. Since most disease management initiatives are drawn up in the hope of improving care and reducing long term costs, the diseases targeted are the chronic, expensive conditions such as congestive heart failure, diabetes, asthma, hypertension and coronary heart disease.

One program design uses the structure of a "clinic" based model where all patients with a specific disease are always seen in a clinic situation and evaluated, educated and referred through a variety of specialists. An example of this structure for a Diabetes disease management program would be a clinic led by an endocrinologist working with diabetic nurse educators, and specialists physicians specific for the potential complications related to diabetes, specialists such as an ophthalmologist, podiatrist, physical therapist and others. Referrals would be made to vascular surgeons and nephrologists as the disease state warrants it. This structure provides very thorough but expensive care. Proving the economic success of this clinic model depends on

excellent cost accounting systems to track costs and revenue through the continuum of care. The goal is to prevent the most expensive care as an inpatient versus care on an outpatient basis. One CHF clinic or "Heart Failure Center" developed as part of The Heart Institute, Immanuel Medical Center, Omaha Nebraska, was structured in this manner. It found that one year of frequent visits to the center cost less than a single hospital admission for heart failure. Sixteen months after the program was initiated, hospital admissions decreased by 30%, hospital days by 42%, and average length of stay by 17% (Chapman 431-436).

There have been very successful disease management programs however, that rely on good patient care by a primary physician following an accepted guideline of treatment for that disease, intensive patient education in their disease and in self-management, and close follow-up by a nurse case manager periodically by phone. An example of this type of disease management program was studied at Washington University Medical Center in St. Louis, MO. In his report Michael Rich, M.D. stated;

> The study demonstrated that a nurse-directed, multidisciplinary (dietitian and social worker) treatment strategy can significantly reduce hospital readmissions and improve the quality of life for elderly patients with heart failure. Widespread use of this intervention in caring for the growing number of elderly patients hospitalized with heart failure could substantially reduce costs for health care (1194).

Basic Components of any Disease Management Program

The major components in any program are a validated clinical practice guideline for care of the disease by the physician(s), good patient education, close follow-up with the patient to assure adherence to his/her plan of care and the ability to measure indicators for economic and patient success factors. Success is understood by determining what indicators are appropriate to track for each disease and patient's quality of life and reaching the goals for those indicators (Friedman).

Guidelines

Researchers have identified substantial variations in clinical practice, overuse, under use, and inappropriate use of health care services, and significant differences in the costs of health care. One of the ways that this concern has been addressed is through the development, dissemination, and implementation of clinical practice guidelines as tools to improve clinical decision making. These guidelines are developed by the experts in each appropriate area from reputable organizations.

Examples of such organizations include the American Medical Association, American College of Surgeons, American College of Cardiology, American Diabetes Association, The National Institutes of Health, The Agency for Health Care Policy and Research of the U.S.

Department of Health. These guidelines have been tested and validated and based on reliable scientific literature (Kelly 1120).

More than eighty percent of health maintenance organizations promote the use of clinical practice guidelines. Currently however, practicing physicians are ambivalent about the use and importance of guidelines. They intuitively understand the importance of applying scientific discipline to medical practice; however, medical decision making is filled with ambiguity. Physicians are inherently autonomous and try to make decisions appropriate for each patient. Yet the forces in managed care and the linking of information sources are working to promote the adherence to guidelines. As guidelines are developed there is more attention to the measurement of patient outcomes.

It follows that as outcome analysis is linked to guidelines, physicians will adhere to them knowing they are proven to be those that provide the best in patient quality of care as well as efficiencies in cost (Singer 312).

Patient Education

The role that patient education plays in disease management is critical. Patients have long been used to the attitude that physicians will "take care of them" and have not then accepted the responsibility for understanding their disease or the importance of adhering to the plan of

care as set out by their physician. The goal of patient education in disease management programs is teaching them self-management. When patients are aware of important signs and symptoms and also of appropriate use of the medical system, the cost of care for patients will be lower and at the same time, patient's will feel in control and empowered to take charge of their own disease state.

Without effective patient empowerment, disease management initiatives will not be successful. As Warren Todd noted, " Didactic, passive education must give way to interactive, problem-based education using adult learning principles that are based on established behavior modification models." (31) The programs Todd lists as effective are:

A. Interactive

B. Primary goal is to improve outcomes

C. Directly addresses drivers of behavior

D. Uses demonstrated educational principles

E. Focuses on relationships

F. Focuses on relationships among all influencers (31).

Educators who are skilled in a specific disease process such as Certified Diabetic Nurse Educators are valuable in this self-management education component.

Many disease management programs use case managers to apply their skills toward promoting wellness and other disease intervention

initiatives. Case managers are the essential link in the new health care delivery system. As comprehensive disease management programs become more common, case managers, who have historically been dedicated to specialized, culturally competent care coordination, have the opportunity to use their position as patient advocates and educators. Case managers in a variety of practice settings are now beginning to help design and implement educational, compliance-focused programs.

Patient Follow-up

Case managers are also key in the follow-up process in a disease management program. Follow-up refers to the attention to the patient having all the resources needed to adhere to the plan of care as outlined by his/her physician. Historically, case managers have always strived to manage illness through a collaborative approach aimed at the delivery of high-quality, cost-effective health care.

Today, professional case managers at every level of the multidisciplinary health care team are well positioned to expand on their role as administrators of enhanced disease management protocols and care delivery over a continuum of time and delivery sites. The philosophy of case management within disease management remains essentially patient centered, and holds that individuals within a defined population

should receive clinically and financially, the best care possible (Ward 236).

One method of follow-up in a disease management program is telemonitoring. Patient telemonitoring is the use of the telephone in case management. It is a means of patient-provider communication. Patient telemonitoring is a "goal-directed" health care information service with a designated population of patients. This includes patient triage, consultations, post-discharge follow-up, referral, counseling, and/or health teaching, offered by a professionally trained operator (usually not a physician) to a patient in a time limited telephone encounter. Ideally, this system is computer-based and designed to support patient care and to provide an infrastructure for ongoing collection of patient-focused outcomes data (McDonald 2).

In a literature review done by McDonald, there was support for the effectiveness of this follow-up method. Telemonitoring was found to be as effective as face to face counseling in helping patients understand how to achieve and maintain medically prescribed behaviors. There should be guidelines determined for the frequency of contact. The frequency of telephone calls is a matter of weighing cost versus the number of encounters to bring about success. Studies show that calls should be made soon after discharge from the hospital and that the first week or two after discharge is the most important time period in terms of patient

education. Scripting telephone call often increases the efficiency and uniformity of interactions and on the information collected in the data base. The cost of telemonitoring can be less than face-to-face education and counseling (McDonald).

Measuring Health Outcomes

It is true that financial outcomes or increased revenues for the provider and reduced costs for the payer, are and should be key drivers for disease management. However, as with all health care services, disease management must also justify its existence in terms of health outcomes. The goal should be that the investment in time and money pays off in terms of better patient health.

John B. Doyle list categories of health outcomes that measure the impact of health care of patient's health status. The last three he considers to be in the "gray area" in that they are not true health outcomes, but are expected measures in a disease management program.

A. Health Risk

B. Physiologic Status

C. Symptoms

D. Signs

E. Functional Status

F. Quality of Life

G. Patient Satisfaction

H. Resource Utilization

I. Compliance (64).

Doyle argues that there are many good reasons to measure the health outcomes of a disease management program:

A. Accountability: To demonstrate the value of disease management to outside parties, especially payers.

B. Continual Improvement: To evaluate the impact of process improvement, to identify opportunities for improvement.

C. Clinical decision making: To help clinicians and patients evaluate the expected risks and benefits of alternative treatments.

D. Research: To test hypotheses regarding the effectiveness of treatment in real-world settings.

E. Medical Record: To provide a structured format for recording and retrieving encounter-based data.

F. Management: To evaluate the degree of success in achieving organizational objectives.

G. Incentives: To reward performance based on achievement of outcomes (78).

Since the success of a disease management program is judged by its outcomes, it is ideal that during development, all aspects of a program should be driven by an outcomes orientation. A program should be designed to achieve maximum outcomes for a minimum cost (83). More specifically, they should be designed to maximize health return on investment (70).

One of the most often-cited challenges or obstacles in implementing a disease management program has been a lack of outcomes data to support the efficacy of the program, usually due to a lack of adequate data systems with which to identify high-risk populations and collect and analyze outcomes data. Current information systems are not sufficient for the advanced work that many disease management programs are expected to accomplish. The most common problem is the lack of connectivity in data systems that serve the different points of service in the health system.

Financial Success Factors

There are as many ways of presenting financial success or return on investment for disease management programs as there are methods of

reimbursement for health care. The analytical issues surround who is at risk for the patient and who is delivering the disease management program. There are disease management programs and disease management companies. If a payer holds most of the financial risk for the care of a population, it may have its own disease management program for its own use. If a provider is being reimbursed in a capitated per member per month method and at full financial risk, it follows that the provider would provide the services that would most efficiently manage the patient's disease. There are companies that sell disease management programs which vary from educational programs for managed care organization members to accepting full risk for total patient care for patients of specific disease types, that is, disease state capitation. Although emerging disease management programs have generally not stressed a willingness to accept significant financial risk, it can be assumed that payers are anticipating the arrival of programs that do (Kipp 90).

Chapter 2

SSM HEALTH CARE-ST. LOUIS

In the vision and strategic plan of SSM Health Care-St. Louis (SSMHC-SL) is a commitment to improving the health status of the community and its defined populations. In order for people to attain their optimum level of health, they need a service that will manage their disease processes and provide resources to ensure that they have a coordinated and proactive resource for education and ongoing follow-up. SSMHC-SL is a network of 7 hospitals in the St. Louis area that has implemented strategies for integrating many of the services of a health care provider. One of the organizations of this network is a Managed Care Organization or MCO. The MCO provides single signature contracting with payers for the physician medical groups and the hospitals within the network.

Many of the contracts are designed so that the providers (hospitals and physicians) are at financial risk. Essentially their revenue in the contract design is surplus funds not used from the "pool" of payments per member per month.

The Medical Management division of the MCO is responsible for assuring the utilization strategies that allow for optimal benefit for both the patient and the organization. The Vice President of Medial Management

Joe Drozda, M.D. brought together a panel of physician leaders from the physician hospital organizations and the physician medical groups. Dr. Drozda states "this council believes that our strength as a network lies in our ability to bring together physicians and other health care providers to work on ways of caring for those who have entrusted their health to us in ways that will simultaneously enhance their health and save health care dollars" (Drozda).

The panel of physicians is called the Clinical Improvement Council (CIC) and is led by Dr. Drozda. The mission of the CIC is to assist the network in achieving the goals laid out in the Statement of Future Reality of SSMHC-SL by leading the CQI process as it applies to medical management across the network.

The four areas of focus for the CIC are summarized in the acronym IDEA.

Innovation: Foster the development of new programs designed to improve patient care or the health status of populations by encouraging and supporting local initiatives and by developing network-wide programs.

Dissemination: The CIC will be the nexus for medical quality improvement initiatives around the network, monitoring the success of those efforts and transmitting the news of successful programs to the rest of the network.

Education: Lead the network's efforts at educating physicians and

other health care providers regarding methods of improving the quality and efficiency of the care they render.

Assessment: Monitor the performance of the network with respect to medical management and identify those areas that are in most need of improvement. To accomplish this, the council will need to work with the MCO and SSM information systems to develop reporting of sufficient quality to support it's goals.

The CIC began meeting monthly in April of 1997 and chose for its first project the design and implementation of practice guidelines and disease management programs for congestive heart failure, diabetes and asthma. In his introduction to the Council Dr. Drozda stated:

> This strategy came from the basic belief of the Council that, in order for the Network to bring value to the marketplace, physicians and other health care providers would have to begin working systematically together in creative ways to improve and make more cost efficient the manner in which we care for those for whom we have taken responsibility. Guidelines and disease management programs by their very nature call for this type of cooperation, both in design and implementation (Drozda).

The three diagnoses chosen as the first to be addressed were chosen for two basic reasons. First of all, they represent high volume and high dollar conditions which are subject to a considerable amount of variability in treatment due to physician, patient, and health care delivery system

factors. Therefore, there was significant room for improvement in these areas, which could lead to better health outcomes and lower costs. Secondly, these same three diagnoses have been targeted on both a national and local scale by HMO's for the same reasons.

Local Managed Care Organizations were introducing their own programs. Within one Network the physicians may have contracts with several of these HMO's and therefore coping with several programs for the same disease. Sixty percent of health maintenance organizations have developed disease management programs for asthma, fifty eight percent have developed programs for diabetes and twenty seven percent have developed programs for congestive heart failure (Drozda).

The CIC felt that ultimately those disease management programs which were created and run by health care providers would be the more efficient and more successful. The CIC also felt that, if the Network (SSMHC-St. Louis), would have these programs in place, it could preempt the HMO programs and simplify operations for physicians.

In order to obtain understanding and "buy-in" of physicians in an organization for disease management programs, it is imperative that the development process be physician led and physician driven and have physician champions. SSMHC had begun the process in the physician led structure of the CIC and continued to develop these physicians as champions through education.

Members of the CIC and the staff of the Medical Management Dept. of the MCO attended a conference presented by Lovelace Health Systems in Albuquerque, New Mexico in June of 1996. Lovelace has been a leader in the United States in the development of disease management programs since 1989 when they adopted Continuous Quality Improvement as a leadership strategy. The conference focused on thier start up methods, details of some of their programs and the importance of data base systems to track outcomes.

The Teams

As SSMHC began its own process, the physician champion members of the CIC nominated the members of the three teams that were chartered to develop the three disease management programs. The teams were multidisciplinary and consisted of physicians that were specialists as well as primary care physicians as well as professionals in the fields appropriate for each team. Each team had a physician as the team leader and was assisted by a facilitator and other staff from the Medical Management (MM) Department of the MCO. These other MM department staff at each team meeting were the Vice President of MM, the Director of Case Management, and an outcomes specialist. The facilitator, the support staff and the team leader comprised the "core"

support staff for each team. There was support needed in gathering data, doing literature review, benchmarking, and coordination of the meetings and records.

Work Plan

There was a very specific work plan for each of the disease management design teams. The plan called for a very focused, intensive approach on the part of both the teams and the support staff in order to achieve their principal goal of adopting practice guidelines and developing disease management programs in a very short period of time, three months. To cut down on the number of meetings and make best use of physician time, the plan called for five meetings, two hours in length, approximately three weeks apart. Approximately three to six months following the fifth meeting, each team would meet a sixth time to check the results of its work, the status of implementation of the practice guideline, and the disease management program it produced.
Each team member received a notebook ahead of time that contained the charter for each team, the goals of each meeting and a timeline. Also included were background reading materials to make the first meeting as productive as possible. Additional reading materials were added to their notebook at each team meeting, as well as the meeting minutes.

Each team understood that they were not to reinvent the wheel as far as developing standards of practice, but to choose an already established practice guideline for their disease and build a supportive disease management program around it. Each team charter and timeline reflected the same objectives.

Meeting one - "Forming" This included introductions, review of the team charter, expectations, the flowchart of actions of the support team and design team and background about disease management programs and models.

Meeting two - "Guidelines" The team selected a guideline and adapted it to the Network needs. There was also a review of disease management programs specific for the disease.

Meeting three - "Disease Management" This meeting included a guest speaker from an out of state health system that had a disease management program for that disease.

Meeting four - "Customize" The team selected a disease program model and built a process flow structure that began with determining outcome measures.

Meeting five - "Implement" Addressed Implementation tasks and the development of an action plan to address potential barriers to success and finally, to approve the program.

Meeting six - "Check"- The SSMHC continuous quality improvement (CQI) efforts use a four fold approach of Plan, Act, Do, Check. The disease management design teams agreed to meet for a sixth time six months after implementation of the pilot phase of the program to check the implementation process, any outcome data available and suggest changes as necessary. A generic work plan flow chart was developed and used by all three of the teams (Appendix I page 52).

Chapter III

THREE DISEASE MANAGEMENT PROGRAMS: DEVELOPMENT THROUGH THE TEAM PROCESS

Diabetes

The diabetes disease management program design team was made up of a diabetic nurse educator, a dietitian, endocrinologist, ophthalmologist, four primary care physicians, and information system specialist and a vascular surgeon as the team leader.

At meeting one the team reviewed the team charter as developed by the CIC and the timeline for the work plan. The team charter contained a brief mission statement that charged them to develop a network wide program to improve the care and health status of the networks diabetes population.

The team charter for this team as well as the asthma and the CHF team contained the:

a. Mission statement

b. Expected measures of success

c. Map of the territory or current resources for diabetes in the network

d. Diabetes continuum of care

e. Barriers to developing and implementing a disease management program

f. Aids that would help support the effort

g. Team member expectations

h. Support information concerning in what way the staff would assist

f. Constraints that the team had to work within, such as the time frame

(Appendix I, pages 53-58).

The team reviewed the *Disease Management Project Flowchart* which gave them a visual example to explain the contents of meetings, the expectations of the team and the activities of the support group during the process (Appendix I, page 59).

In meeting two, the team discussed the most appropriate validated guideline to use as the basis for the diabetes care that is incorporated into a disease management program. Since the American Diabetes Association, which is the recognized authority on diabetes care had just revised their complete guidelines, the team easily adopted the American Diabetes Association's "Clinical Practice Recommendations 1997"

The team also clarified that the disease management program they developed would focus on the non-acute, or outpatient setting. During the implementation phase, the implementation team would connect any existing diabetes inpatient care pathways to the new outpatient diabetes disease management program.

In meeting three the guest speaker was Neal Friedman M.D. from Lovelace Healthcare Innovations in Albuquerque, New Mexico. He

presented a summary of the development of the Lovelace diabetes disease management program and the systems that were in place to measure and report outcomes.

The team then developed a tool for use in data collection of their program. This tool was a form that would be placed in the patient's chart in the physician's office, and would serve as a reminder to the physician to monitor the indicators that are required in the adopted guideline (Appendix I pages 60-61). These indicators are monitored to measure the success of the program. Some of those indicators are the result and frequency of monitoring the patient's glycated hemoglobin, dilated eye exam, foot exam, urine protein, cholesterol, and psychosocial adjustment. For the process for the use of the forms, it was suggested that the physicians's office would fax the forms to the Center for Clinical Improvement (CCI) after the patient's visit, and all of the data collection and monitoring would be done centrally at the CCI. The name Center for Clinical Improvement (CCI) had been designated as the new name to refer to the Medical Management Department of the Managed Care Organization of the network.

At meeting four, the team designed the high level process flow chart for the program (Appendix I pages 62-64). This flow chart demonstrated that the patient would enter the program through the recommendation and referral of the patient's primary care physician. The basic demographic

information would be entered into the centralized database for all disease management programs at the CCI. It was determined that there would be one Medical Director for the program and ideally that should be an endocrinologist. It was also decided was that there would be initially one RN case manager for the enrollees to the program. It was felt that one RN could accommodate a pilot program of 20 patients as enrollees in the program. The patients for the pilot would come from the plan for which SSM Health Care was at full risk and therefore getting capitated payments for these members. It was also determined that the names of potential enrollees and retrospective data on those enrollees would be easier to obtain from the claims data base to which we would have access.

It was determined that the program would focus primarily on good patient education and close telephonic management by the case manager. The education program was developed with the help of some staff from the SSM Health and Wellness component of the network. The education program to be presented in four sessions was carefully designed to meet the American Diabetes Association's guidelines for a certified program. The SSM Health and Wellness component of the network would be responsible for scheduling and advertising the classes and securing the qualified instructors from the pool of diabetic nurse educators in each of the hospitals in the network.

The SSM Health and Wellness component of our network is responsible for all of the community education and already had systems in place for advertising and taking registration for classes. It was decided that all the enrollees in the diabetes disease management program would be put into these community classes. If they needed immediate one on one education as in the case of a new diabetic, this one on one would be done prior to the patient attending the group classes.

After the patient had gone through the classes, the diabetic educator would report back to the case manager and the case manager would then continue to assess patient needs and progress by phone. There would be periodic reports to the physician from the case manager. The medical director of the program and the case manager would have frequent consultations about the enrollees and any recommendations for change in care could be communicated to the patient's physician by the case manager with the help of the medical director (Appendix I pages 65-70).

At meeting five the concerns of implementing the design were discussed and decisions made. Decisions were made about a communication plan for physicians and their office staff and hospital administrative staff. The action plan and time frame for the hiring of the medical director and case manager were decided. Suggestions for the implementation team members were given and confirmation that the

physicians on the design teams were to be champions of the implementation process at each entity.

Implementation

The implementation process also had an action plan, timeline and team. This is where most of the effort, cooperation and learning took place. An aggressive timeline was developed without allowance for real world glitches. Job descriptions had to be developed before posting the case manager position. Physicians had to be spoken to individually to recruit for the medical director role. The role of the Medical Director for the Diabetes Program as well as the CHF and Asthma program consisted of several responsibilities that would be done in collaboration with the Vice President of Medical Management for the network. The responsibilites included:

1. Approve the policies and procedures for the program
2. Oversee the process that delivers care to the patient population with the disease according to the guidelines used as the foundation for the program.
3. Act as a resource to those delivering the care (RN case manager, Home Health nurses, patient education providers, and primary care physicians.
4. Evaluate the program outcomes and participate in process improvement.

5. Communicate the process, benefits and outcomes of the program to other physicians, administrators, and payors.

The medical directors were awarded a stipend assured for the pilot phase of the program.

The networked interactive database for the programs was being built in a Lotus Notes program by outside consultants. The consultants had a longer timeline than had been determined by the network for the startup plan and their final product needed several revisions.

The endocrinologist that had been approached to serve as the medical director for the program was not available on the terms determined during the negotiation. The design team was contacted by mail and phone to gain nominations for the candidate in the field of Internal Medicine. It had been previously determined by the team that if an endocrinologist could not be attracted as the medical director then the best candidate in the field of Internal Medicine would be approved. This candidate was approached and was both willing and excited to take on the medical director role.

Patient Education Program

The activity that was taking place as progress was slowed on some of the above events was the development of the four session diabetes education program. This program was developed by a team of all of the diabetic educators, some dietitians, the medical director and the staff of

the Medical Management Department of the network. This program would be the standardized diabetic education program for the network of hospitals in SSMHC - St. Louis. The program took several revisions, but in its final form, it was designed to meet the criteria for certification by the American Diabetes Association. (Appendix I pages 71-146).

Enrollment

The pilot population for the diabetes disease management program had been determined to be the members of one of the full risk, capitated plans of the network. Much of this population was made up of the network's own employees. The design team had determined that this program would not be structured so that enrollment in the plan and a diagnosis of diabetes would be an automatic enrollment into the disease management program, although many programs associated with full risk plans are structured this way as a benefit to the patient and the plan.

Since the enrollment was not automatic, the primary care physician for each of the potential candidates needed to be contacted to get approval for the referral into the program. The potential candidates with a diagnosis of diabetes were identified from a list extracted from the plan's claims database. The process was designed so that the medical director sent a letter to each of the primary care physicians (PCP's) in the network to inform them of the program, and to let them know that the

case manager would be following up with a letter that would include the list of their diabetic patients and would request referrals. The case manager also was to try to visit each of the physician's offices to present them with a manual of the program and explain more to him/her and the office staff. The case manager had sent a laminated sign with the central intake registration number for all the disease management programs to each physician office.

Since the design team had stressed that the program be physician friendly, the one central intake number, the identification of the enrollees by the case manager and a fax or phone referral were developed as part of the implementation process.

The sixth meeting or the "check" meeting of the design team needed to address a list of concerns and unexpected delays which were on the agenda for discussion. Some of these are listed along with the suggested solution.

1. Enrollment was not automatic. There was considerable delay in getting physician approval for enrollment. Two potential solutions were discussed but none adopted. Letters could have been sent to the potential enrollees to inform them of the program and encourage them to ask their physician about enrolling in the program. The other solution which was not adopted by the diabetes team but **was** adopted by the asthma team, was to consider their membership in the plan and their

diagnosis as automatically enrolling them in the program as a benefit of their plan.

2. Members of the plan were health care workers. This presented a problem since they did not perce any benefit by being enrolled in the program. Many of the potential enrolees were professionals, who claimed that they knew enough and did not need education or follow up. However, the claims data proved that some of these were very uncontrolled diabetics with many complications. The solution of criteria based enrollment was discussed. Sufficient numbers of claims or complications would require the plan member to be enrolled in the program. This solution was not adopted by the team.

3. Phone numbers not available. Since the members of this plan were our own employees, it was not lawful to retrieve confidential phone numbers from the plan data base. It was discovered that no phone number was even listed in the data base. Therefore, even if a physician gave a referral for enrollment, the case manager had to get the phone number to do the initial screening from the physician office staff, or go to the office and do record review. This was the only solution and the case manager then continued to rely on the physician office for the patient's phone number to even make the first assessment call.

4. Physician's perception. Many physicians expressed concern that the existence of the program inferred that he/she was not taking adequate care of the patient, or that the program may remove revenue producing visits to the physician office. The design team stressed that the best communication plan for explanation to physicians was a one on one process. The case manager did set a goal to try to visit each physician in his/her office. However, other methods of communication were also used. Presentations were made at physician staff meetings, articles were placed in physician newsletters and letters were sent directly to them Most of the efforts to communicate and explain the program to physicians were very time consuming and slow to produce results.

5. Little time was allowed or available in the physician office for the case manager to visit. Most of the office staff personnel were also unable to allow time for a mini-presentation or explanation of the program. The design team suggested a brochure that the staff and physicians could use as a quick reference and which could also serve as an information tool to give to the patient. However, the funding for this could not be obtained. The design team suggested a one page information sheet on brightly colored paper be sent to each physician office.

6. Physician offices did not track diagnosis with payor. There was no data base that could be sorted by payor and diagnosis to quickly identify potential enrollees in each physician practice. Therefore many

potential enrollees who did not have a claim record would not be on the list used by the case manager.

7. Case managers were hired part-time for the pilot project. It was difficult on a part-time basis to address all the above challenges just to get the pilot population enrolled. The other limiting factor was that many of the enrollees were only available by phone at home in the evening. This required that the case managers attempt to complete phone monitoring from their homes in the evening. However, they were making themselves available during the day to visit physician offices, send letters, make presentations and also complete some patient calls to enrollees who were home during the day. Another obstacle to successfully contacting the potential enrollee that may be unique to this population of health care workers was due to the fact that if they were home during the day, it might be their sleep time, since they were night shift employees. There was no funding available to make the case managers full time and make their schedule more flexible.

Congestive Heart Failure (CHF)

The structure, process and results of the CHF as well as the asthma design teams were very much the same as the diabetes design team. The differences will be emphasized in the remainder of this chapter. The CHF program design team leader was a cardiologist and the rest of the

team consisted of three other cardiologists, two primary care physicians, one emergency department physician, one director of case management, one home health nurse, one director of a cardiopulmonary rehabilitation department and an information systems representative.

The guideline chosen to be the standard of care for the CHF patients was from the U.S. Department of Health Agency for Health Care Policy and Research. The guideline was this department's report: "Heart Failure-Management of Patients with Left-Ventricular Systolic Dysfunction".

The pilot population was the CHF patients in a different full risk capitated risk plan. The enrollees in the plan were exclusively over the age of sixty five. This plan was not a self-managed plan on the part of the network and even though there was cooperation from the administrators of the plan, it was cumbersome to obtain an accurate claims data base. Therefore it was difficult to identify potential enrollees, and the case manager relied on the hospital and the network's home health data base.

The CHF program was structured differently than the diabetes or asthma program in that instead of managing these patients from a centralized telephonic operation at the Center for Clinical Improvement, the decision of the design team was to base the operations in the existing cardiac rehabilitation departments of each entity. The ultimate goal was to have the medical directors of the cardiac rehabilitation departments

also serve as the medical directors of the CHF disease management program which would be housed in their departments. However, for the startup phase, it was decided to appoint a medical director specifically for the CHF program at each entity. The potential enrollees with a diagnosis of CHF were screened by the case manager through examination of their medical record to insure that they met the criteria for this disease management program. The documentation of left ventricular ejection fractions needed to meet the criteria of the guideline. These patients were then evaluated at a visit in person to the RN case manager in the cardiac rehabilitation department.

Procedures and protocols for the registration, case managers assessment of the patient, frequency and content of phone monitoring and criteria for referral to a specialist were developed. In addition to these, forms for patient, case manager and physician communication were developed and standardized for the two pilot sites. (Appendix II pages 146-162).

Since the program was designed to be based at individual entities each with their own case manager and medical director, it was necessary to plan regular operations meetings. These meetings insured that the programs were being implemented in a standardized way. Through these meetings, the education/counseling sessions to be done by the RN case manager were developed. (Appendix II pages 163-182).

Asthma program

The asthma disease management design team was led by a family practitioner physician and consisted of four allergist/immunologists, four primary care physicians, one emergency department physician, two directors of respiratory therapy departments, one home health nurse, one psychologist, one outpatient case manager, an information systems representative and a representative from the American Lung Association.

The guideline chosen to be the standard of care for the program was the National Institute of Health's February 1997 Expert Panel Report II: Guidelines for the Diagnosis and Management of Asthma.

The program was structured in the same way as the diabetes program (Appendix III pages 183-185). There was one central case manager and one medical director for the network. However there was a specialist in allergy/immunology successfully recruited to be the medical director. The asthma program used the same pilot population and risk product plan as the diabetes program and therefore encountered the same challenges to enrollment. However at the sixth or check meeting of the design team, unlike the diabetes team, the asthma team decided to make the enrollment process in the program function as an automatic benefit of the plan for those with asthma. This eliminated the requirement of a physician referral prior to enrollment. Letters were sent to the potential enrollees and their primary care physician at the same time.

Some of the potential enrollees were already under the care of a specialist, but since the medical director was an allergist/immunologist there was built in support from the physician community to enroll their patients.

The functions of the case manager were similar to the diabetes program and a flow chart was developed to reflect the process for registration, evaluation, education and follow up of the patients (Appendix III page 186). Forms were developed to reflect guidelines for referral to an asthma specialist and for use in communication between the physician, case manager and the patient (Appendix III pages 187-194).

The education program developed for this program was created by the medical director, medical management staff, asthma educators, and the staff of SSM Health and Wellness (Appendix III pages 195-221). The medical director assisted in training additional asthma educators throughout the network to use this standardized education program.

Data collection and outcomes

Each program had disease specific and general indicators that were to be monitored to determine the effect of the program on the patient's physical and lifestyle improvement. Each design team chose the indicators for that disease holding to the criteria that the indicators needed to be according to the guideline chosen. Just as important was that the indicators be relevant and yet easy to access. To this end, each

team chose only a few simple indicators for the pilot programs. The intent was to add additional indicators to monitor as the programs began rolling and data collection became easier due to the improvements developing in the information systems across the network.

Diabetes indicators

The diabetes disease management team carefully determined that the primary outcomes to monitor would come from the ADA guidelines and that initially the program would only monitor the Hemoglobin A1c or glycated hemoglobin and annual eye exams. According to the guidelines, the glycated hemoglobin should be checked quarterly and a dilated eye exam should be done yearly.

The tracking of these indicators was to come from the "Diabetes Disease Management Recommendations Checksheet" (Appendix I page 60). This sheet was to be faxed to the central intake location at the Center for Clinical Improvement. The Outcomes Specialist would be responsible for gathering and tabulating the data for quarterly reports to send back to the physician in graph and chart format (Appendix III pages 222-223).

Asthma indicators

The asthma design team determined that the primary outcomes of the pilot program to be monitored would be Emergency Department visits, hospitalizations, and functional status/quality of life. The goal of this and any disease management program is to maintain good health at home,

support self management and therefore avoid exacerbations of the disease that would require a hospital visit or stay. Therefore, monitoring hospital exposures would determine the effectiveness of the program.

The tool that was used for functional status/quality of life was the SF 36, which is a nationally recognized and validated questionnaire that indicates the patient's perception of their own health. The baseline SF 36 was given at the first education session by the educator and sent to the central case manager to be entered in the central data base. As with the other programs, quarterly reports to the physicians were sent in summary form as well as a patient by patient breakdown (Appendix III pages 224-225).

CHF indicators

The CHF design team determined the primary outcomes for the CHF pilot program would be Emergency Department visits, hospitalizations, re-admissions, and functional status/quality of life. As with the other programs, the data for hospital exposures was easy to obtain through the network's Trendstar data system and obtained by the information systems staff by query reports. The SF 36 is again the tool used to measure functional status/quality of life. This survey tool was given to the patient by the CHF RN case manager at the time of a visit with him/her in the Cardiac Rehabilitation Department. The SF 36 as well as all patient related data was sent to the outcomes specialist at the CCI to be entered

in to the centralized data base. Quarterly reports of these indicators were sent to the physicians in summary form as well as patient by patient breakdown of information (Appendix III pages 226-229).

Program Manuals

There were manuals developed for each program that were used to present the basic purpose, guidelines, flow charts of operations, the case managers functions, protocols for the program, the educational materials and samples of the outcome reports to be used. Manuals were given to physicians as well case management departments in the hospitals. Portions of these manuals as well as tools used by the design teams have been referred to throughout this paper as part of the Appendices.

The forms developed for use in the program and for use in the program manuals were copyrighted by the SSM Health Care Corporation. A copyright page was placed in all manuals. (Appendix I page 51).

Chapter IV

Summary - Lessons Learned

The design, development, implementation and ongoing improvement of disease management systems are complex and time-consuming undertakings requiring substantial resources and commitment from organization leaders. This new paradigm of disease management has been so well received by various segments of the health care industry that implementation has frequently run will ahead of thoughtful design and planning of the systems and infrastructure needed to ensure successful implementation (Eichert 27).

As John Eichert expressed so well,

> Fueled by the pressure of powerful forces within the industry, the evolution of the health care system as a whole, and a high level of interest, disease management has taken on almost revolutionary proportions. Unfortunately, this rush to explore the potential of disease management has resulted in the development of many programs rather than systems. (27)

SSMHC has put forth a credible effort to develop programs for disease management. The next steps are being taken to truly put the systems in place to support these programs. Information systems continues to build the case management database and to improve the inter connection between the physician office, hospital and outpatient case manager.

Acceptance and accountability on the part of physicians, administrative leadership and managed care leadership are the key elements in beginning a successful disease management system. Communication and collaboration are the key factors in the implementation process of a new program.

Much has been learned during the first attempt by SSMHC-St. Louis to develop disease management programs. For future attempts at program development programs several changes would appear to be necessary.

1. Increased level of communication to physicians and administrative leadership for several weeks or months prior to beginning the process. This may make the formation of the teams occur through volunteerism rather than by recruitment. It would also eliminate the misunderstandings and suspicions aroused as the physician and administrative leadership began hearing about the project second hand.

2. Less delay in hiring of the Medical Directors and case managers for the programs after the team has finished its work. The increased communication prior and during the process would encourage physicians and nurses to come forward and want to be leaders in this endeavor. Having the resource for any stipends determined ahead of time would also help, so there would be no need for approval process.

3. Early investigation and assurance of claims data needed to identify

potential enrollees so the list is at hand as soon as the medical directors and case managers are hired.

4. Have the case managers in a full-time role committed to the start up of the program. Since start up is the most time-intensive component of a program, this would eliminate the delay and the loss of momentum needed to get the patients enrolled, meet with physicians, do presentations, develop and mail communication letters to physicians and patients, enter startup data in the data base and gain the personal reward that comes with being able to do a good job.

5. Enrollment would be an automatic benefit of patients in the capitated risk plans used for the pilot. This would eliminate the need for contacting the physician for a referral prior to even contacting the potential patient enrollees. The physician and patients would always have the ability to refuse the program, once contacted.

6. Ensure that there are the resources for all of the communication processes. Brochures needed for each program in addition to a general brochure for all three programs. Brochures, posters and videos to help explain the program and processes to physicians are just a few of the methods that physicians expressed as being helpful.

7. Special communication with physician office staff. This seemed to be the most difficult, as there is very little down time to be able to speak with them.

8. Have the information systems developed prior to the implementation of the program. Beginning with a paper system and making do with inadequate information delayed implementation in a way that caused loss of credibility with those who were promised systems and reports.

9. Have the full infrastructure of physicians across the network structured in a way that increases the accountability and support of the outcomes of disease management programs. Accountability may increase as financial incentives are aligned with the network

As with any new movement, disease management has its adherents and detractors. And, like any enthusiastic adherents, those who wish to quickly implement disease management and place themselves one step closer to total health management may leap too far before they look.

Each step in designing and implementing a disease management program involves a great deal of work. Nothing happens overnight, and a shift in care delivery as dramatic as disease management will demonstrate this rule to many providers.

The systems approach at the heart of disease management involves not only the practicalities of cost analysis, outcomes measurement, and others, but also the intuitive human relations side of gaining acceptance among stakeholders and helping adjust the attitudes of everyone from patients to providers to payers to managed care organizations.

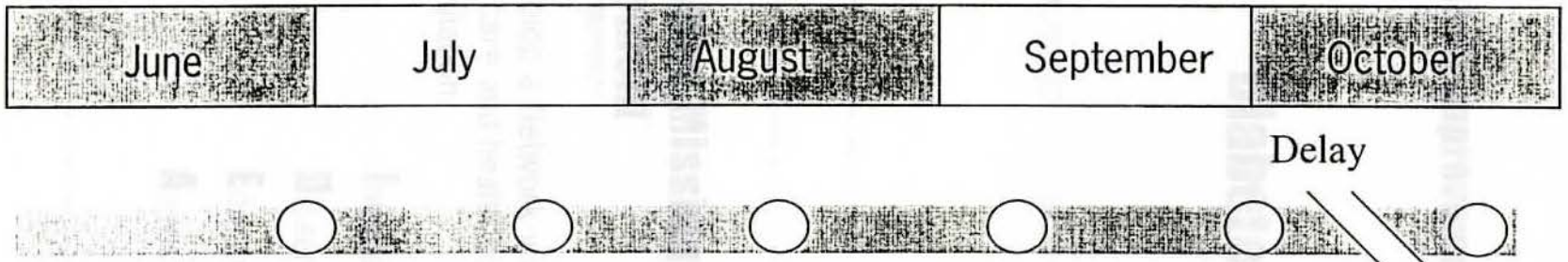
Acceptance and implementation of disease management will grow as health delivery integration accelerates; information systems and databases evolve; capitation becomes more prevalent; outcomes measurement proliferates; practice guidelines prove valuable; utilization reviews and formularies grow more sophisticated; providers gain expertise in outcomes measurement and quality improvement; manufacturers and managed care organizations learn to share risk; and employers demand greater quality and lower costs. These changes are already occurring, some are even well developed and noted by the media, government, and the population as a whole. A true, functional, working disease management system cannot be far behind (Eichert 59).

APPENDIX I

Samples of forms used by the diabetes design team and for use in the Diabetes Disease Mangement Program. The forms used in the patient care process were also placed in the final manual for display.

Project Timeline

1997



Meeting #1	Meeting #2	Meeting #3	Meeting #4	Meeting #5	Meeting #6
"Forming"	*"Guidelines"*	*"Disease Mngt"*	*"Customize"*	*"Implement"*	*"Check"*
Date: Tues, Jul 1	Date: Tues, Jul 29	Date: Mon, Aug 18	Date: Thur, Sept 11	Date: Mon, Sept 29	Date_____
Time: 7am-9am	Time: 7am-9am	Time: 7am-9am	Time: 7am-9am	Time: 7am-9am	Time_____
Place: MCO	Place: MCO	Place: MCO	Place: SSM Corp	Place: MCO	Place_____
7980 Clayton Rd	7980 Clayton Rd	7980 Clayton Rd	477 N. Lindbergh	7980 Clayton Rd	
Room 3A	Room 3A	Room 3A	Room B	Room 3A	

Meetings will be held every 3 weeks with significant work being done between meetings.

Clinical Improvement Council

Diabetes Team Charter

ST. LOUIS
HEALTH
Care
NETWORK

Revised 6/11/97

Diabetes Mission Statement

Develop a Network-wide program to improve the care and health status of our Diabetes population

Innovation

Dissemination

Education

Assessment

Expected Outcome of Team

- Adopt and adapt a Diabetes treatment program including the following features:
  - treatment guidelines
  - disease management program
  - implementation strategies
  - tracking and reporting system
  - cost/benefit analysis

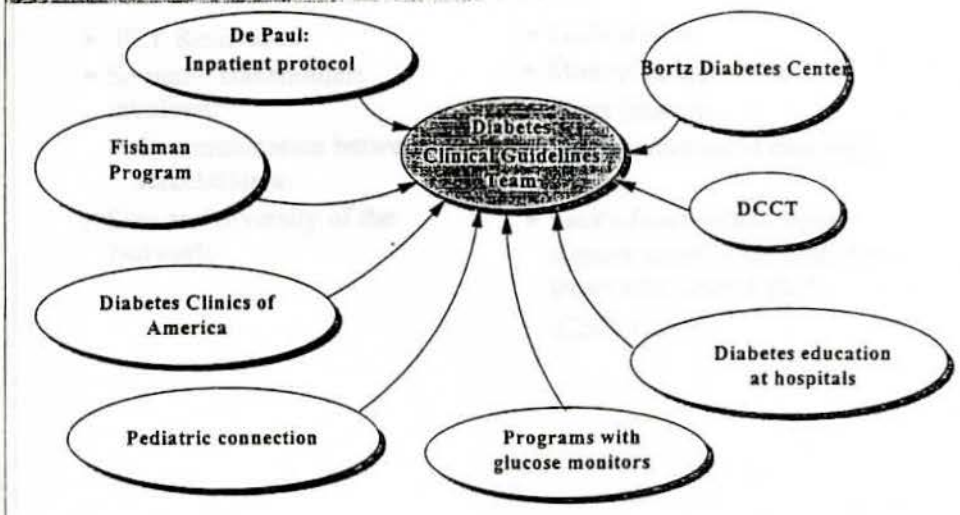
Expected Measures of Success

- Decreased Hgb A_1C
- Diabetic Eye Exams (HEDIS Measure)

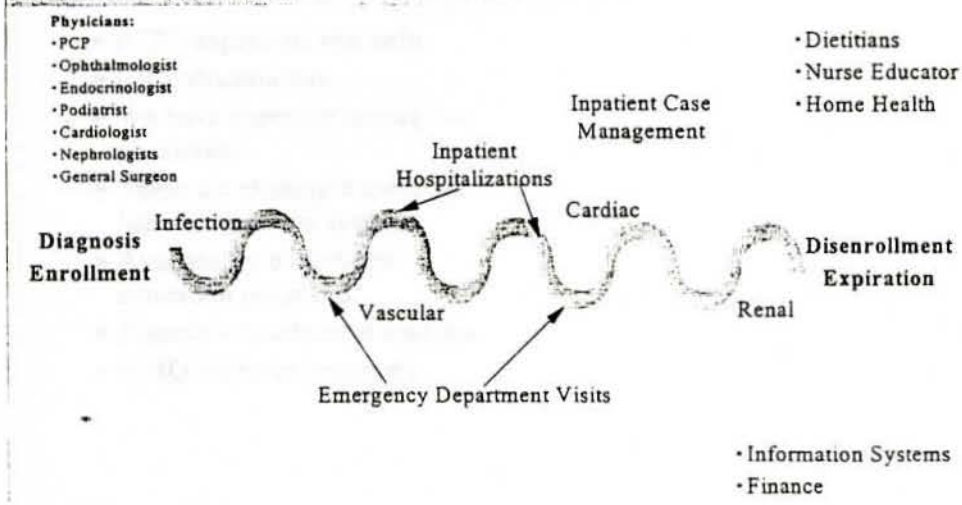
- Consider Measuring
  - Diabetic kidney assessment (micro albumen)
  - Complication rates
  - Individual and mean FBS

Map of the Territory

"What's going on out there?"



Diabetes Continuum of Care



Barriers

- PCP Resistance
- So many stakeholders involved.
  - Communication between stakeholders.
- Size and diversity of the Network.
- Lack of trust.
- Money/budget.
- Team finance.
- Maldistribution of case mgt.. FTE's.
- Lack of understanding of disease mgmt./case mgt.. by those who control the $. (CEO, COOs)

AIDS

- PCP's appreciate this help.
- CIC infrastructure.
- We have expertise among our physicians.
- There are existing knowledge base information systems.
- Availability of diabetes education programs.
- Finance - cost/benefit analysis.
- HMO Diabetes programs.

Team Member Expectations

- Be a champion at your Entity for the implementation of the guidelines and disease management program
- Communication to peers, hospitals and others
- Attend meetings
- Commit to between-meeting work

Support

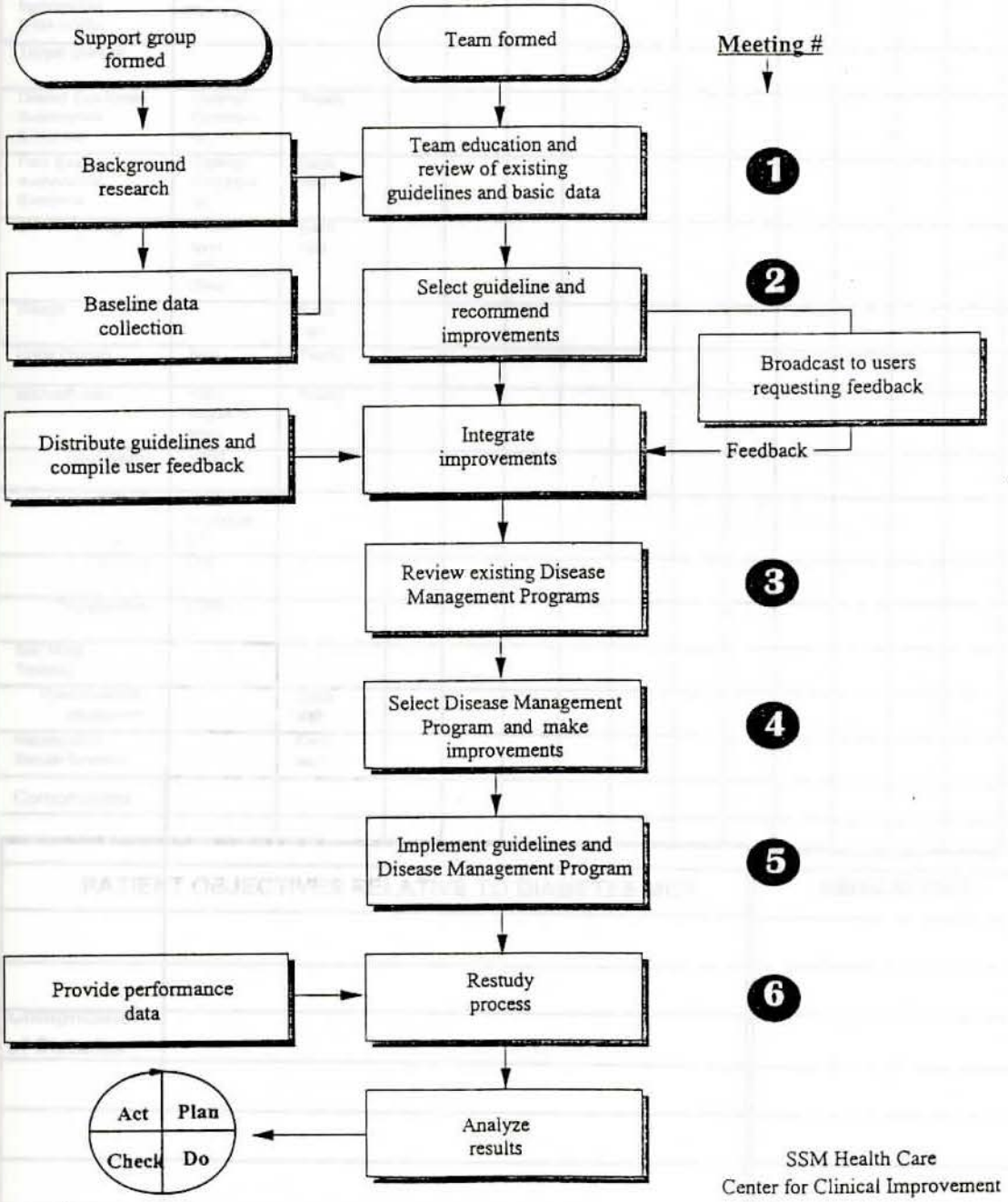
- The Center for Clinical Improvement will supply
  - Clinical Outcomes data support
  - meeting facilitation
  - logistical support

Constraints

- Time limit
- Utilize Adopt-Adapt strategy
- Budget/financial
- Utilize current resources (people/systems)

Disease Management Project Flowchart

Revised 6/97



SSM Health Care
Center for Clinical Improvement

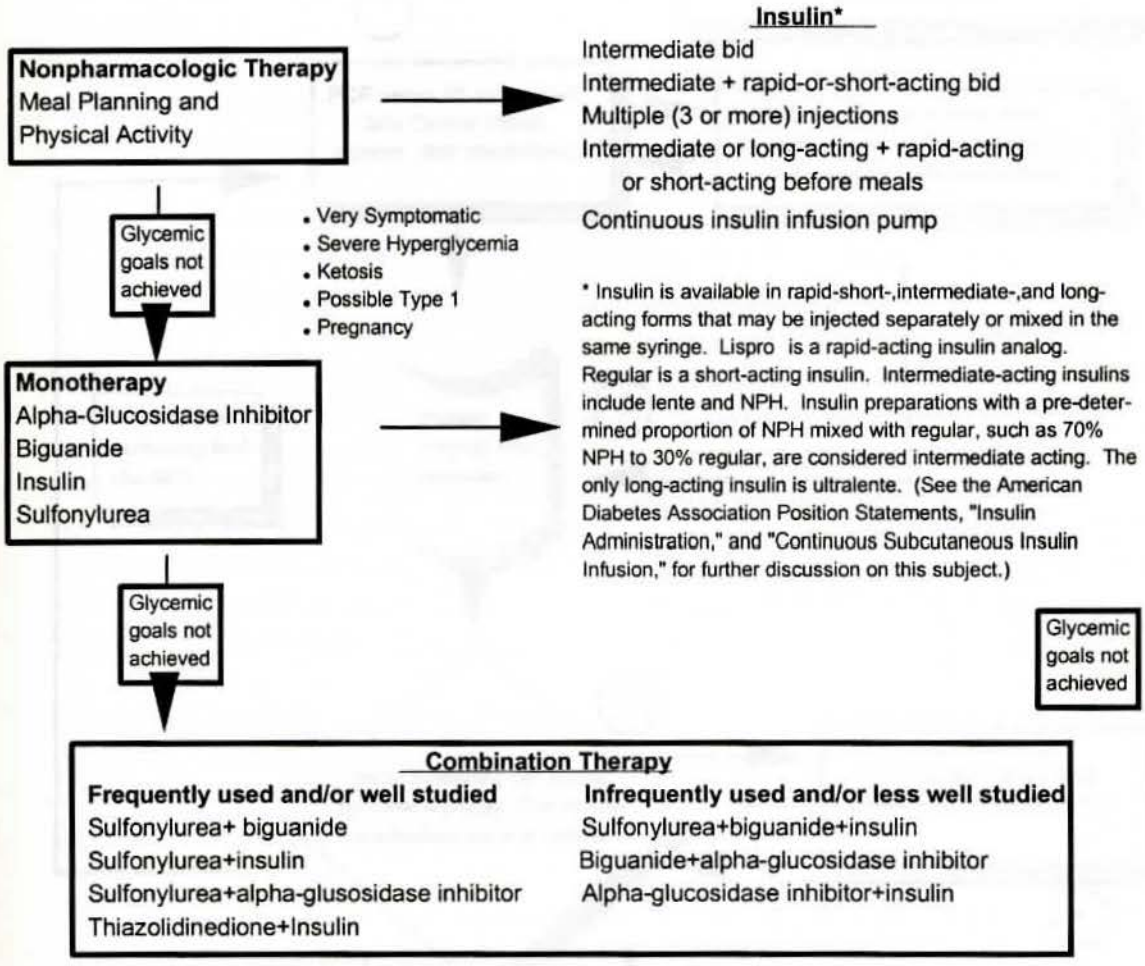
Diabetes Disease Management Recommendations Checksheet

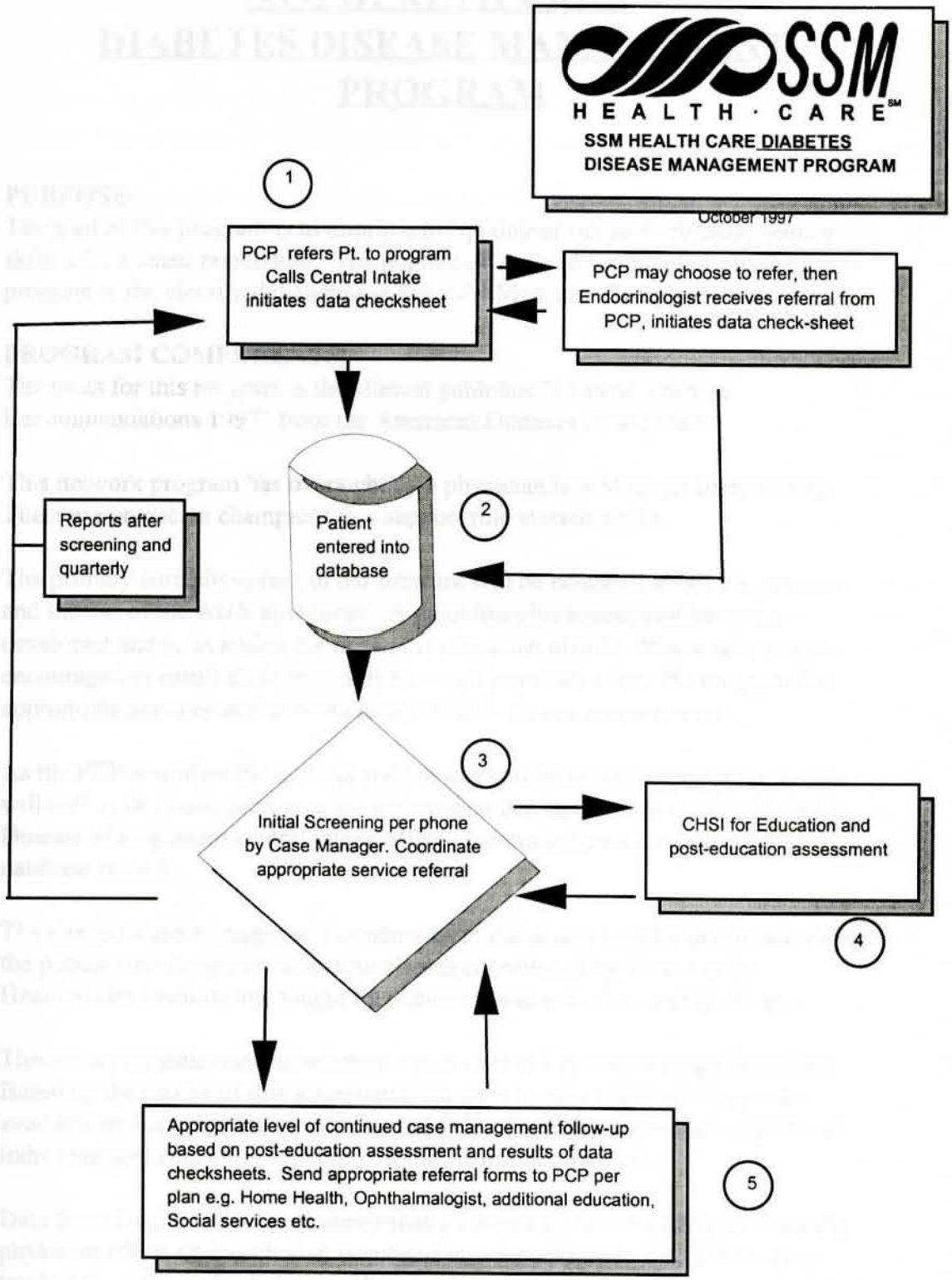
Directions: Place Date of visit in top of column & result in box- when completed Fax Form to 951-5349 every_____

Pt. Name:
Doctor
Year:

Program Measures	Goal	Frequency												
Glycated hemoglobin (HbA1c)(%)	<7% >8%=Action	Quarterly												
Target glucose														
Dilated Eye Exam A-abnormal B-Normal	Optimal Functioning	Yearly												
Foot Exam A-abnormal B-normal	Optimal Functioning	Each visit												
B/P Frequency	<130-Syst <85 - Diast	Each visit												
Weight		Each visit												
Urine Protein	Neg	Yearly												
Microalbumin	<30 mg/24 h spec	Yearly												
Cholesterol	<200													
LDL-C	<130 <100(CHD)													
HDL-C	>35													
Triglycerides	<200													
Self Mngt Training														
Psycho-social adjustment		Each visit												
Neuropathy/ Sexual function		Each visit												
Comorbidities														

PATIENT OBJECTIVES RELATIVE TO DIABETES MGT.		MEDICATIONS
Complication of Diabetes		


Nonpharmacologic Therapy
Meal Planning and
Physical Activity
Insulin*
Intermediate bid
Intermediate + rapid-or-short-acting bid
Multiple (3 or more) injections
Intermediate or long-acting + rapid-acting
or short-acting before meals
Continuous insulin infusion pump
Glycemic goals not achieved
• Very Symptomatic
• Severe Hyperglycemia
• Ketosis
• Possible Type 1
• Pregnancy
Monotherapy
Alpha-Glucosidase Inhibitor
Biguanide
Insulin
Sulfonylurea
* Insulin is available in rapid-short-,intermediate-,and long-acting forms that may be injected separately or mixed in the same syringe. Lispro is a rapid-acting insulin analog. Regular is a short-acting insulin. Intermediate-acting insulins include lente and NPH. Insulin preparations with a pre-determined proportion of NPH mixed with regular, such as 70% NPH to 30% regular, are considered intermediate acting. The only long-acting insulin is ultralente. (See the American Diabetes Association Position Statements, "Insulin Administration," and "Continuous Subcutaneous Insulin Infusion," for further discussion on this subject.)
Glycemic goals not achieved
Glycemic goals not achieved
Combination Therapy
Frequently used and/or well studied
Sulfonylurea+ biguanide
Sulfonylurea+insulin
Sulfonylurea+alpha-glusosidase inhibitor
Thiazolidinedione+Insulin
Infrequently used and/or less well studied
Sulfonylurea+biguanide+insulin
Biguanide+alpha-glucosidase inhibitor
Alpha-glucosidase inhibitor+insulin


SSM
HEALTH · CARE℠
SSM HEALTH CARE DIABETES
DISEASE MANAGEMENT PROGRAM
October 1997
1
PCP refers Pt. to program
Calls Central Intake
initiates data checksheet
PCP may choose to refer, then
Endocrinologist receives referral from
PCP, initiates data check-sheet
Reports after
screening and
quarterly
Patient
entered into
database
2
3
Initial Screening per phone
by Case Manager. Coordinate
appropriate service referral
CHSI for Education and
post-education assessment
4
Appropriate level of continued case management follow-up
based on post-education assessment and results of data
checksheets. Send appropriate referral forms to PCP per
plan e.g. Home Health, Ophthalmalogist, additional education,
Social services etc.
5

SSMart CARE
SSM HEALTH CARE
DIABETES DISEASE MANAGEMENT PROGRAM

PURPOSE:
The goal of this program is to improve the quality of life and self management skills of a defined population. The population defined for the pilot phase of this program is the identified diabetics is the SSM Medicare Complete Plan.

PROGRAM COMPONENTS:
The basis for this program is the clinical guideline "Clinical Practice Recommendations 1997" from the American Diabetes Association.

This network program has oversight by a physician in a Medical Director role. There are physician champions in a support role at each entity.

The primary care physicians in our network will be educated about the program and the use of the ADA guidelines. A guideline checksheet tool has been developed and is available for use in the physician offices. Physicians will be encouraged to enroll all diabetics in the target population into the program for appropriate services and to be included in the outcome measurement.

As the PCP identifies the diabetic patient as a candidate for the program, he/she will call or fax basic demographic information per registration form to the SSM Disease Management central intake office. Patient information entered into database record .

The Central Case Manager will conduct an initial assessment by phone and direct the patient into the group education classes coordinated by Community HealthStyles Institute and taught by diabetic nurse educators and dieticians.

There is a post-education assessment report sent to the case manager by CHSI. Based on the results of this assessment, the case manager will communicate available and appropriate services to the PCP. Options may include additional individualized education sessions, Home Health Services etc.

Data from the guideline checksheets that are faxed to the central intake from the physician office after each visit is entered into the database. The information tracked from these checksheets will assist the case manager in initiating phone follow-up and telephonic monitoring as a service to the physician.

Data collected can also be shared with participating physicians as a way to track the improvement of their patients.
An important part of the program is the phone follow-up by the case-manager to assist the physician in assuring the patient is following his prescribed plan of care.

OUTCOME MEASURES:
The two main measures to monitor the success of the program will be HgA1c and eye exams.
These can be compared to the guideline recommendations. The outcome measurement portion of the program will be overseen by Tony McDonald -- SSM Health Care's Outcomes Specalist.

The program includes quarterly reports to the physician on his/her patients in the program

These reports are in addition to the communication to the PCP by the case manager.

SSM HEALTH CARE - **Diabetes Disease Management Program**
Assessment information from Case Manager to Diabetic Nurse Educator

Pt. Name_____
Date enrolled in program_____

Address_____
Phone#_____

Insurance_____Pt. Age_____ Ht_____
Wt_____

Date of Diagnosis_____ Previous diab. educ. program?_____
When?_____

Describe previous Diabetes
Education_____

Previous Nutrition-Meal planning education?_____
When?_____

Describe_____
_____

Pt. Diet
controlled?_____Meds?_____

On a Cholesterol lowering medication?_____ Which one?_____

Using a monitor for self-testing?_____Which one?_____

Does pt. know own recent blood sugar?_____ Fasting result?_____
Random?_____

Cholesterol?_____ Triglycerides?_____ What is current diet
plan?_____

Does patient have any difficulty obtaining
meds?_____
_____

Significant other that assists in care_____phone#_____

_____phone#_____

Other comments:_____

_____

_____

_____

SSM Health Care Diabetes Disease Management Program

Date_____

To: Dr. _____

Your patient:_____
Has completed the enrollment in the SSMart Care diabetes disease management program. The initial needs assessment has been completed by phone and the ***following activities of the SSMart Care program*** will be started to reinforce your plan of care and to evaluate the progress of your patient.

_____1. Connection with a diabetic nurse educator and/or registered dietitian for one on one education as soon as possible.
_____2. Enrollment in a 4 session diabetes education class which delivers in-depth education in accordance with the American Diabetes Association guidelines.
_____3. Post education follow up phone calls on a the following schedule.

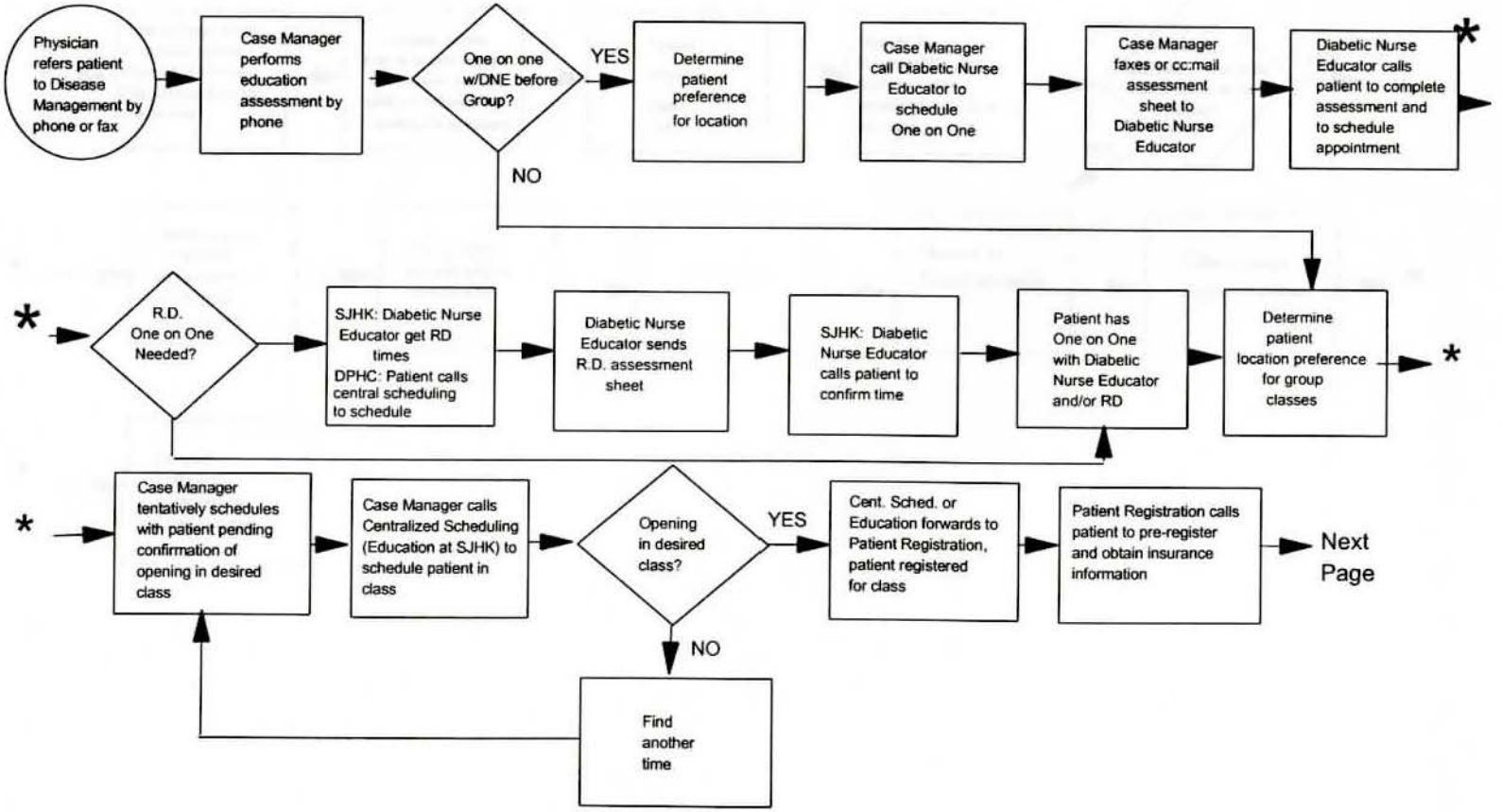
Weekly for 3 weeks
Bi-weekly for 6 weeks
Monthly for twelve months
Maintenence schedule of once every 6 months.

Major changes such as medication changes, hospitilizations, will change call schedule to repeat as above.
_____4. The SSMart Care diabetes disease management program is based on the ADA Clinical Practice Recommendations 1997, and will help you and your patient to monitor the appropriate schedule of eye exams, foot exams, HgA1c levels.
_____5. Monitoring of self-management skills and psycho-social needs and connection with the appropriate resources to meet those needs.
_____6. On the basis of the pt. assessment and the ADA guideline, we recommend the following changes in your patient's treatment to be considered._____

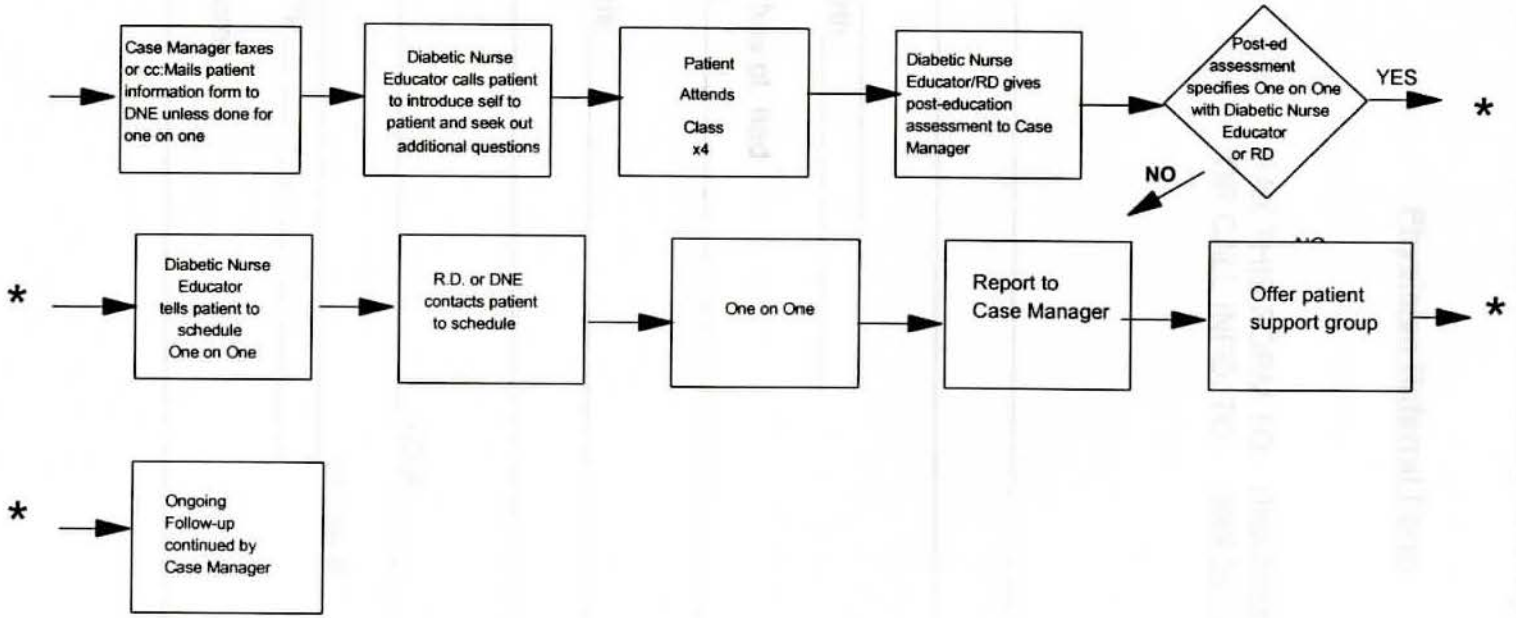
_____

Signature_____RN, Case Manager
Signature_____MD, Medical Director, SSMart Care Diabetes Disease Management Program.

Diabetes Education Group Class - Access for Disease Management Patients



Diabetes Education Group Class - Access for Disease Management Patients



SSM HEALTH CARE

"SSMart Care" Diabetes Disease Management Program

Physician Referral Form

FAX THIS FORM TO: 989-2288
OR CALL INFO. TO: 989-2121

Patient Name_____

Address_____

Phone # _____
Date of Birth_____

How long has pt. had diabetes?_____

Current Medications_____

_____

Health Plan_____I.D.#_____

Caregiver_____phone #_____
Relationship_____

Primary Care Physician_____

DIABETES EDUCATION MODULE

WHAT IS DIABETES?

Purpose: To provide you with a basic understanding of diabetes and the tools you need to use to control diabetes successfully.

Objectives: After covering the information in this module, you will be able to:

1. Define diabetes
2. Describe how diabetes is diagnosed.
3. Explain Type 1 and Type 2 Diabetes
4. Understand risk factors for diabetes
5. Describe the three key parts of diabetes management
6. List the long-term complications of diabetes

Handouts:

Complications sheet (Novo-Nordisk)

Basic Facts Pamphlet (Novo-Nordisk)

Diabetes touches almost every part of your life. It's a serious, lifelong condition, but there is so much you can do to protect your health. **You can take charge of your health** - not only for today, but for the coming years.

1. What is Diabetes?

When you have diabetes your body can't use the food you eat for energy. Glucose (sugar) is the body's main source of energy. Changing food into energy is necessary to maintain life and health.

Most of the food we eat is turned into glucose. The pancreas makes a hormone called insulin to help get glucose into our body cells. When you have diabetes, your body either doesn't have enough insulin or can't use the insulin properly. When this happens, glucose levels in the blood rise and may make us sick. High glucose levels in the blood cause damage to blood vessels and organs such as the kidneys, heart, and eyes.

The goal of diabetes management is **GOOD CONTROL.** What is "good control"?

Diabetes cannot be cured, but it can be controlled. When you didn't have diabetes, your blood sugar level was between 70-115 mg/dl. The level rises after eating, but returns to the normal range in 1 or 2 hours. To control diabetes means to keep the blood sugar as close to normal as possible.

The American Diabetes Association (ADA) has guidelines available to help you judge your diabetes control. These guidelines apply to many people but not to everyone. It is best to discuss your blood sugar guidelines with your diabetes educator and your physician. The ADA guidelines are listed below.

The keys to good control are a healthy diet, exercise, medication (if necessary), and keeping track of your blood sugar. You need a good balance of food , physical activity, and diabetes medicine to keep the blood sugar in balance. Testing your blood sugar lets you know how this balance is working out.

2. How is Diabetes diagnosed?

You find out you have diabetes if a fasting blood sugar is above 126 mg/dl, or if two random blood sugars are above 200 mg/dl. Your doctor might only need the results of one blood sugar test if you have signs and symptoms of diabetes. Your doctor may also order a test called a Glucose Tolerance Test. If the two hour level is above two hundred, this is also positive for diabetes.

3. There are different TYPES OF DIABETES.

There are two main types of diabetes. The types are caused by different problems.

Type 1 Diabetes: (insulin-dependent diabetes or IDDM). If you have Type 1 diabetes, your body makes little or no insulin. People with Type 1 diabetes must take insulin to live. Diabetes pills don't work for them. The symptoms of Type 1 diabetes include the following:

Increased thirst
Increased hunger
weight loss
increased urination
fatigue

People diagnosed with Type 1 diabetes are usually young, but it can occur at any age. Less than 10 % of the people with diabetes have Type 1. Type 1 diabetes is also known as insulin-dependent diabetes or IDDM.

Type 2 Diabetes: (non-insulin dependent diabetes or NIDDM). In Type 2 diabetes, our bodies make insulin, but it isn't enough, or what we do make cannot be used properly.

Type 2 diabetes is the most common form of diabetes; more than 90 % of people with diabetes have Type 2. Although it can occur at a young age, most people are over 40 when it begins. No one knows for sure what causes Type 2 diabetes. But we do know that there are certain factors that make you at increased risk for getting it. These risk factors include the following:

Over 40 years old
diabetes in the family
diabetes during a pregnancy
high blood pressure
have given birth to a baby weighing over 9 pounds
race: African American, Hispanic, Native American, or Asian / Pacific Islander
overweight
sedentary lifestyle

The symptoms of Type 2 diabetes include the following:

- ✓ fatigue
- ✓ frequent infections or infections that won't heal quickly
- ✓ blurred eyesight
- ✓ dry, itchy skin
- ✓ numbness in your hands or feet
- ✓ abdominal pain
- ✓ problems with sexual function
- ✓ possibly increased thirst, urination and / or hunger

There are approximately 16 million people in the United States who have diabetes. Half of these people do not know that they have the disease. More than 90% of them have type 2 diabetes. Whether you have type 1 or type 2, **YOU** have a very important role in taking care of your diabetes. **REMEMBER:** Diabetes cannot be cured , but it can be controlled. These classes will help you learn how to take care of your diabetes.

4. What is DIABETES MANAGEMENT?

The treatment of diabetes has traditionally included a combination of meal planning, exercise and medication. Each of these treatment components is equally important in controlling blood sugar levels. In addition, monitoring blood sugar levels, healthy lifestyle habits and on-going diabetes education and support all contribute to good management.

A. Meal Planning provides:

- ✓ a healthy balance of carbohydrates (CHO), fats, proteins
- ✓ weight reduction or weight control
- ✓ regularly scheduled meals

B. Medication includes:

- ✓ insulin injections
- ✓ oral medications

C. Exercise helps you to :

- ✓ burn up calories
- ✓ reduce or maintain weight
- ✓ promote a healthy heart and circulation
- ✓ feel good

5. What are LONG-TERM COMPLICATIONS of diabetes?

If diabetes is poorly controlled and blood sugar levels remain high, damage can occur to blood vessels and other organs in the body. If diabetes is properly managed, these complications may be delayed, prevented, or the severity decreased.

A person with diabetes is more likely than other people to have : a heart attack or stroke, eye problems that can lead to blindness, kidney problems, kidney failure, a foot or leg amputated, frequent infections of all kinds, impotence or other sexual problems, dental disease, stress, depression, or other psychological problems

These long-term complications of diabetes are caused by damage to the large and small blood vessels, damage to nerves and decreased ability to fight infections. You can protect yourself against much of this damage by good management.

You <u>can</u> help protect yourself against long term complications of diabetes by good management.

WHAT IS DIABETES TEST

1. Diabetes is:

a) a condition in which the pancreas doesn't make enough insulin for your needs
b) hyperglycemia (high blood sugar)
c) a life-long condition
d) all of the above

2. In Type 1 Diabetes:

a) the pancreas produces NO insulin
b) the body does not correctly use the insulin produced
c) the pancreas does not produce enough insulin
d) the body has too much insulin

3. There are several factors which could lead to diabetes. These include:

a) injury to the pancreas
b) family history (Type 2)
c) obesity (Type 2)
d) all of the above

4. Symptoms of hyperglycemia (high blood glucose) include:

a) increased thirst and urination
b) tingling in the lips and fingers
c) chest pain
d) shakiness and trembling

5. The key parts to diabetes management include: meal planning, medication, and exercise. Exercise helps to control diabetes by:

a) bringing blood glucose levels up
b) bringing blood glucose levels down
c) strengthens muscles
d) helping you to feel good

6. Over a period of time hyperglycemia (high blood glucose) can lead to long-term complications which include:

a) hardening of the arteries (arteriosclerosis)
b) loss of sensation especially in the legs and feet (neuropathy)
c) kidney failure (nephropathy)
d) all of the above

DIABETES EDUCATION MODULE

HYPOGLYCEMIA

Purpose: To assist you in effectively recognizing, treating, and preventing the occurrence of hypoglycemia.

Objectives: After completing this section you will be able to:

1. Define hypoglycemia
2. Describe signs and symptoms of hypoglycemia
3. Identify appropriate treatment
4. Explain the causes of hypoglycemia
5. Describe measures to prevent hypoglycemia

Handouts:

Novo Nordisk Hypoglycemia tear-off page
MedicAlert Identification pamphlet
Identification of Medical Conditions list
Pre-test/Post-test

1. What is Low Blood Sugar? (Hypoglycemia)

Low blood sugar or hypoglycemia is a blood sugar ***below 70 mg/dl.*** Always check your blood sugar if you start to feel unusual, experience any of the symptoms listed below, or think that your blood sugar is too low.

2. What causes Low Blood Sugar?

The most common reasons for low blood sugar are missing a meal, too much insulin, too much oral diabetes medication, or too much exercise.

3. What does Low Blood Sugar Feel Like?

Low blood sugar symptoms come on quickly. You may notice any of the following symptoms: sweating, sudden mood change, nervous, excited, headache, fast heartbeat, irritability, blurred vision, staggering, hunger, fatique, weakness, dizziness, shaking, pale, moist skin, tingling, drowsiness

4. What Should I Do To Treat Low Blood Sugar?

1). Check your blood sugar. If your blood sugar is ***below 70 mg/dl*** or if you do not have a way to check your blood sugar, go to step 2.

2). Treat low blood sugar. A form of simple sugar should raise your blood sugar in 15 minutes or less.

EMERGENCY FOODS FOR LOW BLOOD SUGAR

(Choose one of the following simple sugars)

4 OUNCES (1/2 CUP) FRUIT JUICE
6 OUNCES (1/2 CAN) SOFT DRINK, NON-DIET
3 GLUCOSE TABLETS or HARD CANDIES
5 LIFESAVER CANDIES
2 TBS. RAISINS
1 TBS. HONEY or SYRUP
4 TSP. SUGAR IN WATER

3). If you don't feel better within 15 minutes, check your blood sugar again. Take more simple sugar is your blood sugar is still **below 70 mg/dl.**

4). Snacks after low blood sugar. After you have treated your low blood sugar with a simple sugar and it is more than one hour before your next meal, also have a snack of protein and CHO.

SNACK

(Choose one from the protein list and one from the starch list)

PROTEIN	CARBOHYDRATE
8 oz. skim milk	6 saltine crackers
1 Tbs. peanut butter	3 graham crackers
1 slice cheese (1 oz.)	1 slice bread
1 slice lunch meat	3/4 cup cereal
1 oz, meat	

If you have **SYMPTOMS** of **low blood sugar**, and your blood sugar reading is **over 70 mg/dl** , eat a **PROTEIN** and **CHO** snack without any simple sugar.

Always carry some food with you. Eat regularly and don't skip meals.

5. What Can I Do To Prevent Low Blood Sugar?

1. Follow your meal plan: do not skip meals, eat meals on time.
2. Take your medication as directed.
3. If you are going to have more exercise than usual, eat a snack.
4. Know that alcohol can be a cause of low blood sugar. Discuss alcohol with your dietitian, educator or physician.
5. Test your blood sugar: follow your regular testing schedule, do extra tests if you feel bad, or different than usual. Write down the test results.

6. If you ignore or leave it untreated, hypoglycemia may progress to a serious level. You may become **unresponsive, unconscious, and may have seizures.**

Treatment for severe hypoglycemia will include **Glucagon** and will be provided by someone else (family member, friend, etc.)

Glucagon: a hormone which changes stored glucose in the liver to active glucose.

Administration:

a. Turn person with hypoglycemia onto side, in case of vomiting.
b. Inject 1 cc. into the upper arm or thigh.

c. Call 911

d. The person should come to (after the Glucagon) in 10-15 minutes.

NOTE: If unconsciousness occurs it is NOT necessary to check the blood sugar before injecting the Glucagon. ASSUME the problem is HYPOGLYCEMIA and treat as such.

e. After the person comes to, then check the blood sugar. Give a snack as previously described if food can be safely taken.

NOTE: If NO RESPONSE in 15 minutes, repeat the Glucagon.

f. The doctor should always be notified of repeated low blood sugar reactions, and of all severe low blood sugar reactions.

7. MEDICAL IDENTIFICATION

Signs and symptoms of hypoglycemia may not be recognized by everyone. In fact, severe hypoglycemia (slurred speech, unsteady gait, confusion) may resemble drunkeness. Your diabetes needs to be recognized quickly so that treatment can begin promptly.

It is important to wear medical identification. This can be a bracelet or necklace that indicates you have diabetes. The wrist is the best place to wear it because it can be easily seen. Also carry an ID card in your wallet listing your medical conditions (including diabetes) and medications. Include a phone number to call for more information on your condition.

HYPOGLYCEMIA TEST

1. Hypoglycemia is:

a) a blood glucose level of 70 mg/dl or less
b) an insulin reaction
c) low blood sugar
d) all of the above

2. List signs and symptoms of hypoglycemia

_____
_____
_____
_____

3. The first step in treating hypoglycemia is:

a) call your doctor
b) drink some juice or milk
c) stop your activity and check your blood glucose (whenever possible)
d) inject glucagon

4. For severe hypoglycemia (unresponsive, unconscious), a friend or family member may need to inject:

a) insulin
b) glucagon
c) sugar water
d) adrenaline

5. Causes of hypoglycemia include:

a) too much medication
b) not enough food
d) too much activity
e) all of the above

DIABETES EDUCATION MODULE

INSULIN MEDICATION

Purpose: To instruct you on the use of insulin, focusing on knowledge and skill.

Objectives: After covering the information in this module, you will be able to:

1. Explain what insulin is.
2. Explain who insulin works.
3. Describe and demonstrate insulin administration how to give insulin (draw up, mix, inject, site), syringe disposal, when to give insulin, storage of insulin
4. Identify guidelines for taking prescribed insulin (Do's and Don'ts)

Handouts:

"How to Prepare and Inject a Dose of Insulin"

Lilly "Selection and Rotation of Insulin Injection Sites"

B-D "Mixing Insulins" (if appropriate)

St. Louis County Department of Health "Proper Disposal of Needles, Syringes in the Home"

1. What is Insulin?

Insulin is a naturally occurring hormone produced by the pancreas.

People with diabetes do not produce enough insulin or do not use it correctly. When this happens, insulin injections may be necessary to make up for the lack of this naturally occurring hormone.

Insulin cannot be taken by mouth because it would be destroyed in the stomach.

2. Where does Insulin Come From?

For years, insulin has been taken from pigs and cows (called pork or beef insulin). More recently, insulin that is exactly like human insulin has been available through genetic engineering.

3. How Does Insulin Work?

When we eat, most of our food breaks down and enters the bloodstream as glucose. Glucose is on its way to enter every cell of the body for energy.

Insulin, however, is the key that has to be working well to let the glucose enter the cells of the body. Insulin lowers blood glucose (sugar) by allowing glucose to leave the bloodstream and enter the cells of the body where it is as "energy" for the cells. When insulin is working properly, the blood glucose level stays in a safe range all day long. This range is between 70 mg/dl and 130 mg/dl.

Without enough insulin, the blood glucose level becomes very high (hyperglycemia).

Signs and symptoms of Hyperglycemia are:

excessive thirst	blurred vision
frequent urination	fatigue
hunger or loss of appetite	weight loss
an infection may be present as well	

4. Are There Different Types of Insulin?

Insulin is prepared in different ways (called types). The type refers to the pattern of action of the insulin preparation. Your doctor will prescribe the source and type of insulin for you to take.

Short - Acting Insulins

Lispro (Humalog) - begins to work to lower blood sugar in about 5 minutes, peaks (does its best work in lowering sugar) in 1 hour, and lasts for about 2 - 4 hours. It is a clear fluid.

Human Regular Insulin - begins to work to lower blood sugar in about 30 minutes, peaks in 2 - 5 hours, and lasts about 6 - 8 hours. It is a clear fluid.

Intermediate - acting Insulins

Human NPH Insulin - begins to work in about 2 - 4 hours, peaks in 4 - 10 hours and lasts anywhere from 10 - 16 hours. It is a cloudy fluid.

Human Lente Insulin - begins to work in 3 - 4 hours, peaks in 4 - 12 hours, and lasts 12 - 18 hours. It is a cloudy fluid.

Long - acting Insulin

Human Ultralente Insulin - begins to work in 6 - 10 hours, has no real peak, and lasts 18 - 20 hours. It is a cloudy fluid.

Combination Insulins

Human 70/30 Insulin - 70% of the insulin in the bottle is NPH insulin and 30% is Regular insulin. It is a cloudy fluid.

Human 50/50 Insulin - 50% of the insulin in the bottle is NPH insulin and 50% is Regular insulin. It is a cloudy fluid.

5. Insulin Dosage and Strength

Insulin dosage is measured in units. Insulin is prepared in a strength that contains 100 units/cc. This is called U-100 insulin. The syringes that you buy are called U-100 insulin syringes so that they measure the insulin properly. You can buy these syringes to hold as much as 100 units (1cc syringes), 50 units (1/2 cc syringes), or 30 units (3/10cc syringes). The different sizes are for your convenience. Use the smallest syringe that will hold your dose of insulin.

Your personal dosage will depend upon a number of factors. The amount of insulin that you will need will be affected by:

- ✓ your body weight
- ✓ your level of physical activity
- ✓ your daily food intake
- ✓ other medications that you may be taking
- ✓ your emotions
- ✓ your general health
- ✓ the amount of stress that you are experiencing

6. Times to Take Your Insulin

Generally, you will need a dose of insulin before the breakfast meal and another before the dinner meal. Insulin needs to be taken with meal times so that the onset (when the insulin begins working), the peak (when the insulin is working its hardest) and the duration are timed with the digestion of the meal. (Refer to the additional reading - "It's All In The Timing".

If you are taking fast acting insulin before meals, you will get the best results if you allow time for it to begin to work (about 30 - 45 minutes for regular insulin) (essentially no waiting if you take Lispro).

Take your insulin after you check your blood glucose level:

Regular Insulin - wait 30 - 45 minutes and then eat.

Lispro Insulin - eat right away.

Your doctor will work with you to determine the best source, type, dosage, and schedule of injections for your personal needs.

7. How to Give Insulin (draw up, mix, inject, sites)

Refer to the following handouts for step-by-step instructions:

Drawing up and Injecting Insulin
"How to Prepare and Inject a Dose of Insulin"

Mixing and injecting Insulin
"Mixing Insulins"

Injection Site (selection and rotation)
"Selection and Rotation of Insulin Injection Sites"

Injecting Insulin

- ✓ It is important to rotate injection sites to prevent scar tissue from forming (lumps) under the skin. This causes poor absorption of the insulin into the blood.
- ✓ Use all the sites in one area before switching to another. Injection sites are to be 1 inch apart from each other.
- ✓ Avoid 1 inch space around the navel.
- ✓ Insulin is absorbed at different speeds from different parts of the body
  - Abdomen - fastest
  - Arms - next fastest
  - Thighs and lower buttocks - slowest

8. Syringe Disposal

Syringes may be reused but may become dull with reuse

Dispose of needles in a bleach bottle or coffee can and label it "Do Not Recycle"

A Sharps Container can be purchased at most Pharmacies.

Needle clipping devices are available at most Pharmacies.

9. Insulin Storage

- ✓ Keep in a cool place (avoid freezing)
- ✓ Once opened, insulin is good for 30 days at room temperature - below 86 degrees F.
- ✓ If refrigerated and opened, it is good for 3 months
- ✓ keep out of sunlight (protect from light)

Remember that successful diabetes management needs a balance of food, activity, and insulin. Insulin injections will help control your blood sugar levels only if you pay attention to all factors to work out the balance.

Food and Stress
cause the blood sugar to *go up*

Insulin and Physical Activity
cause the blood sugar to *go down*

INSULIN DO'S AND DON'TS

DO'S

Do check insulin for correct brand, type, source, and expiration date

Do take insulin 30 - 45 minutes before meals. Take it at the same time every day (or within 30 minutes).

Do store pre-mixed syringes in the refrigerator (three week's supply at the very most).

Do use up all pre-drawn syringes, then draw up a new batch.

Do allow insulin to come to room temperature (if stored in the refrigerator) before injecting.

Do keep an extra bottle of insulin in the refrigerator in case of breakage or damage.

When planning to exercise, inject insulin in the abdomen rather that the arms or legs.

Do wear identification saying that you have diabetes and take insulin.

Do carry an extra prescription for insulin and syringes with you when you travel.

Do talk to your doctor about adjusting your insulin dosages to avoid high and low blood sugar if your activity changes, if you are ill, or if your food intake changes temporarily.

DON'T

Don't use insulin if crystals, frost, or lumps are present in the bottle after the insulin is rolled.

Don't skip a dose of insulin (ask your doctor what you should do if you miss a dose of insulin).

Don't switch brands of insulin

Don't take a hot bath (hot tub or whirlpool) immediately after injecting insulin (increases circulation and insulin will be absorbed faster).

Don't share your insulin or syringes with anyone.

ORAL MEDICATIONS TO LOWER BLOOD SUGAR

Purpose: To learn how oral medications are used in the management of Type 2 Diabetes.

Objectives: After covering the information in this section, you will be able to:

1. Describe what Type 2 Diabetes is.
2. State the treatment of Type 2 Diabetes.
3. Identify oral medications used to treat Type 2 Diabetes.
4. State common side effects of oral medications used to treat Type 2 Diabetes.
5. Understand drug interactions with oral medications used to lower blood sugar.
6. Identify guidelines for taking oral medications used to lower blood sugar.

Handouts:

1. Oral Glucose Lowering Medications - Chart

1. Type 2 Diabetes

Type 2 Diabetes is also known as non-insulin-dependent diabetes.

- ✓ the body does not properly use the insulin that is produced by the pancreas. This is called insulin resistance.
- ✓ the pancreas does not make enough insulin to meet the body's needs.
- ✓ a combination of the two

2. Treatment of Type 2 Diabetes

Following a healthy meal plan, lowering weight (if overweight), and establishing a regular exercise plan are the mainstays of Type 2 Diabetes management. Oral medications to lower the blood glucose may also be necessary.

Oral Glucose -Lowering Medications

1. used in Type 2 Diabetes management
2. supplement meal planning and exercise.

They are most likely to work for you to lower your blood glucose if you :

- ✓ are still making some insulin
- ✓ have a fasting blood glucose less than 200 mg/dl
- ✓ have had diabetes for 5 years or less
- ✓ are normal weight or overweight (not underweight)
- ✓ are 40 years or older at the onset of diabetes
- ✓ have normal kidney and liver function

3. What are Oral Glucose-Lowering Medications?

Different types of oral glucose-lowering medications work in one or more of the following ways:

1. The pancreas may be stimulated to make more insulin. ***(sulfonylureas)***
2. The cells of the body may become more sensitive to insulin. ***(troglitazone)***
3. The release of glucose from the liver may be lessened. ***(metformin)***

4. The body absorbs glucose from food more slowly.
   (alpha glucosidase inhibitors)

These medications are NOT insulin.

You must be producing some insulin for these medications to be useful. Your doctor will work with you to decide which medication or combination of medications is best for you.

4. Side effects of Oral Glucose Lowering Medications

Any medication can cause some side-effects. If you notice a rash, hives, or fever, report this to your doctor.

The sulfonylurea medications can cause hypoglycemia (low blood sugar). These pills stimulate the pancreas to make more insulin, which results in the lowering of your blood glucose level. It is possible for the blood glucose level to go too low, especially if meals are skipped or if the dose is too high.

Symptoms of hypoglycemia are:

shakiness, tremor	heart palpitations
sweating	hunger
feeling weak or faint	headache
nervousness, irritability	double vision

Refer to the **HYPOGLYCEMIA** module for additional information

There are also certain precautions when using glucose lowering medications.

Glucose lowering medications should <u>not</u> be used if you:

1. are pregnant
2. are breast-feeding
3. have kidney or liver disease
4. have Type 1 Diabetes (Precose may sometimes be used in combination with insulin)
5. have other serious medical problems
6. drink excessive amounts of alcohol

5. Drug Interactions with Glucose Lowering Medications

The medication prescribed by your doctor for your diabetes will lower your blood glucose. When combined with other medications, your blood glucose could be lowered even more. Also other medications may act against your diabetes medication and cause an increase in your blood glucose.

It is important that your doctor knows ALL the medications you are taking including any over-the-counter medications.

DO

Store glucose lowering medications at room temperature.

Know the name of your medication, the correct dose and times to take it.

Know the length of time your medication is effective (duration).

Set a medication schedule and follow it as closely as possible. (Take your medication at about the same time every day.)

Check all medication for expiration dates (do not take if expired).

Know the side effects when mixing alcohol with ANY medication.

Report all side effects of any medication to your doctor.

Check with your pharmacist when taking Over-The-Counter medications to avoid drug interactions.

DO NOT

Take more or less medication than prescribed unless instructed to do so by your doctor.

Take a double dose of your glucose lowering medication. If you miss a dose of medication, take it as soon as possible. If it is almost time for your next dose, skip the missed dose and go back to your regular schedule.

Take someone else's medication (for diabetes or any other condition).

Skip a dose of medication because you are "feeling good".

ORAL GLUCOSE-LOWERING MEDICATIONS

NAME	COMMON STARTING DOSE	MAXIMUM DOSE / DAY	SCHEDULE
1. Second Generation Sulfonylureas (Stimulate the pancreas to make more insulin)			
MICRONASE (glyburide)	1.25 - 5.0 mg	20 mg	1 -2 times daily
GLYNASE (glyburide)	1.50 - 3.0 mg	12 mg	1 - 2 times daily
DIABETA (glyburide)	1.25 - 5.0 mg	20 mg	1 - 2 times daily
GLUCOTROL (glipizide)	5.0 mg	40 mg	1 - 2 times daily (1/2 hour before meals)
GLUCOTROL XL (glipizide)* *extended release	5.0 mg	20 mg	1 time daily
AMARYL (glimepiride)	1 - 4 mg	8 mg	1 time daily
2. Biguanides (Decrease the amount of glucose released by the liver)			
GLUCOPHAGE (Metformin)	500 - 1000 mg	2550 mg	1 - 3 times daily (with meals)
3. Alpha glucosidase inhibitors (Slows absorption of glucose from the gut.			
PRECOSE (Acarbose)	50 mg	300 mg	3 times daily (at the beginning of each main meal)
4. Thiazolidinediones (Increases the body's cells to become more sensitive to insulin. Does stimulate excess insulin production)			
REZULIN (troglitazone)	200 mg	600 mg	1 time daily

ORAL MEDICATIONS TO LOWER BLOOD SUGAR TEST

1. The treatment of Type 2 Diabetes includes:

a) proper meal planning
b) adequate exercise
c) oral Medications to lower blood sugar as prescribed
d) all of the above

2. Oral medications to lower blood sugar are:

a) an oral form of insulin
b) sugar pills
c) medications taken by mouth to raise blood glucose
d) medications taken by mouth to lower blood glucose

3. A possible side effect of oral medications to lower blood sugar is HYPOGLYCEMIA (Low blood sugar). List 4 symptoms of hypoglycemia.

1) _____
2) _____
3) _____
4) _____

4. Some medications interact with oral diabetes medications, therefore:

a) inform your physician of all medications you are taking
b) stop taking all medications
c) read labels of all medications and ask your pharmacist about possible interactions
d) both a and c

5. When taking oral diabetes medications:

a) know the correct dose (mg)
b) know the name of the medication
c) know how often to take the medication
d) all of the above

DIABETES EDUCATION MODULE

MONITORING DIABETES

Purpose: To discuss the benefits and means for monitoring your diabetes.

Objectives: After covering the information in this module, you will be able to:

1. Explain the benefits of monitoring your diabetes.
2. Describe how diabetes is monitored.
3. Discuss resources available and equipment needed.
4. Demonstrate blood glucose monitoring, quality control testing, and meter maintenance

Handouts:

Blood Glucose Monitoring Log Book

1. Explain Benefits of Monitoring Your Diabetes

Monitoring diabetes helps both you and your doctor achieve better diabetes control by providing feedback regarding the effectiveness of your meal plan, medication and exercise program. Specifically, when you test your blood glucose level on a regular basis, you are able to:

- ✓ know when emergency treatment is necessary due to extremely high or low blood glucose levels.
- ✓ help your doctor adjust medication doses and meal plan as needed.
- ✓ evaluate the effects of exercise on your blood glucose level.
- ✓ learn how your blood glucose level is affected by certain foods.
- ✓ can prevent hospitalization in the event of illness (Sick Day Management).
- ✓ is cost-effective in that frequent monitoring may decrease the incidence of hospitalization and decrease the potential for long-term complications

Why not test urine sugar? Sugar does not "spill" into the urine until the blood sugar is well above safe levels. Urine sugar testing does not tell when your blood sugar is too high.

2. Describe Various Means of Monitoring

A. Self Blood Glucose Monitoring - provides immediate feedback regarding your present blood glucose level (hyperglycemia, hypoglycemia).

Blood Glucose Meters are used to obtain specific readings of your blood glucose. All meters require a drop of blood obtained by sticking your finger with a lancet device.

Newer types of meters have become easier to use requiring very few steps in the procedure. There are a variety of meters available with varied prices. Ask your diabetes nurse educator for suggestions. Also, contact your insurance provider to see if the meter purchase and supplies are covered under your policy.

Practical Points About Blood Glucose Monitoring

1. **Take care of your meter and supplies**
   a. follow cleaning instructions
   b. calibrate or code your meter according to the meter instructions
   c. store your testing strips in the proper temperature - heat and freezing ruin your test strips.
   d. do not use expired supplies
   e. use the 800 number on the back of the meter for answers to technical problems
2. **Use correct technique when using your equipment**
   a. follow meter instructions
   b. apply the correct amount of blood to the testing strip
   c. use a meter with as few steps as possible
3. **Keep your blood testing equipment in a small kit with everything you need so that you can test at any time.**
   a. your equipment is useless if you do not use it

B. Urine Testing For Ketones - When the blood sugar is elevated and not enough insulin is present, energy is not produced. The body will begin to break down fats for energy, leaving an acid waste product of ketones. This acid travels through the bloodstream and is excreted in the urine. When blood sugars are elevated, and the urine is positive for ketones, this must be treated with insulin. If left untreated, a condition called ketoacidosis may occur (diabetic coma). This condition is more likely to occur in people with Type 1 diabetes. Test your urine for ketones when your blood sugar readings are 250 mg/dl or higher. Test for ketones when you feel sick, have the flu, a cold or infection.

There are several products available that test for ketones. Ketostix and Chemstrips K are two that may be used. These strips have an expiration date, so be certain to check that date. The test strip is dipped into a sample of urine. After a certain number of seconds (follow the timing instrucions on the container), the color change on the test pad is compared to a color chart on the side of the container.

If ketones are present in the urine, drink non-caloric fluids and test again in two hours. If ketones are still present, notify your doctor.

3. Physician Ordered Lab Tests To Monitor Diabetes

A. Hemoglobin A1c or Glycated Hemoglobin - obtains an overall average of your blood glucose levels over the 2 - 3 month period prior to the test. This test is done by taking a blood sample from your vein. The results are reported in a percentage.

The Relationship between HbA1c and Average Blood Glucose Levels

360	_____	14%
330	_____	13%
300	_____	12%
270	_____	11%
240	_____	10%
210	_____	9%
180	_____	8%
150	_____	7%
120	_____	6%
90	_____	5%

The American Diabetes Association recommends that you have this test done every 3 months.

B. Urine Test for Microalbumin - helps in early detection of kidney damage (nephropathy).
If detected early, treatment may reverse kidney damage. Treatment includes ACE - inhibitors (a medication).
This test is performed by a Laboratory. A 24 hour urine collection may be required. The test may be done using a single urine sample.
The American Diabetes Association recommends you have this test performed in have had diabetes more than 5 years, and then every year.

C. Equipment For Blood Glucose Monitoring refer to meter instruction checklist

D. Demonstrate Blood Glucose Monitoring refer to meter instruction ***Quality Control Testing, and Meter Maintenance.***

E. Summary Chart of Diabetes Management Goals Below is a chart showing how your doctor can check your state of health. Since diabetes can affect many different functions of your body, these functions can be checked periodically so that problems can be picked up early and proper treatment started.

Measures	Goal	How Often?
HbA1c (%)	<7%	Quarterly
Target Glucose	<120 - Fasting blood glucose 100-140 - at bedtime	
Dilated Eye Exam	Optimal function	Yearly
Foot Exam	Optimal function	Each visit
BP	<130 systolic <85 diastolic	Each visit
Weight	set individual goals	Each visit
Urine Protein	negative	Yearly
Urine Microalbumin - if protein negative	<30 mg / 24 hours	Yearly
Cholestrol	<200	Yearly
LDL-C	<130 <100 (CHD)	Yearly
HDL-C	>35	Yearly
Triglycerides	<200	Yearly
Neuropathy / Sexual Function	Optimal Function	Each visit
Self-Management Training	Optimal Function	At diagnosis, if change in treatment, if change in diabetes control
Psycho-social adjustment	Optimal function	Each visit

METER INSTRUCTION CHECKLIST

Patient Name:	Instructor: Facility:
Meter Name:	Date:
Recommended Range of Blood Glucose Results	
Frequency of Testing	
Meter Features	**Troubleshooting**
On/Off Button	Messages (Owner's Manual)
Display	Equipment Problems
Memory	Technique Problems
"Other Buttons"	800# Customer Service
Meter Range	Breakage, Replacement
Instruction Material (videotape, manual)	
Checking The System	**Taking Care of Your Meter**
Calibration	Cleaning
Control Solution	Storage
Why Check The System	Battery
Testing Your Blood	**Purchasing Supplies**
Getting a Drop of Blood Using the Lancet Device	What:
Applying Drop of Blood	Where:
Disposal	Warranty
Recording Results	Rebate/Trade-In
	Reimbursement

DIABETES EDUCATION MODULE

Nutritional Management

Purpose: To provide you with basic knowledge of nutritional management in controlling your diabetes.

Objectives: After reading and discussing the information in this section, you will be able to:

1. Describe the relationship of food, insulin, and activity in controlling blood sugar.
2. State that food in important for good nutrition and control of blood sugar, cholesterol, and triglyceride levels.
3. State the necessity of eating meals and snacks at consistent and appropriate times and in relatively consistent amounts.
4. State the necessity of maintaining normal weight as an essential component of diabetes management.
5. List types and amounts of foods to be included in meals and snacks as indicated in your meal plan.
6. State that meal planning is a critical component in diabetes management.

Handouts:

Exchange Lists for Meal Planning (American Diabetes Association) booklet

What's New in Diabetes Meal Planning? Nutrition Fact Sheet (The American Dietetic Association)

Blood Cholesterol...What is it? -- Types of Fat

Weight Loss: Diets Don't Work; Lifestyle Changes Do. (American Diabetes Association)

Think Thin: How You Eat May Be As Important As What You Eat. (American Diabetes Association)

Guide to Eating Out: Healthy Choices in Restaurants and Fast Food Chains. (American Diabetes Association)

Food and Insulin Adjustments when Eating Out

Treating Low Blood Sugar

Alcoholic Beverage Content and Groups

DIETITIAN WORKSHEET -- MEAL PLANNING

NAME: _____ DATE: _____

HT. _____ WT. _____ AGE _____ GENDER: MALE ___ FEMALE ___

DESIRABLE Body Wt. _____ % DESIRABLE Body Wt. _____

ADJUSTED Body Wt. _____

Estimated Needs to Maintain CURRENT body wt. _____ Calories _____gms of Pro

Estimated Needs to Maintain ADJUSTED body wt. _____Calories _____gms of Pro

Estimated Needs for weight GAIN _____ Calories _____gms of Pro

Estimated Needs for weight LOSS _____ Calories _____gms of Pro

PERTINENT LABS (if available) Glu, accuchecks, cholesterol, triglycerides

	CHO	PRO	FAT	TOTAL		BF	L	D	HS
CHO					CHO				
Milk 2%					Milk 2%				
Starch					Starch				
Fruit					Fruit				
Vegetable					Vegetable				
Meat					Meat				
Fats					Fats				
Total									
%									

Meat Exchange: ___Very Lean ___Lean ___Medium ___High

Number of Tsps. of sugar: ____Tsps. ____gms CHO

Meal Pattern Provided _____ ____Class ____Outpatient appointment

NOTES:

GOALS:

Introduction

There are 3 pieces to the diabetic puzzle. These include diet, medication and exercise. Learning to balance these pieces of the diabetic puzzle will empower you to remain in control of your life.

I. How is energy made from food?

The foods we eat and drink are digested in the body and changed into glucose (sugar). The glucose enters the blood stream where it is carried to the rest of the body.

The body is made up of many small units called cells. Each cell needs energy from glucose to work properly. However, before this glucose can enter the body's cell it must be accompanied by a substance called insulin. Insulin acts as a key to unlock the cell door so glucose can enter and provide energy for the body.

Insulin is produced by an organ called the pancreas which is located behind the stomach. When blood glucose levels are high (such as after a meal) the pancreas releases insulin into the blood stream. The insulin travels to the cells where it does its job of unlocking the cell "door" so glucose can enter. When the glucose enters the cell, the glucose level in the blood is decreased. In this way insulin helps keep the blood glucose level from getting too high.

II. Guidelines for Nutritional Management

Eat three meals a day and planned snacks about the same time each day. Never skip meals.

Try to eat the same amount of food at each meal. Choose small to medium-sized portions.

Eat a variety of foods within each food group.

Bake, broil, roast, or boil your meats. Avoid frying foods.
Add fats (margarine, butter, oil, salad dressings, gravy, etc.) to foods after they are prepared, so exact portions can be measured.

Foods should be measured after they are cooked.

Be physically active.

Use caution with diet and dietetic foods. They may still be very high fat, high calories and high in carbohydrates.

Avoid regular sweeteners, candy, condiments and foods with sugar added to them.

III. Nutrient Composition

There are 6 major food groups which include:

- **Starch/Bread**
- **Fruit**
- **Milk**
- **Vegetable**
- **Meat**
- **Fat**

Food contains 6 major nutrients, **three** of these **nutrients provide energy** or calories. These include **carbohydrate, protein and fat.**

The three food groups which contain **carbohydrates** include the :

- **Starch/Bread**
- **Fruit**
- **Milk**

(Vegetables contain a smaller amount of carbohydrates.)

Milk, Fruit and Starch/Bread contain similar amounts of carbohydrates and can be substituted or used one for another.

Protein which is used to build and repair tissue is found in **meat and milk** products.

Fat which is used as an energy source, to maintain healthy skin and to carry fat-soluble vitamins (i.e. Vitamins A, E, D and K) throughout the body. Sources include **oils, butter, margarine, bacon, nuts, sour cream, whole and 2%-milk, cheese, etc.**

IV. Affect of carbohydrate, protein and fat on blood glucose

Carbohydrate is digested and absorbed the fastest. Up to 100% of carbohydrate can be broken down to glucose.

The more concentrated a food is with carbohydrate, that is the more sugar per bite, the more quickly glucose will rise. For example, there is more carbohydrate in 1/2 cup of regular pudding than in 1/2 cup of diet pudding. There is equal amounts of carbohydrates in 1/4 cup Grape Nuts® and in 1-1/2 cups puffed wheat cereal.

Protein digestion is slower than carbohydrate. About 50-60% of this broken down into glucose.

Fat is digested the slowest of the nutrients. Only 10% of fat can be used to make glucose.

V. Meal Planning

1. Eat some carbohydrate, protein and fat at each meal.
2. Eat every 4 to 5 hours. You may need 2 to 3 snacks per day.
3. Do not skip meals or delay meals. Skipping a meal after taking insulin will increase the risk for hypoglycemia (low blood glucose). It may cause overeating later.
4. Choose starches for most of your carbohydrate foods, especially those with fiber.
5. Choose foods with added sugar in moderation. They are usually high in fat and calories. When used:

   A: Eat small portions.

   B: Choose less sweet sweets (for example vanilla wafers rather than Oreos®, or choose plain ice cream not a sundae.)

   C. When choosing occasional sweets, eat them with a meal rather than as a snack.
6. Eating a bedtime snack which includes protein may help to prevent hypoglycemia during the night.
7. Carbohydrates without fat or fiber will provide the fastest treatment for hypoglycemia (for example: 1/2 cup juice, 1 cup skim milk, 8 sweet tarts, 6 ounces regular soda, 1 T honey). For more information see low blood sugar handout.

VI. Food Groups

Foods are divided into six groups:

1) Starch
2) Fruit
3) Milk
4) Vegetables
5) Meat
6) Fat

Each food within each group has a specific serving size. The serving sizes are chosen to provide approximately the same amount of calories, carbohydrates, protein, and fat as any other food within the same groups. Since the quantities in each group are equal to each other in nutritional values, they can be traded for one another.

Of these food groups' three can be considered the Carbohydrate Groups because they contain similar amount of carbohydrate. These three groups are Starch, Fruit, and Milk. A serving of any of these three food groups contains about 15 grams of carbohydrate and therefore the groups can be traded without a large effect on the blood sugar. For example, if you run out of milk at home you can substitute a serving of fruit for a serving of milk. Realize that the foods within the three carbohydrate groups supply different nutrients but the same amount of carbohydrates. (For example, the serving of fruit won't provide the same calcium a serving of milk would). Remember, a balanced diet is important for good health.

You can review each food group and their portion sizes in The Exchange Lists for Meal Planning.

VII. Meal Plans

An individualized meal plan is one that balances food intake with medications and activity. The number of calories you need is based on age, gender, height, weight, and activity level. Your daily meal plan will tell you how many servings from each food group to have at meals and snacks based on your calorie needs and medications. A Registered Dietitian will provide you with this information.

Have your meal plan reviewed often since the calorie level may need to be changed due to lifestyle or exercise changes, weight changes or a change in medications.

Your individualized meal plan is YOUR GUIDE for healthy eating. You may not follow all of the time, however, the more closely you follow your meal plan the more likely you will be able to keep your blood glucose in a normal range.

VIII. Label Reading

When label reading be sure to note what a serving size is according to the package. By noting this you can adjust your individual serving size up or down from the one on the package depending on the grams of carbohydrate in the food.

Keep in mind that a serving of a Carbohydrate Group (Starch, Fruit, or Milk) contains about 15 grams of carbohydrate. Therefore look at the grams of **Total Carbohydrates** on the food label. You'll notice that sugars are listed underneath the grams of **Total Carbohydrates**, that is because sugars are a form of carbohydrate and are included in the grams of **Total Carbohydrates** on the label. As you learned earlier, both sugars

and starches raise the blood sugar, that is why it is important to note the **Total Carbohydrate** on the label, not just the sugar.

Another important thing to note on food labels is the amount of fat in a food. A good goal is to keep fat at 3 grams or less per 100 calories. Remember that a serving of fat in your meal plan contains 5 grams of fat, therefore if a starchy food contains 5 grams of fat or more it should be counted in your fat for the day.

You can review food labels more on page 26 in the Exchange Lists for Meal Planning.

IX. Post Test

Please choose the best answer for each of the following.

1. Which nutrient has the greatest effect on blood glucose?

   a. Carbohydrate
   b. Fat
   c. Protein

2. For good blood glucose control it is best to:

   a. Eat a small breakfast and a large lunch and dinner
   b. Eat at different times from the day to day
   c. Eat about the same amount of food at the same time daily

3. A serving in the Carbohydrate Groups (Starch, Fruit, or Milk) is:

   a. 1 oz.
   b. Always a 1/2 cup
   c. About 15 grams of carbohydrate

4. Which of the following is important for good blood glucose control?

   a. Maintaining normal weight
   b. Following your meal plan
   c. Staying active
   d. All of the above

5. Insulin:

   a. May be lacking or not working well in a person with diabetes
   b. Keep blood glucose from getting too high
   c. Helps provide energy for the body by letting glucose enter cells
   d. All of the above

MEXICAN

Tortillas, flat bread made with corn or wheat flour and fried in oil, are the basis of many Mexican dishes. Tortillas filled with beef and pork, chicken, or cheese mixtures and then baked or fried appear on the menu as tacos, enchiladas, or burritos. A typical meal usually includes rice or refried beans. Tortillas contain some fat, and more will be added if they are fried after being filled. Refried beans are cooked and mashed with a generous amount of fat.

Food	Serving	Group
Mexican Foods:		
Burrito, bean	1 small	2 CHO*
	1 large	1 med.-fat meat, 3 CHO*, 2 fat
Burrito, meat (beef)	1 small	1 CHO*, 1 med.-fat meat
	1 large	2 1/2 CHO*, 3 med.-fat meat, 1 fat
Chili	1 cup	2 CHO*. 2 med.-fat meat, 1 fat
Chili sauce	2 tsp.	1/3 fruit
Corn chips	1 oz. (1 cup)	1 CHO*, 2 fat
Enchilada (meat or cheese)	1 sm. (6" tortilla)	1 med.-fat meat
Refried beans	1/2 cup	1 CHO*, 1 med.-fat meat
Spanish rice	1 cup	2 CHO*, 1 fat
Spanish sauce	1/2 cup	1/3 fruit, 1 fat
Tamale with sauce	1	1 CHO*, 1 med.-fat meat
Tortilla/taco shell	6-in. diameter	1 CHO*
Taco (meat, cheese, lettuce, tomato)	1	1 CHO*, 2 med.-fat meat
Tostado	1 small	2 CHO*
with refried beans		
with meat	1 small	1 CHO*, 1 high-fat meat

* carbohydrate serving

ITALIAN

A variety of pastas and sauces are available. Fettucini is the Roman name for noodles. If the portion sizes are too large, you could make a meal from two appetizers (such as a salad and side order of pasta), or you could split an entree with someone. For a leaner entree, order veal flavored with lemon juice rather than breaded and fried.

Food	Serving	Group
Italian Foods		
Vermicilli Soup	1 cup	1 CHO*
Minestrone Soup	1 cup	1 CHO*, 1 fat
Pasta, cooked	1/2 cup	1 med.-fat meat
Italian ham, (Prosciutto)	1 oz.	1 med.-fat meat
Meatballs	1 oz.	1 med.-fat meat
Chicken cacciatore	3 oz. chicken with sauce	3 lean meat, 1 veg., 1 fat
Eggplant parmesan	1 cup	2 med.-fat meat, 2 vegetable, 1 CHO*, 1 1/2 fat
Veal parmesan	1 cutlet (4 oz.)	1 CHO*, 4 med.-fat meat, 1 vegetable, 1 fat
Italian spaghetti	1 cup	2 CHO*, 2 vegetable, 2 med.-fat meat
Lasagna	1 (3x4") serving	1 CHO*, 1 vegetable, 2 1/2 med.-fat meat
Manicotti	1 shell	1 1/2 CHO*, 1 vegetable, 3 med.-fat meat, 2 fat
Pizza, with cheese, sausage, pepperoni	1/4 of 16. oz pizza	2 CHO*, 1 vegetable, 2 med.-fat meat, 1 fat
Ravioli		
with cheese	1 cup	2 CHO*, 1 vegetable, 1 med.-fat meat, 1 fat
with beef	1 cup	2 CHO*, 1 vegetable, 1 med.-fat meat, 1 fat

* carbohydrate serving

CHINESE

Order dishes containing "extra" vegetables such as chicken chop suey, mixed Chinese greens, or beef with broccoli, along with steamed rice. Avoid sweet and sour sauces, honey and garlic foods, and breaded items. If you are limiting your salt intake, avoid soy sauce.

Food	Serving	Group
Chinese Foods:		
Egg flower soup	1 cup	1/2 med.-fat meat
Fried rice (rice, meat, eggs, onions)	1 cup	1 1/2 CHO*, 1/2 med.-fat meat
Fortune cookies	1	1/2 CHO*, or 1/2 fruit
Egg roll	1	1/2 CHO*, 1 vegetable
Chow mein	1 cup	1 CHO*, 1 med.-fat meat, 1 veg.
Sukiyaki	1 cup	3 med.-fat meat, 1 fat
Tofu	2 oz.	1/2 med.-fat meat,
Chop suey	1 cup	2 med.-fat meat, 1 vegetable
Pepper steak	1 cup	1 CHO*, 3 med.-fat meat, 1 veg.
Chow mein noodles	1/2 cup	1 CHO*, 1 fat
Egg foo young	1	1 vegetable, 2 med.-fat meat, 2 fat

* carbohydrate serving

JAPANESE

The traditional Japanese food of rice, noodles, fish, seafood, and vegetables can easily be worked into the diabetic meal plan. Very little fat is used in food preparation, with the exception of tempura dishes. Pickling, stewing, boiling, and barbecuing are the most popular cooking methods. Many foods are eaten raw, *Tempura* refers to a cooking method in which food is lightly battered and fried in vegetable oil. Avoid excessive use of shoyu, a sweetened soy sauce.

FRENCH

Traditional French cooking is famous for thick rich sauces. When you eat in a French restaurant, plan to limit your fat intake during the day. For example, if your meal plan provides 4 fats and oils choices per day, they can be taken at your special meal. If you would like to try a dish but are not familiar with it, ask your waiter/waitress about the content and method of preparation.

GREEK

Traditional Greek meals include generous portions of starches (potato, rice, and breads). The olive oil typical of Greek cooking and the creamy custard-like topping on moussaka add calories to the meal. Small rice-filled rolls called stuffed grape leaves make a good appetizer. For the main course, a charbroiled shish-kabob (small pieces of marinated beef, lamb, or fish on a skewer) is a good choice. When the meat is wrapped inside a pita bread, it is called souvlaki. Meals are served with a small Greek salad, fried potato, and rice. Tzatziki sauce made of high-fat yogurt mixed with cucumber and garlic may be served with the meat. For a lighter meal, order a large Greek salad of tomatoes and cucumbers with feta cheese and unbuttered bread. Desserts such as baklava are drenched with honey, so it's best to avoid them.

JEWISH

Food	Serving	Group
Jewish Foods		
Bagel	1/2	1 CHO*
Bialy	1	1 CHO*
Challah	1 slice	1 CHO*
Matzo, 6-in. diameter	1	1 CHO*
Matzo crackers	7 (1 1/2" square each)	1 CHO*
Potato latkes -calculate fat used in cooking	1/2 cup	1 CHO*
Kippered herring	1 oz.	1 lean meat
Pickled herring	1 oz.	1 lean meat
Smoked salmon (lox)	1 oz.	1 lean meat
Corned beef	1 oz.	1 high-fat meat
Chopped liver	1 oz.	1 high-fat meat

EAST INDIAN

Food	Serving	Group
East Indian Foods		
Alu Mattar (curried potatoes & peas)	1 cup	1 veg., 1 1/2 CHO*, 3 fat
Alu Paratha (flat whole wheat bread with spiced potato filling	6 in. diameter	2 1/2 CHO*, 6 fat
Chana Dal (curried chick peas)	1/2 cup	2 med.-fat meat
Kheema do Pyaza (curried ground lamb with onions)	1 cup	2 vegetable, 3 lean meat, 3 fat
Kofta	3 balls (1 1/2" diameter)	3 high-fat meat, 4 fat
Machli aur tomatar (curried halibut)	3 oz. fish	1/2 veg., 3 lean meat, 1 1/2 fat
Masala dosai (crepe-like pancake with spiced potato filling)	1	2 CHO*, 4 fat
Chicken curry	3 oz. chicken	1/2 veg., 3 lean mt, 2 fat
Samosas (deep fried filled pastries)	1 large or 3 small (potato filling)	1 CHO, 2 fat
	1 large or 3 small (lamb filling)	1 CHO*, 1/2 lean meat, 2 1/2 fat

* carbohydrate serving

ALCOHOLIC BEVERAGE CONTENT AND GROUPS

Beverage	Serving (oz)	Alcohol (gm)	CHO (gm)	Kcal	Groups
Beer					
Light	12	13	13	150	1 CHO **, 2 fat
Regular	12	11	5	100	2 fat, 1 CHO**
Non-alcoholic	12	1.5	12	60	1 CHO**
Spirits					
80 proof clear*	1.5	14	trace	100	2 fat
Dry brandy, cognac	1	11	trace	75	1.5 fat
Wine					
Dry white	4	11	trace	80	2 fat
Red or rose'	4	12	2	85	2 fat
Sweet wine	4	12	5	105	0.3 CHO**
Light wine	4	6	1	50	1 fat
Wine cooler	12	13	30	215	2 CHO**, 2 fat
Non-alcoholic	4	trace	6-7	25-35	0.5 CHO**
Champagne	4	12	4	100	2 fat
Sweet kosher wine	4	12	12	132	1 CHO**, 2 fat
Dry sherry	2	9	2	74	1.5 fat
Sweet sherry, port, muscatel	2	9	7	90	0.5 CHO**, 1.5 fat
Cordials/liqueurs	1.5	13	18	160	1 CHO**, 2 fat
Dry vermouth	3	13	4	105	2 fat
Sweet vermouth	3	13	14	140	1 CHO**, 2 fat
Cocktails					
Bloody Mary	5	14	5	116	1 vegetable, 2 fat
Daiquiri	2	14	2	111	2 fat
Manhattan	2	17	2	178	2.5 fat
Martini	2.5	22	trace	156	3.5 fat
Old Fashioned	4	26	trace	180	4 fat
Tom Collins	7.5	16	3	120	2.5 fat

Beverage	Serving (oz)	Alcohol (gm)	CHO (gm)	Kcal	Groups
Mixers					
Mineral water	–	0	0	0	free
Sugar-free tonic	–	0	0	0	free
Club soda	–	0	0	0	free
Diet soda	–	0	0	0	free
Tomato juice	4	0	5	25	1 vegetable
Bloody Mary mix	4	0	5	25	1 vegetable
Orange juice	4	0	15	60	1 fruit
Grapefruit juice	4	0	15	60	1 fruit
Pineapple juice	4	0	15	60	1 fruit

*gin, whiskey, run, vodka, Scotch
** carbohydrate serving

Guidelines for Use of Alcoholic Beverages

- Alcohol makes insulin reactions more difficult to recognize. Discuss your use of alcohol with your health care team.
- Drink only if your diabetes is well-controlled and you are not pregnant.
- Consume alcohol with meals or snacks containing carbohydrate, such as pretzels, bread sticks, or crackers.
- Use alcohol in moderation (2 equivalents 1-2 times per week).
  Equivalent = 1 1/2 oz. distilled spirits
  4 oz. dry wine
  12 oz. beer
- Mix alcohol with:

  Free
  - water
  - club soda
  - seltzer
  - sugar-free carbonated soft drinks

  Fruit/Vegetable Exchange
  - unsweetened fruit juice
  - tomato juice
  - V-8
- Avoid sweet wine, liqueurs, and sweetened mixed drinks. Try a wine spritzer made with club soda, rather than a wine cooler which is usually made with sweetened fruit-flavored mix.
- Drink with a friend who recognizes and knows how to treat a low blood glucose reaction.

MEAL PLAN QUESTIONNAIRE

NAME: _____ DATE: _____

HEIGHT: _____ WEIGHT: _____ USUAL BODY WEIGHT: _____ M ___ F ___

Are you on:

___ Insulin (please indicate type) _____
___ Oral Diabetic Medications (please indicate type) _____
_____
___ No medication for diabetes
___ Do not know

ACTIVITY LEVEL:

Sedentary: desk job and no exercise
Low Activity: some walking on the job and at home
Moderate: physical job and exercise at least 20-30 min/day; 3-5 times/week
High Activity: very physical job and exercise at least 1 hr/day; 3-5 times/week

In the past 6 months, do you feel you have (check only one):
_____ gained more than 10 lbs.
_____ lost more than 10 lbs.
_____ gained and lost more than 10 lbs.
_____ stayed within 10 lbs.
_____ do not know

Are you happy with your weight? Yes ___ No ___
If No, what would you like to weigh? _____

Have you ever been on a diet? Yes ___ No ___

What was the special diet for (check all that apply):
_____ weight reduction
_____ stomach problems
_____ high blood pressure
_____ heart problems
_____ diabetes
_____ don't know
_____ other reason(s) (specify) _____

How have you been instructed on this diet (check all that apply):
_____ by physician
_____ by nurse
_____ by a dietitian once
_____ by a dietitian more than once on the same diet
_____ in formal group or classes
_____ told to follow a diet but not instructed
_____ given printed materials but not instructed
_____ never instructed on the diet
_____ none of the above
_____ other (specify)

How many times including snacks do you eat per day?
_____

How many 8 ounce cups of milk do you drink per day? _____
Do you drink _____skim _____2% _____whole?

How many cups of milk per day would you like in your meal pattern? _____
At which meals/snacks?
_____ Breakfast _____ Lunch _____ Dinner _____Bedtime
_____mid-morning _____mid-afternoon

How many fruit servings do you have in one day? _____

How many fruit servings per day would you like in your meal pattern? _____

How many vegetable servings do you have in one day?
(excluding potato, corn, peas) _____

How many vegetable servings per day would you like in your meal pattern? _____

EXERCISE GUIDELINES

Purpose: to learn how safe exercise can play a role in optimum glucose control.

Objectives: after covering the information in this section, you will be able to:

1. State benefits of aerobic exercise.
2. State safe exercise practices when dealing with diabetes complications.
3. List recommended exercises.
4. State how to start an exercise program.
5. List the components of an exercise program.
6. List exercise do's and don'ts

Handouts:

1. Finding your target heart rate
2. The Walking Workout
3. "Be Flexible"
4. Six Warm-Up Stretches and Flexes

1. Exercise is an important part of diabetes management.

Exercise, along with your meal plan and medication, helps keep blood glucose levels under control.

2. Benefits of Aerobic Exercise.

- ✓ decreases blood glucose
- ✓ decreases insulin resistance
- ✓ reduces risk factors for atherosclerosis (hardening of the arteries / plaque build up)
- ✓ lowers blood pressure
- ✓ promotes weight loss
- ✓ you feel better about yourself
- ✓

3. Exercise and Complications of Diabetes

Retinopathy (eye damage / deterioration) - avoid heavy lifting, isometric exercises, and weight lifting.

High Blood Pressure (hypertension) - avoid intense upper body activity (Such as weight lifting and tennis)

Neuropathy (decreased feeling in the feet and legs) - avoid long walks and running, wear swim shoes for swimming

Nephropathy (kidney disease) - avoid strenuous exercise (unless directed by your doctor)

4. Recommended Exercise

- ✓ Brisk walking or jogging
- ✓ Swimming
- ✓ Bicycling / Stationary bike / Treadmill
- ✓ Aerobic exercise

EXERCISE EXTENDERS

Besides taking part in a routine exercise program, it is important to increase your overall activity level as often as you can. Here are some suggestions.

1. Park at the farthest end of the parking lot and walk to your destination. You can do this at shopping centers, supermarkets, or work.

2. Take a walk during your lunch hour, but do not skip lunch. Bring a bag lunch, and then get out for a walk. Or walk at a nearby park and eat your lunch there.

3. Walk up a couple flights of stairs rather than taking the elevator.

4. Walk whenever possible in your neighborhood - when going to visit neighbors, to the corner drug store, or to buy a newspaper.

5. If your take the bus or subway, get off a few blocks before your stop and walk the rest of the way.

6. Take a quick walk around your house during TV commercials. Reports show that during an average hour of TV programming, 10 minutes are devoted to commercials. If you watch TV for three hours, you can work in about 30 minutes of walking. Or better yet, turn off the TV and take a 30 minute walk.

5. Starting an Exercise Program:

- ✓ Check with your doctor first before any type of exercise, especially if you have not been exercising regularly.
- ✓ Refer to the Exercise Do's and Don'ts.
- ✓ People with Type 2 Diabetes who are overweight benefit from early morning exercise. It helps with weight loss.
- ✓ Stop exercising immediately if you feel short of breath, dizzy, faint, or develop pain of any kind.

EXERCISE DO'S AND DON'TS

EXERCISE DO'S:

DO wear shoes that fit properly and are designed for exercise

DO check your blood sugar before starting exercise

- ✓ if blood sugar less than 100 before exercise, eat a "pre-exercise" snack
- ✓ if blood sugar is greater than 100, go ahead and exercise
- ✓ if blood sugar is over 240 (Type 1 diabetes) DO NOT EXERCISE
- ✓ if blood sugar is over 300 (Type 2 diabetes) DO NOT EXERCISE
- ✓ when you first start an exercise program, check your blood sugar before and after exercising. Hypoglycemia can occur up to 24 hours after exercise.

Remember, exercise is likened to an injection of insulin (Refer to Time/Life Video).

EXERCISE DON'TS:

DON'T exercise if your blood glucose is 240 or higher, or if you have ketones in your urine (Type 1 Diabetes).

DON'T exercise if your blood glucose is 300 or higher (Type 2 Diabetes .

DON'T exercise if your blood glucose is below 100.

DON'T exercise in extreme heat and cold.

DON'T exercise when you have a fever.

DON'T exceed your target heart rate.

DON'T exercise shortly after injecting insulin. Know the peak times of your insulin.

DON'T exercise immediately after a heavy meal (to avoid cramping). However, an "easy" walk after a meal aids digestion.

DON'T exercise on an empty stomach.

DON'T drink alcohol before exercising.

DON'T exercise if you are having pain.

Tips To Help You Exercise

It is easy enough to remember that routine exercise is an important part of a healthy lifestyle and an important part of your diabetes management. However, the only exercise that is helpful to you is the exercise that you actually do. Here are eight tips that can help you start and continue an exercise program.

1. ***Visualize.*** See yourself as a person who feels good, looks good, and has energy. Think about your positive aspects, not your negative ones.

2. ***Reject excuses.*** If your excuse is that you are just too tired to exercise after work, then go for a 20 minute walk at lunchtime.

3. ***Be prepared to make sacrifices.*** It takes time to fit exercise in, and you'll need to make decisions and set priorities.

4. ***Establish goals and rewards.*** Think of short-term and long-term goals and regard yourself when you meet them. You may find it helps to chart your progress.

5. ***Find an exercise partner.*** A neighbor, spouse, friend, or attend a class, or even an exercise video. Exercise is often more fun if you have someone to do it with. Exercising with someone helps you stick to your program.

6. ***Build in variety.*** It is important to find several fitness activities, indoor and outdoor. Boredom sets in quickly if your program lacks variety.

7. ***Plan your exercise time.*** Set aside a time during the day for exercise. Many people find it helpful to actually schedule exercise as an "appointment" on their daily calendar. Make it a high priority so the time you have scheduled does not get used for something else.

8. ***Make it fun.*** This is really the key to success. Are you enjoying your exercise? If it isn't, what can you do to make it fun? Be creative. Explore your options. Learn a new skill - it can be very rewarding.

*Red Flag System

Must have ** to Cancel Exercise

* **Any Blood Sugar over 250**

* **Positive Urine Ketones**

* **Blood Sugar 60 - 80 (need change in calories)**

** **Blood Sugar over 300 regardless of ketones**

** **Blood Sugar under 60**

BE FLEXIBLE

Flexibility, cardiovascular endurance, strength, and body composition (the relative amount of fat weight vs. lean mass) are considered to be the components of physical fitness. Of these, flexibility is often overlooked. But anyone, regardless of age, can improve their flexibility by stretching.

Stretching feels good when it is done right. It relieves muscle tension and stiffness and can help prevent or alleviate low back pain. Stretching also relieves "delayed" muscle soreness which can occur the day after a vigorous workout.

Stretching should be performed before and after exercise. Studies have shown that a single stretching session will significantly improve flexibility and range of motion for at least 90 minutes. Stretching before a workout signals the body that it is about to perform work.

HOW TO STRETCH

Relax when you stretch! Perform a 5-10 minute aerobic warm-up like jogging in place or stationary cycling first. This helps increase the circulation and temperature in your muscles making them more pliable. Stretching muscles that are warmed up in this manner is easier than stretching muscles that are cold. Concentrate in making your movements slow and deliberate. Exhale as you go into a stretch and then breathe in and out normally. Stretch your muscle only 10% beyond it's normal length, so that you feel a comfortable tightness in the center of the muscle. Don't stretch beyond this point. If you feel discomfort at the muscle's end attachments, you are stretching too far.

LISTEN TO YOUR BODY

Never stretch to the point of pain! Keep in mind that improvements in your flexibility will be gradual. Performance will vary from day to day. For instance, you may not be able to do the same stretch on one day that you did the day before.

DON'T BOUNCE!

When stretching one side of the body, follow the same stretch on the other side.
For best results, hold the stretch 15 - 30 seconds, relax, and repeat it one to two times.

To obtain modest benefits, stretch 3 times each week. To maximize your results, stretch 4 - 7 times each week.

Concentrate on the muscles on which you place the greatest demands.

FINDING YOUR TARGET HEART RATE

Before Exercising
To determine how vigorously you should exercise, find your target heart rate by rounding your age to the nearest age in chart.

Age	Target Heart Rate (beats per minute)
25	- 117 146
30	114 - 142
35	111 - 138
40	108 - 135
45	105 - 131
50	102 - 127
55	99 - 123
60	96 - 120
65	93 - 116
70	90 - 113
75	87 - 109
80	84 - 105
85	81 - 101

During and after Exercising
To find out if you are at your target heart rate, first take your pulse.

TAKING YOUR PULSE
Hold your hand with the palm facing up and place the first two fingers of your other hand on the thumbside of your wrist.

Press gently and count the number of beats you feel for 10 seconds

or

Gently place your first two fingers over a blood vessel under your jaw and count the number of beats you feel for 10 seconds

Multiply this number by 6 to find your heart rate in beats per minute. For example: 20 beats in 10 seconds = 120 beats per minute.

- ✓ Keep track of your actual heart rate (pulse) before, during, and after each workout
- ✓ Your pulse should fall within the range of your target heart rate during and immediately after your workout.

THE WALKING WORKOUT

- ✓ Always consult your doctor before starting any exercise program.
- ✓ If you experience any discomfort, stop immediately and consult your doctor.
- ✓ This chart is based on a 3-times-per-week exercise program in which you exercise once per day.

	Warm Up	Work Out To Your Target Heart Rate	Cool Down
Exercise and Heart Rate	○ Find your target heart rate. ○ Stretch gently to loosen muscles ○ Begin walking at a normal pace. ○ Gradually increase this pace.	○ Walk vigorously, keeping your head and chest up while moving your arms in brisk, even rhythms. ○ Midway through your walk, take your pulse (see reverse side). ○ Adjust workout so that you are exercising within your target heart rate. ○ Continue vigorous walking until the time limit is up.	○ Gradually slow down walking pace. ○ So not stop abruptly. ○ Take your pulse again as soon as you begin the cool down phase (see reverse side). ○ Stretch gently to loosen muscles.
Duration of Exercise Per Session	○ 5 to 6 minutes	○ Build up slowly - start with a 5-minute workout. ○ Gradually increase this daily workout by 2 to 3 minutes each week. ○ Aim for a 20 to 30 minute vigorous walking workout. ○ Exercise regularly and walk at least 3 times each week.	○ 5 to 6 minutes
Benefits of Exercise	○ Stretching prepares muscles and joints for activity. ○ Walking slowly allows your heart rate and breathing to increase gradually.	○ Try to walk at a target heart rate that is near the top of your range. ○ This helps your heart and lungs to use oxygen efficiently and safely. ○ You will obtain fewer benefits of you work out below your target heart rate; if your post-exercise heart rate (pulse) is lower than your target heart rate, walk a little more vigorously next time.	○ Walking slowly allows your heart rate to return to its resting level.

Food Adjustments for Exercise

These are general guidelines. In order to achieve best results, blood glucose measurements before, during, and after exercise will help to determine what adjustments are best for <u>YOU.</u>

TYPE EXERCISE (EXAMPLES)	IF BLOOD SUGAR LEVEL	INCREASE FOOD INTAKE BY:	FOOD CHOICES
Short duration Low to moderate intensity-	Less then 80 mg/dl	10-15 GM. CHO per hour	1 CHO exchange (fruit, milk, or starch)
1/2 mile walk 30" leisure bike ride	80 mg/dl or above	Not necessary to increase food	
Moderate Intensity	Less than 80 mg/dl	25-50 GM CHO before exercise, then 10-15 GM per hour of exercise	1/2 meat sandwich + milk or fruit exchange
Tennis, jogging, vacuuming for one hour			1 fruit, milk, or starch exchange
	80-170 mg/dl	10-15 GM CHO per hour of exercise	
	180-300 mg/dl	Not necessary to increase food	
	300 mg/dl or above	Don't begin exercise until blood sugar is under better control. Check urine for ketones, if Type 1	
Strenuous activity or exercise	less than 80 mg/dl	50 GM CHO Monitor blood glucose	1 meat sandwich (2 slices bread) + milk or fruit exchange
Strenuous biking, swimming, shoveling heavy snow	80-170 mg/dl	25-50 GM CHO depending on duration and intensity	1/2 meat sandwich + milk or fruit exchange
	180-300 mg/dl	10-15 GM CHO per hour of exercise	1 fruit, milk, or starch exchange
	300 mg/dl or	Don't begin exercise until blood sugar is under better control.	

Insulin Adjustments for Extended Exercise

These are general guidelines that should be evaluated by your physician in order to determine whether they are right for YOU.

If exercise or strenuous activity will be extended over a long period of time, food adjustment alone may not be satisfactory to prevent hypoglycemia.

Reducing the insulin that is acting during the time that exercise is taking place will be helpful.

Decrease insulin ACTING DURING THE EXERCISE TIME by 10% of the TOTAL dose.

Example:	Insulin Dose	8 Regular	24 NPH	Before Breakfast
		2 Regular	6 NPH	Before Dinner
		10 Regular	30 NPH	Total Dose = 40 Units,

If exercise is to be for the whole morning, reduce the Regular Insulin taken before breakfast by 4 Units. In other words, in this example, 4 Units of Regular Insulin would be taken in the morning.

If exercise is to be the whole afternoon, reduce the NPH Insulin taken in the morning by 4 Units. In this example, the NPH Insulin would be reduced to 20 Units before breakfast.

If exercise is to be for the entire day, both the Regular and the NPH insulin would be reduced by 4 units each. Morning dose would be NPH 20 units and Regular 4 units.

DIABETES EDUCATION MODULE

FOOT CARE

Purpose: To learn why foot health is important for people with diabetes. to learn how to care for your feet to keep them healthy and avoid injury.

Objectives: After covering the information in this module, you will be able to:

1. Explain the importance of diabetic foot care.
2. List the steps involved in foot care (hygiene and protection).
3. Learn what foot problems require notifying your doctor or a member of your health care team.
4. Describe the role of the health care team in diabetic foot care.

Handouts:

Shoe Stores for People with Diabetes or Problem Feet

1. The Importance of Diabetic Foot Care

Nerve damage, circulation problems, and infection can cause serious foot problems for people with diabetes. There are steps you can take to prevent problems with your feet. Controlling your blood sugar and not smoking can protect your feet. You can also take some safeguards each day to care for and protect your feet. These safeguards include proper hygiene and foot protection. These work to help prevent amputation.

It is helpful to understand why foot problems happen. Nerve damage can cause you to lose feeling in your feet. Loss of feeling, especially in the feet, is called **Neuropathy.** Sometimes nerve damage can deform your feet, causing pressure points that can turn into blisters, sores, an ulcers. Poor circulation can make these injuries slow to heal.

For people with diabetes, the key to healthy feet and avoiding injury is PREVENTION.

2. List the steps involved in foot care (Inspection, Hygiene and Protection).

There are three steps or parts to diabetic foot care.

1. Daily INSPECTION to catch problems early.
2. Proper HYGIENE to keep the feet clean and dry, the skin in good condition, and the toe nails trimmed.
3. PROTECTION of the feet by wearing shoes and socks that fit properly, avoiding injury, and promoting good circulation to the legs and feet.

3 Step Diabetic Foot Care.

1. Daily INSPECTION to catch problems early.
2. Proper HYGIENE to keep the feet clean and dry, the skin in good condition, and the toe nails trimmed.
3. PROTECTION of the feet by wearing shoes and socks that fit properly, avoiding injury, and promoting good circulation to the legs and feet.

DAILY INSPECTION FOR THE FEET - this is where it begins.

- ✓ Look at your feet - top, bottom, and between the toes
- ✓ Look for breaks in the skin, redness, increased warmth, dry skin, corns and calluses, blisters, changes in color, and sores.
- ✓ (If you are unable to see the bottom of your feet use a mirror to view the bottom of your feet or ask a family member or friend to help you.)
- ✓ Do not rely on sensation (feeling pain or discomfort) to let you know you have a problem with your feet. If you have any loss of sensation, how your feet FEEL is not a reliable indication of their condition.

HYGIENE

- ✓ **Keep feet clean and dry**

Wash your feet daily and pat dry. Be sure also to dry between the toes. Check the water temperature before showering or bathing.

- ✓ **Keep skin in good condition**

For dry skin on your feet and legs use lotion or cream regularly to prevent cracks and flaking of the skin. Do not use lotion between the toes as it builds up excess moisture which may cause breaks in the skin.

Lotions with lanolin, aloe, and mineral oil are best but may be costly. For an inexpensive alternative mix 1 part Mineral Oil with 2 parts (most any brand) lotion. For heavy perspiration, lightly dust your feet with powder or corn starch (not between the toes.)

- ✓ **Toenail Care**

Cut toenails straight across and even with the end of the toe. Use a nail clipper rather than a scissors.

Do not rip nails, or tear them off. Round corners with an emory board.

See a Podiatrist for problem nails and if you are unable to cut them yourself.

Cut toenails when they are soft (after a shower or bath).

For a callus, use an emery board or pumice stone after washing to gradually wear it down. Remember, only a little bit at a time.

PROTECTION

✓ Wear Properly Fitting Shoes and Socks

Wear shoes with soles at all times. Soles are to be thick enough to protect from injury. Upper part of shoes should be made of soft material.

Have your feet measured at a shoe store using a Brannock Scale. Measure your feet in the middle of the day (feet slightly swollen but not as much as at the end of the day).

Adjust to new shoes gradually. Start with 2 hours per day and increase wear time each day. Do not wear the same shoes every day. Remember to wear the correct shoe to match your activity.

One inch heels are best as they cause less pressure to the bottom of the foot.

Avoid shoes with pointed toes. A rounded toe box with 1/2 - 3/4 inch allowance is best.

Wear clean socks or stockings with your shoes. Change daily. "Knee-hi" stockings should have a wide elastic band.

Wear cotton or cotton-blend socks which will keep your feet dry. Do not wear socks with holes. Avoid socks with seams, creases, or tight elastic bands that may reduce circulation to your feet.

✓ Avoid Injury to the Feet

DO NOT use heating pads, or hot water bottles on your feet. (With a loss of sensation you may feel not feel excess heat or burns).

DO NOT soak your feet unless specifically instructed to do so by your physician. (Soaking can soften skin too much and lead to breaks. Soaking can also cause dry skin).

DO NOT use over-the-counter products for warts, corns, calluses. (They contain acidic solutions which may be harmful to the skin.)

DO NOT use a razor blade, knife, or any other sharp object to cut toenails or wear away corns or calluses.

AVOID walking in dark rooms and stairs (unseen objects or obstacles could cause falls or injury).

✓ **Promoting Circulation to the legs and feet:**

STOP SMOKING as it ruins circulation

Exercise regularly to promote circulation (Refer to the EXERCISE module)

Avoid crossing your legs at the knees (ankles only)

Try not to stand in one position too long. Change positions as often as possible.

4. Know when to call your doctor (or member of your health care team).

Contact your doctor, podiatrist, or foot care specialist for:

a) ingrown toenails

b) foot infections (signs of infection include redness, swelling, drainage, increased warmth

c) a cut or sore on the foot or leg which does not show signs of healing

d) cracking or peeling skin

e) redness, swelling, or pain in your feet, ankles, or legs

f) numbness, coldness, or loss of color (pale or bluish) in your feet (also feelings of "needles and pins")

5. Describe the role of the health care team in diabetic foot care.

Managing your diabetes is a team effort. The team is made up of: the doctor, diabetes nurse educator, dietitian, pharmacist, podiatrist or

foot care specialist, diabetes specialist (endocrinologist), and most importantly, **YOU.**

Each member of the team can help you make the most of your life and health even though you have diabetes. You can benefit from their knowledge and skills - so make use of their services.

take off your socks and shoes at every regular office visit with your doctor or endocrinologist.

- ✓ see a podiatrist at least once (whether or not your have a problem) in order to learn how to properly care for your feet and toenails.

Besides good hygiene and protection of your feet, properly managed diabetes may delay, prevent, or lessen the severity of possible complications of diabetes such as poor circulation and neuropathy. Use the diabetes health care team to assist you:

- ✓ keep current on your knowledge and skills in managing your diabetes (take a class, join a support group, or subscribe to a diabetes magazine.
- ✓ meet with a dietitian every year to review and update your meal plan.
- ✓ ask your pharmacist about medications and foot care products which may affect your diabetes
- ✓

SHOE STORES FOR PEOPLE WITH DIABETES OR PROBLEM FEET

Comfort Shoe Specialists, Inc.
12143 Manchester Road
St. Louis, MO 63131 822-3300
Type of Shoes: extra depth, many styles

Custom Shoe Laboratories
4227 Watson Road
St. Louis, MO 63109 645-3727
Type of Shoes: extra depth

Gravois Bootery
5045 Gravois
St. Louis MO 752-2784

Type of Shoes: Rockport, Dexter, Hush Puppies, Soft Spot

Laurie's Shoes
9916 Manchester Road 961-1642
12346 Olive Blvd. 434-4430
Types of Shoes: Rockport, Dexter, Converse, New Balance, Birkenstock, Easy Spirit

Orthotic & Prosthetic Lab, Inc.
748 Marshall Avenue
St. Louis, MO 63119 968-8555

Proper Shoe Store
2712 Cherokee 771-6632
Types of Shoes: New Balance, Nike, Hush Puppies, Drew, Dexter,
Easy Spirit, Soft Spot

Seliga Shoe Salons
2530 S. Brentwood Blvd 961-0110
6221 Gravois 481-3851
Types of Shoes: Extra depth, New Balance, Easy Spirit, Drew

Willard Trower's Comfort Shoes
37 Village Square Shopping Center 731-1530
Types of Shoes: Rockport, Birkenstock, P.W. Minor, Extra-depth, Clarks

DIABETES EDUCATION MODULE

SICK DAY MANAGEMENT

Purpose: To learn what you need to do to keep your diabetes under control even if you become ill, have surgery, or are in very stressful situations.

Objectives: After covering the information in this section, you will be able to:

1. State what conditions are called "sickness" or illness.
2. List the symptoms of high blood glucose levels (Hyperglycemia).
3. State medication use, meal plan, and monitoring during illness.
4. State when you need to call your doctor or member of your health care team.
5. Know what to report to your doctor during illness.
6. Use a list of medications for your home medicine cabinet and a list of Over-the Counter medicines that are safe for a person with diabetes.
7. Use a Sick Day Sheet to keep track of diabetes management during illness.

Handouts:

1. Calorie and Carbohydrate Guide
2. Sick Day Sheet (sample and blank copies)

INTRODUCTION

Any type of infection, the common cold, flu, or diarrhea puts stress on the body. Even events such as an injury, surgery, or having a tooth pulled are stressful to the body. Severe emotional upsets such as death in the family or divorce are also stressful.

To cope with stress, the body makes more glucose. This gives the body more energy. Normally, the body makes more insulin so that the extra glucose gets used. If you have diabetes, your body just can't "make more insulin". As a result, the blood glucose just gets higher and higher.

If there is a severe lack of insulin, the body can't use glucose for energy. To get energy, fat will be burned by the body instead of glucose. When this happens, acids are formed (called ketones). If these acids (ketones) build up in the blood a dangerous situation called Diabetic Ketoacidosis (DKA for short) can develop. This can be life-threatening.

Even without DKA, very high blood sugar causes severe dehydration. Left untreated, dehydration can be deadly, as well.

By **knowing what to do** if you get sick or find yourself in very stressful situations, you can prevent these problems.

1. Know what conditions may be called "sickness" or illness.

fever	congestion in the head or chest
nausea	surgery
vomiting	dental work
diarrhea	emotionally stressful situation
infection	sunburn

Many times these stressful times affect your appetite or keep you from eating normally or cause you to lose food and fluid from vomiting and diarrhea.

2. Know symptoms of high blood glucose (Hyperglycemia)

increased thirst	nausea, vomiting, stomach pain
more frequent urination	warm, dry, flushed skin
blurred vision	rapid pulse
weakness	rapid, deep breathing
	fruity odor to breath
	drowsy --> coma

The Four MMMM's of Sick Day Management

M = Medication and Insulin
M = Meals and Fluids
M = Monitoring - blood and urine
M = M.D. contact (when to call the doctor)

3. Know how to take your medication and /or insulin to keep your blood glucose level safe.

M - Medications

Never omit insulin injections during an illness. When you are ill, your body needs that insulin so that you can burn glucose for energy. Sometimes, you will need additional amounts of short-acting insulin.

If you normally control your blood glucose levels with oral medications, do not stop taking those medications. Sometimes you will need to take insulin temporarily during an illness.

If you do not routinely take a short-acting insulin (Regular Insulin), check with your doctor if you are ill.

4. Know how to adjust your meals and fluids to prevent dehydration and get energy **M - Meals and Fluids**

Prevent dehydration.

When your blood glucose is high, you can lose large volumes of fluids. This can lead to dehydration. To prevent this from happening:

- ✓ drink one cup (8 ounces) of fluid every 1/2 to 1 hour.
- ✓ if you are able to follow your usual meal plan, use sugar-free liquids. You can use water, diet sodas, broth, bouillon, decaffeinated coffee or tea, diet kool-aid.
- ✓ if you are unable to follow your usual meal plan because you are nauseated or vomiting, alternate fluids that are sugar-free with fluids that contain sugar. You can choose fluids such as regular soda or kool-aid, fruit juices, jello, popsicles.

Keep up your nourishment.

✓ If you are able to eat normally, just follow your usual meal plan. Drink additional fluids (as described in the previous section) to prevent dehydration. Choose sugar free fluids.

✓ If you have little or no appetite or are nauseated, just eat the foods in your diet that contain carbohydrate (fruits, starchy foods, and milk). The table below tells you how much carbohydrate (CHO) that is in your particular meal plan.

Calories in your usual meal plan	Amount of CHO you need
1200 calories	165 grams
1500 calories	200 grams
1800 calories	240 grams
2000 calories	270 grams
2200 calories	300 grams
2500 calories	315 grams
3000 calories	370 grams

To know what to eat or drink to get the carbohydrates that youneed, look at the list below. It tells you how much carbohydrate is in foods that are listed when you eat or drink the quantity that is listed. You can substitute these foods for the fruit, CHO or milk exchanges in your usual diet.

CHO Grams	Food Choice and Amount	CHO Grams	Food Choice and Amount	CHO Grams	Food Choice and Amount
12	1/2 cup egg nog	15	5 vanilla wafers	15	1/2 cup regular kool-aid
12	1 cup milk	15	1 slice toast	15	1 tbsp. honey, syrup, sugar
12	1/2 cup reg. hot chocolate	15	2 cups broth based soup	15	1/2 cup sherbert
12	1/4 cup milk shake	15	1 cup cream soup	15	1/2 cup applesauce
12	1/4 cup regular pudding	15	3/4 cup dry cereal	15	1 popsicle
12	1/2 cup custard	15	1/2 cup cooked cereal	15	1/3 cup regular jello
		15	6 saltine crackers	15	1/2 cup orange, or apple juice

5. M - Monitoring

Know how to keep track of yourself through blood glucose monitoring and urine ketone monitoring.

You will want to check your blood glucose more often when you are ill or under stress. If you are unable to check your own blood glucose because you are too ill, ask someone else to do the testing for you.

- ✓ Check blood glucose every four (4) hours throughout your illness. Set your alarm clock to awaken yourself during the night.
- ✓ If you have Type 1 diabetes, test urine for ketones if your blood glucose is greater than 240 mg/dl. You can get these ketone testing strips at your pharmacy without a prescription.
- ✓ If ketones are present in your urine along with high blood glucose levels, you will need to contact your doctor for changes in your insulin.

. M - M.D. Contact

Know when to call your doctor.

Call your doctor or a member of your health care team when:

1. You feel too sick to eat normally and unable to keep food or fluids down for more than six hours.
2. You have severe diarrhea.
3. Your temperature is over 101 degrees F.
4. Your blood glucose is staying over 300 mg/dl or your blood sugar is under 60 mg/dl.
5. You have moderate to large ketones in your urine.
6. You have trouble breathing.
7. You feel sleepy or can't think clearly.

Know what to tell your doctor.

Be prepared to report the following information to your doctor when you are ill:

1. Temperature
2. Blood glucose readings (and ketones, if appropriate)
3. Current insulin dose (or oral medication dose)
4. Food and liquid intake

5. Whether or not you are vomiting or having diarrhea
6. Signs of infection or illness
7. Your pharmacy phone number

7. Items which are suggested medications to have available in the home medicine cabinet.

Suggested medications to have on hand - taken under the direction of your doctor

- ✓ Tylenol (acetominophen) or an equivalent pain killer (analgesic)
- ✓ Liquid antacids for stomach upset and heartburn
- ✓ Imodium AD for diarrhea
- ✓ Neosporin, Polysporin (antibiotic for skin infections)
- ✓ Hydrocortisone (topical)

Keep a Sick Day Box on hand so that you are prepared for an unexpected illness.

Sick Day Box

1. Phone numbers: Doctor, Pharmacy, Hospital ER
2. Written sick day guidelines
3. Instructions on when to call MD
4. Blood glucose testing equipment
5. Ketone test strips
6. Thermometer
7. Tylenol (acetominophen) or an equivalent pain killer (analgesic)
8. Antinausea medication
9. Sick Day menu
10. Sick day foods - regular soda, regular jello, bouillon

Ask the pharmacist to help you select non-prescription medicines which do not contain a syrup base, sugar, or alcohol. Refer to the attached list of Over-The Counter Medications for People with Diabetes.

8. Use a Sick Day Record with medication taken, necessary information to report to your doctor, and the amount of carbohydrate and fluid intake.

Directions for using a Sick Day Record

Fill in the following information - make note of these things at least four times each day

1. your temperature
2. each insulin or diabetes medication dose that you take
3. each blood sugar test that you do (time and reading)
4. each urine ketone test (if applicable)
5. amount of fluids in ounces that you take
6. amount of food you take
7. each time you urinate
8. each time you vomit or have diarrhea
9. note if you are having any breathing problems or feel less alert

**if there are any changes in alertness or rapid breathing (more than 24/minute), contact your doctor IMMEDIATELY.

SICK DAY RECORD

	AM	Noon	PM	Night
Time				
Temperature				
Test::				
Blood Sugar				
Urine Ketones				
Insulin				
Food Intake				
Fluid Intake (ounces)				
# of urinations				
# of diarrhea or vomiting times				
Breathing (note any change)**				
Alertness**				

**if there are any changes in alertness or rapid breathing (more than 24/minute), contact your doctor IMMEDIATELY.

SICK DAY MANAGEMENT TEST

1. Illness may be considered:

a) nausea, vomiting, diarrhea, fever
b) an infection for congestion in the head or chest
c) surgery, dental work, a stressful situation, or a sunburn
d) all of the above

2. Medications that may be helpful in times of illness include:

a) Tylenol (acetominophen)
b) Maalox
c) Immodium AD
d) all of the above

3. Symptoms of high blood sugar include:

a) increased thirst
b) more frequent urination
c) blurred vision
d) all of the above

4. You would need to talk to your doctor as soon as possible if you:

a) were unable to keep food or fluids down
b) had a toothache
c) had a temperature of 99 degrees
d) had a stomach ache

5. If you are ill and don't have an appetite you should stop taking your insulin or oral diabetes medication.

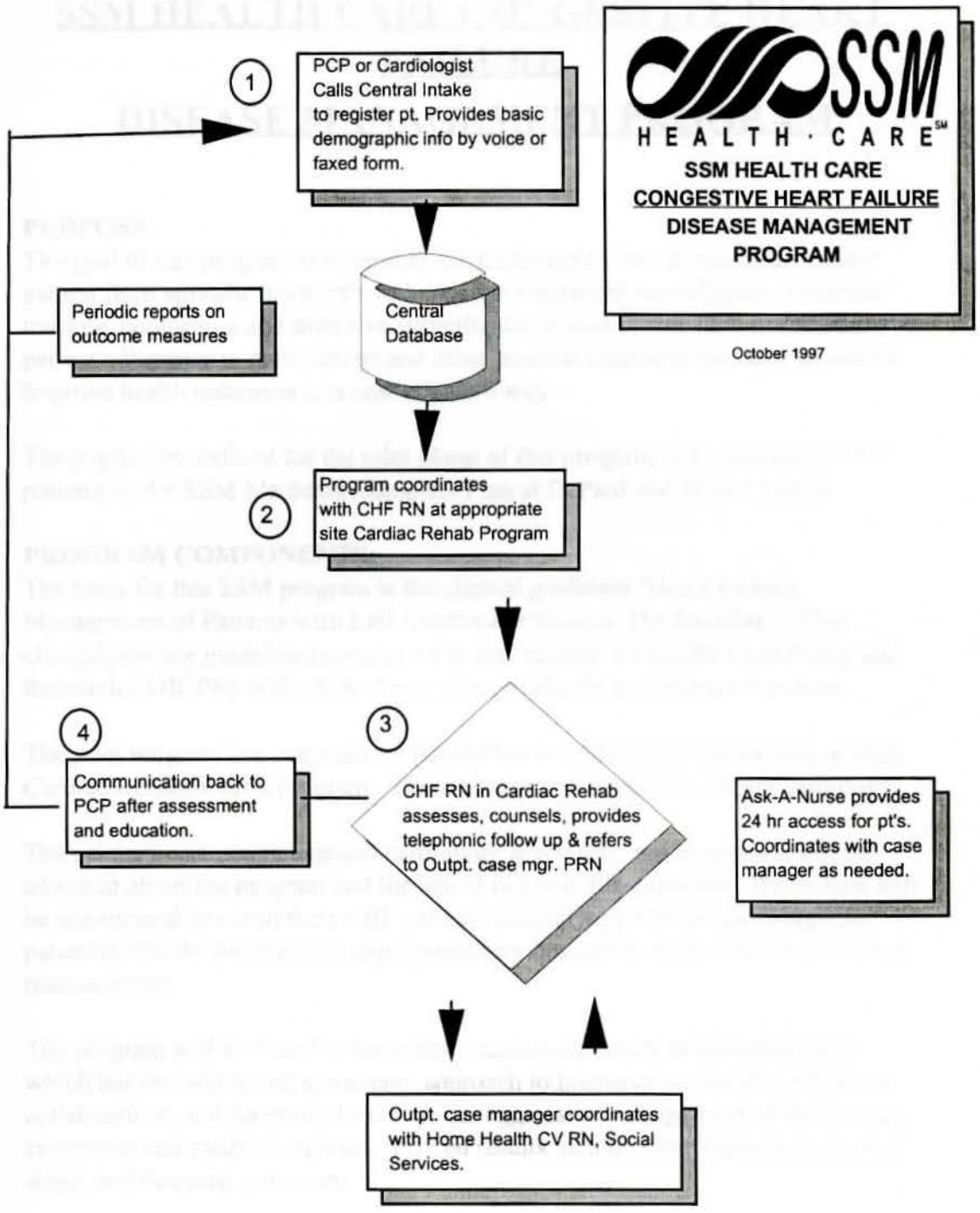
a) True
b) False

6. If you are ill, but are still able to eat your normal meal plan, you should still drink extra fluids that:

a) contain sugar
b) do not contain sugar

APPENDIX II

Samples of forms used by the Congestive Heart Failure Disease Management Program. The forms used in the patient care process were also placed in the final manual for display.


SSM
HEALTH · CARE℠
SSM HEALTH CARE
CONGESTIVE HEART FAILURE
DISEASE MANAGEMENT
PROGRAM
October 1997
1
PCP or Cardiologist Calls Central Intake to register pt. Provides basic demographic info by voice or faxed form.
Central Database
Periodic reports on outcome measures
2
Program coordinates with CHF RN at appropriate site Cardiac Rehab Program
3
CHF RN in Cardiac Rehab assesses, counsels, provides telephonic follow up & refers to Outpt. case mgr. PRN
4
Communication back to PCP after assessment and education.
Ask-A-Nurse provides 24 hr access for pt's. Coordinates with case manager as needed.
Outpt. case manager coordinates with Home Health CV RN, Social Services.

SSMart CARE

SSM HEALTH CARE CONGESTIVE HEART FAILURE DISEASE MANAGEMENT PROGRAM

PURPOSE:

The goal of this program is to modify the treatment of the chronic heart failure patient from episodic acute care to long-term outpatient surveillance. Exercise training, counseling and intensive surveillance to modify risk factors and improve patient adherence to medications and other medical regimens has been shown to improve health outcomes in a cost effective way.

The population defined for the pilot phase of this program is the identified CHF patients in the SSM Medicare Complete Plan at DePaul and in St. Charles.

PROGRAM COMPONENTS:

The basis for this SSM program is the clinical guideline "Heart Failure: Management of Patients with Left-Ventricular Systolic Dysfunction". This clinical practice guideline is produced by the Agency for Health Care Policy and Research (AHCPR) of the U.S. Department of Health and Human Services.

The pilot program has oversight by physicians in a Medical Director role in each Cardiac Rehabilitation Program. These physicians are specialists in Cardiology.

The primary care physicians and cardiology specialists in our network will be educated about the program and the use of the AHCPR guideline. Physicians will be encouraged to enroll their CHF patients (initially, just Medicare Complete patients) into the program for appropriate services and to be included in outcome measurement.

The program will be based in the entity's cardiopulmonary rehab department which has an established systematic approach to intensive counseling, physician collaboration, and supervised exercise for aggressive management of risk factors, symptoms and medical regimen. Proven results include improvement in clinical status and financial outcomes.

The emphasis of this SSMart Care program in counseling and close follow-up by a designated CHF RN within the Cardiac Rehab Depts. of the hospital.

As a primary care physician or cardiologist identifies the diagnosed CHF patient, he/she will call or fax basic demographic information per a registration form to

the SSM Disease Management central intake office (See attached registration form).

The central intake coordinator will relay information to the CHF RN at the appropriate entity. That CHF RN in Cardiac Rehab will contact the patient and schedule an initial assessment and counseling session. Counseling will follow the AHCPR guideline.

The CHF RN will send a post assessment/counseling report to the referring PCP or specialist. This RN will provide telephonic follow-up to assure adherence and identify triggers to notify the physician. The frequency and intensity of the telephonic follow-up will be based on the results of the assessment by the RN and recommendations of the physician.

The CHF RN will coordinate outpatient services as needs are identified e.g., Home Health, Social Services, community resources.

OUTCOME MEASUREMENT:

The specific monitors that the program will track to show success are: Hospital readmits, Hospital Length of Stay, CHF care costs for Medicare Complete patients and Quality of Life as measured by the "Minnesota Living with Heart Failure Questionnaire" from the University of Minnesota in Minneapolis. The outcome measurement portion of the program will be overseen by Tony McDonald -- SSM Health Care's Outcomes Specialist.

The program includes quarterly reports on these measures to the physicians that have patient's in the program.

These reports are in addition to the communication to the physicians from the CHF RN as outlined in the above process.

Physician Referral Form
Outpatient Congestive Heart Failure
Disease Management Program

Patient Name: _____ **DOB:** _____
Address: _____ **HM Phone:** _____
_____ **WK Phone:** _____

I consider the above individual a program candidate for the following (x'd) reasons:

Diagnosis/Procedure	Date M/Y	Diagnosis/Procedure	Date M/Y
__ Cardiovascular Disease	__/__	__ Diabetes Mellitus	__/__
__ Myocardial Infarction	__/__	__ Insulin Dependent	
__ Coronary Artery Bypass	__/__	__ Non-Insulin Dependent	
__ Valve Repair/Replace	__/__	__ Hypertension	__/__
__ PTCA/Stent/Other	__/__	__ Hyperlipidemia	__/__
__ Stable Angina	__/__	__ Obesity	
_X_ Systolic Heart Failure	__/__		
__ Pulmonary Disease	__/__	__ Sedentary Lifestyle	
__ COPD	__/__	__ Smoking	
__ Pulmonary Fibrosis	__/__		
__ Asthma	__/__		
__ Peripheral Vascular Disease	__/__	__ Other Diagnosis	__/__
__ Medical Treatment	__/__		
__ Revascularized	__/__		

I authorize the program medical director to perform:
_X_ Medical director's review of plan of care.

I have examined the above applicant and as his/her personal physician approve participation in:
_X_ Outpatient Congestive Heart Failure Disease Management Program (telemanagement & education)
___ Outpatient Congestive Heart Failure Diesease Management Program (supervised exercise program)

_____ _____
(Physician Signature) **(Date)**

me of Physician (printed): _____

CONGESTIVE HEART FAILURE

Guidelines for Patient Assessment

1. Every patient entering the CHF Disease Management program will undergo an initial evaluation (I/E) by the case manager. The I/E will include the following;

    * Nursing Physical Assessment
    * Completion of outcome tools including; quality of life, dietary intake assessment, stress assessment tool and medication adherence tool
    * Development of an individualized plan of care based on the above assessments

2. A notification letter will be sent to the primary care physician stating that the patient has completed the assessment and is registered into the database. In addition, those areas identified as being barriers to adherence will be listed.

3. Ongoing communication will be make through an ancillary report (see attached) that would list any medication changes or problems, status reports or those items that are FYI in nature. Any information requiring physician follow up will be FAXED with a follow up call by the case manager.

INITIAL VISIT TO THE CHF RN CASE MANAGER:

1. Explain the program to patients and significant other

2. Take medical history
   If patient has not had some type of LV function assessment, get an ECHO ordered.

3. Patient physical examination
   Instruct patient and significant other in self-examination of pulse, swelling, and weight.

4. Formulate problem list.

5. Decide on follow-up phone call schedule based on overall risk and need assessment
   Schedule first follow-up phone call

6. Explain counseling program
   Provide patient and significant other with handout materials
   Decide if another care giver is or should be involved
   Schedule first counseling session

7. Establish that patient has access to a working scale and can use it and explain how to
   weigh and record weight.
   "Weigh each morning after first going to the restroom"

8. Confirm:
   a. Medicine list and schedule
      assess need for or use of pill box
      establish who will administer medication
   b. Diet and fluid restriction
      review how to measure amount of fluids and restriction

9. Establish target weight

10. Decide on diuretic protocol *using currently prescribed diuretics*
    Medical Director to co-sign.

11. Review Signs and Symptoms sheet with patient and significant other
    Write down important phone numbers

12. Establish list of ancillary services needs for patient

13. Write note to referring physician

SSMart Care
SSM Health Care Congestive Heart Failure Disease Management Program

To: Dr. _____

Your Patient, _____
Has completed the initial assessment as part of the SSMHC SSMart Care Congestive Heart Failure Disease Management Program.

Your patient will be receiving follow-up phone calls to reinforce your plan of care and to evaluate progress. He/She will be on the following phone follow up schedule:

_____ Weekly for six weeks
_____ Bi-weekly for eight weeks
_____ Monthly for twelve months

Major clinical changes such as, medication changes or hospital admissions, etc., will change the call schedule to : Weekly for four weeks, bi-weekly for eight weeks and monthly for twelve months.

The SSMart Care program includes an Individualized Protocol for the patient's diuretic dose to keep the patient at their target weight and to respond to symptoms of heart failure. This protocol directs your patient's diuretic medication dose to be altered to:_____,
whenever_____

The SSMart Care CHF Disease Management Program is structured on the Agency for Health Care Policy and Research (AHCPR).
On the basis of this government program, we recommend the following changes in your patient's treatement be considered:

_____

_____

Signature_____RN, MSN Case Manager

Signature_____MD Medical Director, SSMart Care CHF Disease Management Program.

CONGESTIVE HEART FAILURE
Guidelines for Changing Telephone Frequency

The following guidelines will be used for telephone management:

- Weekly for six weeks
- Bi-weekly for eight weeks
- Monthly for twelve months

Any variance, i.e., medication changes, hospital readmission, etc., would then follow the guidelines listed below:

- Weekly for four weeks
- Then back to bi-weekly for eight weeks
- Then return to monthly for twelve months

SSMart Care
Congestive Heart Failure Disease Management Program
Telemonitoring Worksheet

1. How are you feeling today? ___ Better ____ Worse ____ Same

2. What is your weight today? _____

3. Tell me your weight for the last few days ____ yesterday ____ the day before that _____ the day before that.

4. What was your pulse this morning? _____

5. Is there any swelling of your ankles or legs? _____ Yes _____ No

6. Have you had any feelings of fullness, clothes or rings feeling tight?
____ Yes ____ No

7. Have you had any chest, arm or throat discomfort? ____ Yes _____No

8. Have you been dizzy, lightheaded or had passing out episode?
____Yes ____No

10.Have you had any palpitations or feelings of your heart racing or skipping?
____Yes ____No

11. Are you having any shortness of breath at rest? #____ #____

12. Are you having any shortness of breath with activity? #____ #____

Scale 0=Not at all 1, 2, 3, 4 = Severely 5 = Maximally or unable to do because of breathlessness

13. Are you taking your medications as prescribed? ___ Yes ____ No

14. Are there any changes in medication dosages? ____ Yes ____No

5. Read your medications to me_____

16. Bottles/list match case manager's list ____Yes ____No

Comment_____

17. Tell me what time you are taking each pill_____

18. Times match case manager's list? _____ Yes _____No

19. Are you having any problems getting your medications? ____ Yes _____No

Comment_____

20. Are you following your diet? _____Yes _____No

21. Tell me what you had for breakfast?_____

22. Are you on fluid restriction? _____Yes ____No

23. What is your fluid restriction? (if applicable)_____

24. Fluid intake comply with plan? _____ Yes ____No

Comment_____

25. Are you following the light exercise program given to you? ____Yes ____No

26. How Active have you been? 1 = Very active___ 2 = Active____
3 = Somewhat ____ 4 = Not very____ 5 = Not at all_____

27. What is your pulse during activity? _____

28. What is your level of effort? #_____

CONGESTIVE HEART FAILURE

Criteria for Referring to Specialist

The following guidelines are used to recommend to a referring physician that the patient be seen by a specialist:

- Chest Pain
- Diuretic doses adjusted twice and patient has not yet achieved target weight
- Greater than two hospital admissions within thirty days

SSMart Care

Congestive Heart Failure Disease Management Program
SSM Health Care - St. Louis

Your physician has determined that you have a medical condition known as "heart failure", also known as Congestive Heart Failure. This term may sound frightening but it really isn't. It simply means your heart isn't pumping as well as it should be.

Congestive Heart Failure is the leading cause of health problems in patients 65 years of age and older. Your physician has enrolled you in the **SSMart Care Congestive Heart Failure Program** to provide a resource to help you stay as healthy as possible.

The goals of this program are to:

- Keep you well and as healthy as possible
- Provide appropriate educational and community resources for you.

This is accomplished by:

- Telephone follow up on a regular basis by an R.N. specializing in cardiac care.
- Outpatient education classes that are taught by an R.N., pharmacist, social worker and dietician
- Regular communication about your progress with the physician that referred you to the program and your primary care physician.

Together we can develop a partnership to manage your heart condition. In doing so, our commitment will be to:

- Call you at pre-determined intervals to ask you specific questions that allows us to assess your progress
- Regularly communicate with your physician about your progress or any problems you are having

- *Provide you with the information you need to successfully manage congestive heart failure*

We ask that you make the following commitments:

- Answer our telephone questions as honestly and accurately as possible
- Let the R.N. calling know of any medication changes, over the counter medications or problems or concerns you are having about the medications your physician has ordered
- Weigh yourself daily and record on the chart provided
- Attend the outpatient classes
- Follow your physician's orders

Patient signature:_____ Date:_____

R.N. *signature:*_____ *Date:*_____

SSMart Care-Congestive Heart Failure Self- Management Plan

GREEN ZONE (All Clear)

Goal Weight

Your weight is in this range and you have:

- No shortness of breath
- No swelling
- No weight gain
- No decrease in your ability to maintain your activity level

Green Zone Means:

- Your Symptoms are under control.
- Continue taking your medications as ordered
- Follow low salt diet
- Keep all physician Appointments

YELLOW ZONE (Caution)

If you have the following signs or symptoms:

- Increased Weight
- Increased Cough
- Increased Swelling
- Increase in shortness of breath with activity
- Chest Pain
- Increase in number of pillows needed or need to sit in chair to sleep
- Anything else unusual that bothers you

Call your Case Manager if you are going into the Yellow Zone

Yellow Zone Means:

- Your Symptoms may indicate that you need an adjustment of your medications - **Call Case Manager.**

Name_____

Number_____

RED ZONE (Medical Alert)

- Unrelieved shortness of breath or shortness of breath at rest
- Unrelieved Chest Pain
- Wheezing or chest tightness at rest

Red Zone Means:

This indicates that you need to be evaluated by a physician right away.

Primary Care Dr._____

Office#_____Exch._____

Cardiologist Dr._____

Office#_____Exch_____

SELF CARE REFERENCE SHEET

I WILL TAKE ALL MYMEDICATIONS AS PRESCRIBED AND KNOW THE NAMES, PURPOSE, DOSAGES AND MAJOR ADVERSE REACTIONS OF EACH.

I WILL CALL MY NURSE CASE MANAGER_____
AND REPORT ANY PROBLEMS WITH MY MEDICATIONS.

I WILL WEIGH MYSELF DAILY ON WAKING, BEFORE BREAKFAST.

I WILL CALL MY NURSE CASE MANAGER IF MY WEIGHT INCREASES 3 POUNDS OVERNIGHT OR IF I HAVE A STEADY WEIGHT GAIN OF 5 POUNDS OR MORE OVER MY TARGET WEIGHT.

I WILL MAINTAIN A LOW-SALT DIET, BY AVOIDING FOODS THAT ARE HIGH IN SALT.

I WILL KNOW THE SYMPTOMS OF CONGESTIVE HEART FAILURE, UNUSUAL SHORTNESS OF BREATH, INCREASED FATIGUE, SWELLING, WAISTBAND OF PANTS OR RINGS FEELING TIGHT AND POOR APPETITE AND FEELING OF FULLNESS.

IF ANYOF THE ABOVE SHOULD OCCUR, I WILL CALL MY NURSE CASE MANAGER BETWEEN THE HOURS OF:

_____.

IN THE EVENT OF EXTREME SHORTNESS OF BREATH AND/OR CHEST PAIN THAT DOES NOT GO AWAY, I WILL CALL 911.

Congestive Heart Failure Disease Management Program

SELF CARE WEEKLY CHECKLIST

My Target Weight is:_____

DATE:___ ___ ___ ___ ___ ___ ___

TODAY:
My weight is
(on waking)___ ___ ___ ___ ___ ___ ___

My pulse is
(on waking)___ ___ ___ ___ ___ ___ ___

I will take my
medications as
prescribed ___ ___ ___ ___ ___ ___ ___

I will follow my
low salt diet as
prescribed ___ ___ ___ ___ ___ ___ ___

I will do my
exercises as
prescribed ___ ___ ___ ___ ___ ___

With Activity
My pulse is___ ___ ___ ___ ___ ___ ___

Level of effort___ ___ ___ ___ ___ ___

Congestive Heart Failure
Disease Management Program
Cardiopulmonary Rehabilitation

Report from Case Manager to referring physician

Hospital:_____TO:_____
Date:_____ Patient:_____

For Your Information:_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Signature/Title_____

SSMart CARE

CONGESTIVE HEART FAILURE DISEASE MANAGEMENT PROGRAM

Counseling Objectives

After completion of the counseling sessions, the patient will be able to:

- Identify key signs/symptoms that are to be reported to the physician or nurse
- Discuss the role that significant others will have in managing the disease process
- Understand the disease process of congestive heart failure
- Discuss the purpose, dose, and potential side effects of medications
- Discuss the importance of following a low fat, low sodium diet
- Identify those food items that are to be avoided on a low fat, low sodium diet
- Identify appropriate low level exercises to maintain activities of daily living
- Understand the tests that may be performed to help manage congestive heart failure

Self Care

"SSMart Care"

A Guide to Learning to Live With Heart Failure

A handbook for patients and families

What is Heart Failure?

Heart failure means that your heart is not pumping enough blood to meet your body's needs.

Heart failure does not mean that you are about to die, or even that your heart has stopped. It simply means that your heart is not working as well as it should.

Heart failure also affects the kidneys' ability to get rid of sodium and water.

The excess water can cause your feet, ankles and legs to swell.

Heart failure usually doesn't occur suddenly.

It gradually worsens over time. Heart failure can be caused by:

- coronary artery disease
- past heart attack
- high blood pressure
- smoking
- heart valve disease due to rheumatic fever or another problem
- heart disease
- heart defects present at birth
- infection of the heart's valves or the heart itself.

A HEALTHY HEART

A healthy heart is strong enough to pump blood out or the heart so it doesn't back up into the lungs and veins.

A Normal Beat

A DAMAGED HEART

A damaged heart pumps blood with little force, causing blood to back up into the lungs and veins

A Weak beat

THE TRAFFIC JAM

When your heart is not pumping properly, blood from the lungs or from the rest of the body backs up, just as traffic can back up at rush hour. To stop the traffic jam, the heart may:

- enlarge its chambers to let in more blood
- beat with more force

This helps keep the heart working almost normally in the early stages of heart failure. But these measures cannot keep your heart working properly over a long period of time--and can actually make things worse.

COMMOM SYMPTOMS OF HEART FAILURE

Check the symptoms on this list that you've had:

- ☐ shortness of breath during physical activity or even while lying in bed
- ☐ waking up short of breath
- ☐ a dry, hacking cough
- ☐ bloating
- ☐ swollen feet, legs and ankles
- ☐ the need to urinate more often during the night
- ☐ a sudden weight gain
- ☐ fatigue or weakness.

If your symptoms change or worsen, contact your health-care provider.

But, there are many things you can do to feel better!

MEDICINE IS A KEY FACTOR IN TREATING HEART FAILURE

Medicine can help make it easier for your heart to pump, strengthen your heartbeat and remove excess fluid from your body. Your health-care provider may prescribe one or more of these types of medicine.

Even if you are feeling better, take your medicine as prescribed! Don't stop taking a medicine without talking to your health-care provider first. Changing the size of doses or skipping doses can be dangerous.

ACE INHIBITORS

Purpose: To open up your arteries and make it easier for your heart to pump.

Possible side effects: May include a cough, dizziness, loss of taste, fever, skin rash and sore throat.

DiURETICS

Purpose: To make you urinate more often, so fluids do not collect in your legs, feet, ankles and abdomen. Getting rid of excess fluid makes it easier for your heart to pump.

Possible side effects: May include leg cramps, dizziness, accidental urine leaks and skin rash. Diuretics can also wash much-needed potassium out of the body.

DIGITALIS (digoxin)

Purpose: To make your heartbeat stronger and more regular.

Possible side effects: May include nausea and loss of appetite, blurred vision, mental confusion, irregular heartbeat and slow pulse. Tell your health-care provider right away if you have any of these side effects.

VASODILATORS

Purpose: To open up your arteries and make it easeir for your heart to pump. (ACE inhibitors are one type of vaso-dilator.)

Possible side effects: May include headache, low blood pressure, fever, loss of appetite, nausea and skin rash.

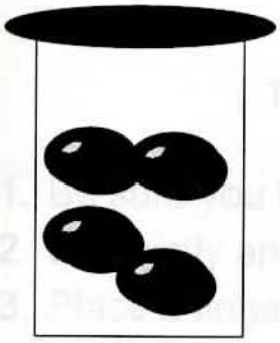
POTASSIUM SUPPLEMENTS

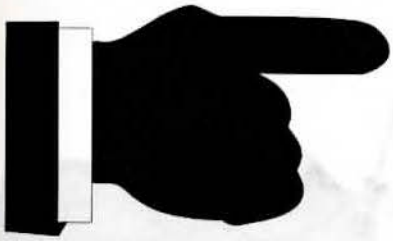
Purpose: To replace potassium that may be lost by taking diuretics. You may also have to eat foods that are high in potassium.

Possible side effects: May include irritation of the stomach and intestines.

TIPS FOR MANAGING YOUR MEDICINES

Taken as prescribed, medicine can help you feel better. Taken incorrectly, medicine can be useless or, even worse, harmful. Follow these guidelines for taking your medicine.





ASK QUESTIONS ABOUT YOUR MEDICINES

--if you don't understand what they are for, when to take them, etc.

CHECK THE LABEL

--before you take a medicine. Be sure you are taking the right one and have the correct dose. Always follow the directions carefully.

DON'T TAKE MEDICINE IN THE DARK

--it is easy to make a mistake and take the wrong one.

TELL YOUR HEALTH-CARE PROVIDER IF YOU TAKE ANY OVER-THE-COUNTER MEDICINES

--they could react with other medicines he or she prescribes.

ASK YOUR HEALTH-CARE PROVIDER WHAT YOU SHOULD DO

--if you miss a dose. Never take a larger dose the next time without his or her permission.

REPORT NEW SIDE EFFECTS

-to your health-care provider. He or she may adjust your dose, prescribe a different medicine or make other changes.

ALWAYS CARRY A LIST OF MEDICINES

--with you. This can help health-care professionals in an emergency.

KEEP TRACK OF YOUR MEDICINES

--by using a pill dispenser. Keeping a written record of your medicines, including vitamins and over-the-counter drugs, will also help you remember to take them on schedule.

YOU MAY NEED TO TAKE YOUR PULSE

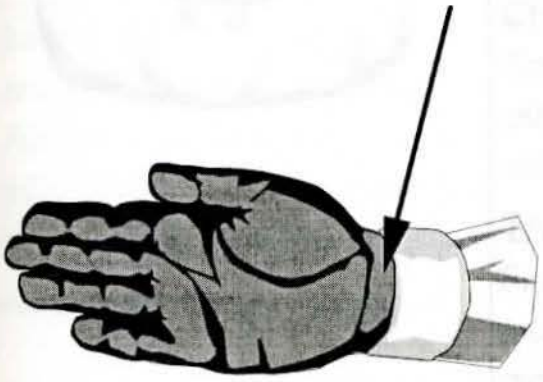
if you take certain drugs, such as digitalis (digoxin). Your pulse rate is the number of times your heart beats in a minute. If you need to do this, your health-care provider will show you how.

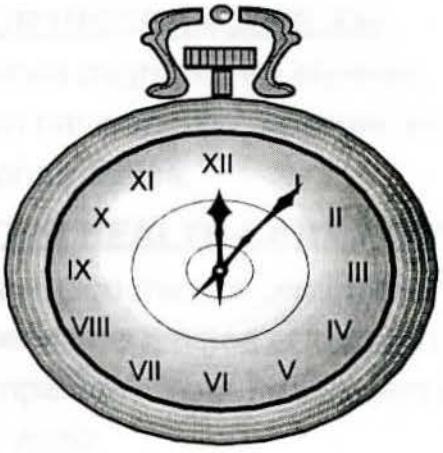
SOME DRUGS MAY CHANGE YOUR HEART RATE,

so taking your pulse is very important. Always check your pulse before you take these medicines. If your pulse is under 60 beats per minute or over 100 beats per minute, call your health-care-provider before taking your medicine.

TO TAKE YOUR PULSE

1. Be sure you have a clock or a watch with a second hand.
2. Sit quietly and rest for several minutes.
3. Place 2 fingers on your wrist or neck artery. (Don't press too hard!)
4. Count pulse beats for 60 seconds all at once , or you may count for 30 seconds and multiply that number by 2. this is your "resting pulse."





MEDICINES CAN BE EXPENSIVE,

especially if you take several of them.

However, failure to take your medicine can be even more costly.

TO CUT BACK ON EXPENSES, TRY SOME OF THESE MONEY SAVING IDEAS

SHOP AROUND

Although most pharmacies are quite competitive, some may be less expensive than others.

ASK ABOUT GENERIC DRUGS

They are less expensive and, in some cases, can be substituted for brand name medicines.

ASK FOR SMALL AMOUNTS

Ask your health-care provider or pharmacist to consider giving you only a 1 to 2 week supply when a new medication is prescribed. If your body doesn't tolerate it and your prescription is changed, little medicine will go unused.

SEE IF YOUR HEALTH-CARE PROVIDER HAS ANY FREE SAMPLES.

These can cut down on the amount you have to purchase.

LOOK FOR A MAIL-ORDER SERVICE

Medicines are often less expensive when purchased through these companies.

CHECK YOUR INSURANCE PLAN

Some medicines might not be covered. Your plan may also have special arrangements with certain pharmacies.

TALK TO YOUR HEALTH-CARE PROVIDER

Financial assistance may be available through local social service agencies or through medicine companies. Your health care provider can help you apply.

TIPS TO LOWER SODIUM INTAKE

Many over-the-counter medicines contain sodium. Ask your pharmacist about the sodium content of the medicines you take.

REMOVE THE SALT SHAKER
from your table. You'll be less likely to use it.

USE SPICES, HERBS AND OTHER SEASONINGS
instead of salt to flavor food. Try garlic, oregano, basil, curry, onion, parsley, rosemary, lemon juice, etc.

EAT FRESH AND FROZEN VEGETABLES
instead of canned vegetables. Canned vegetables can be very high in sodium because salt is used as a preservative.

SNACK ON FRESH FRUITS AND VEGETABLES
instead of salty snack foods, such as pretzels, popcorn or chips.

AVOID SALTED CRACKERS,
muffins and biscuits that contain salt, and stuffing mixes.

AVOID SALT SUBSTITUES
and spices that taste salty. They generally contain other forms of salt that can be just as harmful. They may also contain potassium which can significantly change your potassium level, especially if potassium supplements are used.

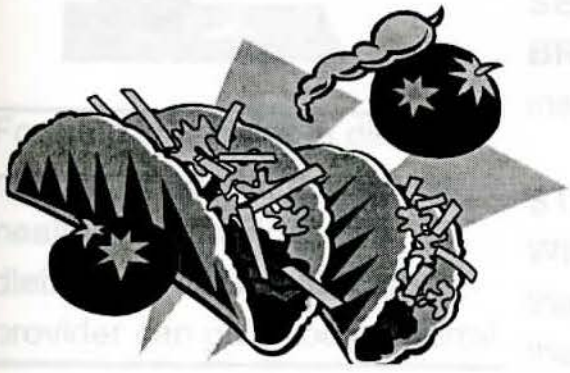
CHECK THE SODIUM CONTENT
of foods (It's listed on the label). Many frozen dinners, canned soups and condiments are high in sodium.

CHECK OUT NUTRITION LABELS

before purchasing food.

With the exception of fresh fruits, vegetables and meats, most foods have a nutrition label like the one shown here. The amount of sodium a product contains is listed on the label. By checking labels, you can find out how much sodium is in the foods you eat.

Remember -- Foods with over 140mg of sodium per serving are considered high in sodium.



BE SURE TO NOTE THE SERVING SIZE LISTED ON THE PACKAGE

Although a package may look small, it may contain more than one serving. The sodium content listed is for one serving, not necessarily the entire package.

Nutrition Facts

Serving Size 1 Cup (228g)
Servings per Container 2

Amount Per Serving	
Calories 260	Calories from Fat 120
	% Daily Value*
Total Fat 13g	20%
Saturated Fat 5g	25%
Cholesterol 30 mg	10%
Sodium 660mg	28%
Total Carbohydrate 31g	10%
Dietary Fiber 0g	0%
Sugars 5g	
Protein 5g	

Vitamin A 4%	-	**Vitamin C 2%**
Calcium 15%	-	Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

Calories:		2,000	2,500
Total Fat	Less than	65g	80g
Sat. Fat	Less than	20g	25g
Cholesteroll	Less than	300g	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

Calories per gram:

Fat 9 - Carbohydrate 4 - Protein 4

WHAT ABOUT EATING OUT?

Good news! If you have heart failure, you can still go out to eat. However, watch what you eat. Food may be high is sodium, especially at fast-food restaurants.

For help in tailoring a diet to meet your needs, talk to your health-care provider or a dietitian. Your health-care provider can give you a referral.

HERE ARE SOME TIPS YOU SHOULD FOLLOW WHEN EATING OUT:

FIND OUT WHAT TYPES OF FOOD ARE SERVED
and see if they fit your diet. If a restaurant serves mainly fried food,avoid it.

ASK THE RESTAURANT IF MEALS CAN BE CHANGED
to meet your dietary needs.

CHOOSE LOW-SODIUM FOODS
like those listed on another page

ORDER YOUR SALAD DRESSING "ON THE SIDE"
to help you use less. Or, ask for oil and vinegar dressing, which generally contains less sodium.

ORDER YOUR MEAL WITH OUT GRAVY
or cream sause. They're usually salty.

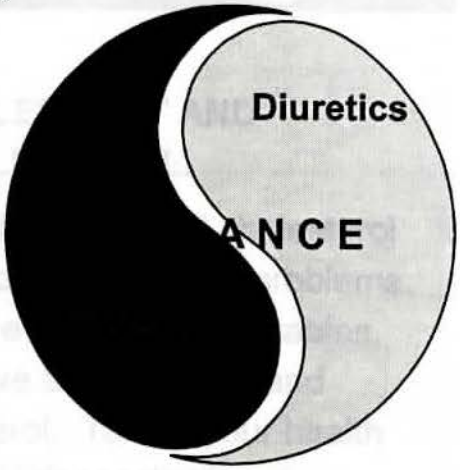
CHOOSE JUICE, FRUIT OR VEGETABLES FOR AN APPETIZER
instead of a baked, breaded or fried item.

SELECT ENTREES THAT ARE ROASTED, BROILED OR GRILLED
instead of fried.

STAY AWAY FROM BREAD AND ROLLS WITH SALTY, BUTTERY CRUSTS
they may be high in sodium. If you eat them, skip the butter.

KEEP YOUR POTASSIUM LEVELS UP

Your potassium levels may drop if you are taking diuretics. (Diuretics can flush potassium out of your body.)



TO PREVENT YOUR BODY FROM LOSING POTASSIUM, YOUR HEALTH-CARE PROVIDER MAY:

PRESCRIBE A SPECIAL DIURETIC.
Some diuretics will not flush potassium out of your body.

PRESCRIBE A POTASSIUM SUPPLEMENT

SUGGEST THAT YOU EAT CERTAIN FOODS TO REPLACE LOST POTASSIUM.

Foods high in potassium include:

- ✓ potatoes and sweet potatoes
- ✓ spinach, swiss chard, broccoli, winter squashes and parsnips
- ✓ dates, bananas, cantaloupes, mangoes, plantains, dried apricots, raisins, prunes, orange juice and grapefruit juice.
- ✓ dry beans, peas and lentils
- ✓ milk and yogurt.

YOU MAY NEED TO MAKE OTHER CHANGES, TOO.

Take a look at your lifestyle with your health-care provider. A few changes can lessen the symptoms of heart failure. They can also improve your overall health and quality of life.

EAT LESS FAT AND CHOLESTEROL.

A diet high in fat and cholesterol can lead to more heart problems. Eat more fruits and vegetables, they have almost no fat and cholesterol. Talk to your health care provider or dietitian for specific guidelines.

IF YOU SMOKE, QUIT!

Smoking:

- × narrows blood vessels, making it harder to breathe
- × increases your blood pressure and heart rate
- × increases your risk of developing other heart and health problems.

Don't wait--quit **now!** Your health-care provider can help you.

WATCH YOUR FLUID INTAKE.

Your health-care provider may set a limit on the amount of liquid you can have. Drinking too many liquids may increase swelling in your feet and legs and force your heart to work harder. To keep your mouth from getting dry, suck on hard candies You may want to try a humidifier.

I should limit fluid to _____cups a day.

AVOID ALCOHOL.

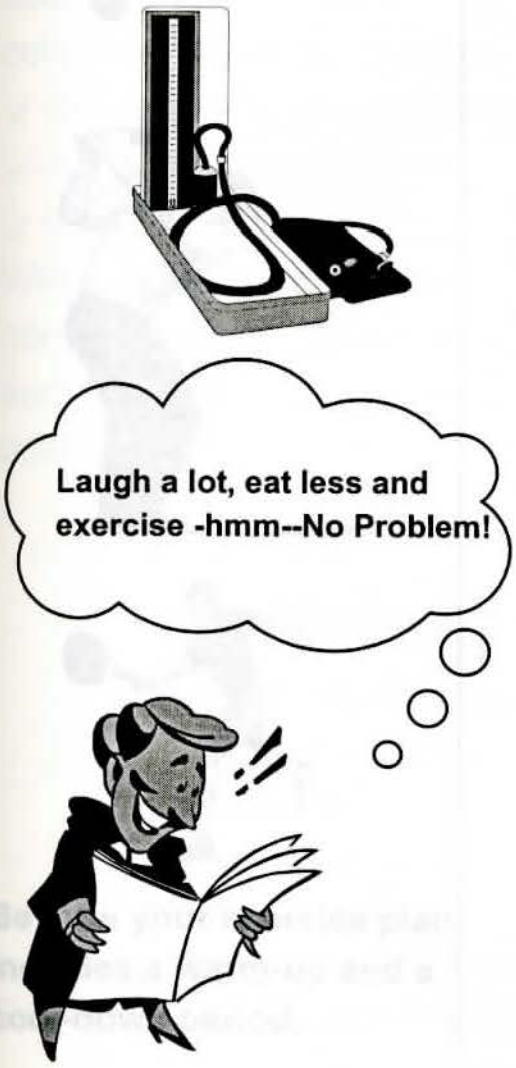
Because alcohol can slow your heart rate and worsen heart failure, your health-care provider may tell you not to drink. Alcohol may also interact with the medicines you are taking.

REDUCE YOUR CAFFEINE INTAKE

Your health-care provider may tell you to limit caffeine. Caffeine may lead to anxiety and could cause an irregular heartbeat.
I should limit caffeint to____ drink(s) a day.

DON'T BE HARD ON YOUR HEART.

Your heart is under enough strain already. Help make your heart's work easier by maintaining a healthy weight, keeping your blood pressure under control and reducing stress.



GIVE YOUR HEART, BACK AND LEGS A BREAK BY MAINTAINING A HEALTHY WEIGHT.

Being overweight also increases your chances of having a high blood pressure, diabetes, a heart attack and other problems. To help you lose weight, your health-care provider may suggest a combination of dietary changes and exercise.

TRY TO MAINTAIN A NORMAL BLOOD PRESSURE OF 140/90 OR LOWER.

High blood pressure can lead to increased risk of stroke, heart attack and other health problems. High blood pressure can be caused by a lack of activity, being overweight, eating too much salt and feeling stress.

PRACTICE STRESS-REDUCING TECHNIQUES TO CALM YOUR MIND AND IMPROVE YOUR OVERALL HEALTH.

Talk to your health-care provider about meditation, visualization, massage, breathing techniques, biofeedback, counseling, support groups, stress management courses, etc. Volunteer activities, hobbies, taking classes and exercising may also help reduce stress.

SHOULD I EXERCISE?

YES!

Be sure your exercise plan includes a warm-up and a cool-down period.

STUDIES HAVE SHOWN THAT EXERCISE HAS MANY BENEFITS FOR PEOPLE WITH HEART FAILURE.

It can help you:

- ✓ improve the flow of blood through your body.
- ✓ strengthen your heart and body
- ✓ tone your muscles
- ✓ increase your energy level
- ✓ manage stress
- ✓ raise your spirits.

Exercising does not mean you have to buy expensive equipment or join a health club. It can be as easy as walking regularly.

SEE YOUR HEALTH-CARE PROVIDER BEFORE STARTING AN EXERCISE PROGRAM.

Your health-care provider can help you develop an exercise plan based on your level of fitness. (He or she may give you an exercise test first or refer you to a cardiac rehabilitation program.) Your exercise program may include a variety of aerobic activities, such as:

- ✓ walking
- ✓ swimming
- ✓ cycling
- ✓ low-impact aerobics or water aerobics.

Avoid weight lifting because it can raise your blood pressure and strain your heart.

MORE TIPS ABOUT EXERCISE AND ACTIVITY

Watch the Weather

try not to exercise or participate in other outdoor activities when it is too cold, hot or humid. It can:

- ✓ interfere with your circulation
- ✓ make breathing difficult
- ✓ cause chest pain.

When the weather is poor consider indoor activities such as walking in a shopping mall.

ASK QUESTIONS

about your exercise program.

For example, you may want to ask:

- ✓ How often should I exercise?
- ✓ What kind of exercise should I do?
- ✓ Are there any activities I shouldn't do?
- ✓ How long should I exercise?
- ✓ Do I need special equipment or clothing?

INVOLVE FRIENDS OR FAMILY IN YOUR ACTIVITIES

-you'll be more likely to stick with them.

DON'T OVERDO IT.

While exercising and staying active are important, keep in mind that you won't be able to do as much as you once did. Set realistic goals. Take periodic rest breaks.

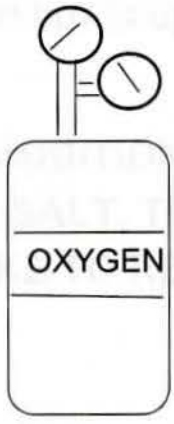
STOP EXERCISING IMMEDIATELY AND REST,

no matter what you are doing, if you:

- ✓ feel more tired than usual
- ✓ have chest pain
- ✓ are very short of breath.

Call your health-care provider if these symptoms don't go away.

OXYGEN THERAPY MAY BE PRESCRIBED if you are having trouble breathing.



THE FLOW RATE WILL BE PRESCRIBED FOR YOU.

Your flow rate is_____
(Never change the flow rate without your health-care provider's approval

LEARN ABOUT THE EQUIPMENT

Have the medical equipment supplier show you how to:

- ✓ set up the equipment
- ✓ refill the unit, if necessary
- ✓ check the unit for problems
- ✓ clean the unit
- ✓ check the flow rate.

FOLLOW THESE GENERAL SAFETY TIPS FOR OXYGEN EQUIPMENT.

- ✓ Don't smoke near the equipment.
- ✓ Keep the tank at least 10 feet away from an open flame, gas stove, wood burning stove, etc.
- ✓ Keep the equipment at least 10 feet away from electrical appliances that may spark.
- ✓ Don't put the oxygen tubing under blankets, clothing, furniture or carpeting.

IF YOU WAKE UP SHORT OF BREATH, take the following steps:

- ✓ Use your oxygen equipment, if available.
- ✓ Prop yourself up with pillows or a foam wedge. Dangle your feet and legs off the side of the bed.
- ✓ Walk around the room or go to the bathroom.

If shortness of breath is a common problem during the night, you should try elevating your legs for an hour before lying down. Your health-care provider can offer other suggestions.

HOW TO PREVENT SWELLING

Swelling of the legs, ankles and feet, known as edema, is common in people with heart failure. It is caused when excess fluid builds up in one part of the body.

IN ADDITION TO TAKING DIURETICS AND CUTTING DOWN ON SALT, THERE ARE A FEW OTHER STEPS YOU CAN TAKE TO REDUCE SWELLING.

RAISE YOUR LEGS.

Sitting or lying down with your legs raised will help drain the fluid away from your legs. However, this is only a temporary measure because the fluid is just shifting from one area to another.

WEAR SPECIAL ELASTIC STOCKINGS.

These stockings can keep fluid from collecting in your legs. In general, they should reach above your knees because shorter ones may not eliminate swelling. They should be fitted for you and adjusted as the swelling decreases. Your health-care provider can recommend the proper type for you.

WALK REGULARLY.

Walking will help tone muscles and increase circulation. If you are bedridden, flex your leg muscles, wiggle your toes and move your feet in circles to improve circulation.

PREVENTING INFECTIONS

Unfortunately, heart failure may make you more likely to get pneumonia and other illnesses. But, you can do some things to reduce risk.

STAY HEALTHY BY:

- ✓ getting flu and pneumonia shots (check with your health-care provider).
- ✓ staying away from people who are ill or who have respiratory infections
- ✓ avoiding large crowds.

BE SURE TO GET PLENTY OF REST

to improve your chances of staying healthy. You should:

- ✓ Plan at least one rest period every day.
- ✓ Consider a short nap after lunch (long naps may make it difficult to sleep at night).
- ✓ Avoid working long days.
- ✓ Rest between periods of heavy activity. Alternate light and heavy activities.

When you rest, elevate your legs to help keep the swelling down.

YOUR EMOTIONAL HEALTH IS IMPORTANT

Learning that you have heart failure can stir a variety of emotions. You may feel anxious, stressed, angry or depressed -- that's normal. Here are some things you can do to feel better.

LEARN TO RELAX.

Stress and anxiety can raise your blood pressure and heart rate. Teach yourself to relax by:

- ✓ meditating
- ✓ imagining peaceful scenes
- ✓ listening to music

TALK TO FRIENDS AND FAMILY.

Talking about your fears and concerns can help.

STAY ACTIVE.

Too much idle time may make you feel depressed. To stay active:

- ✓ Go for a walk with a family member
- ✓ Make plans to go out with a friend
- ✓ Let your family know if you want to do more around the house
- ✓ Volunteer at your local library, hospital or school.

ASK ABOUT SEXUAL CONCERNS

Talk to your health-care provider about when you can resume sexual activity. Talk openly to your partner, too. Resuming sexual activity should help you feel better, not create stress.

SEE A PROFESSIONAL COUNSELOR

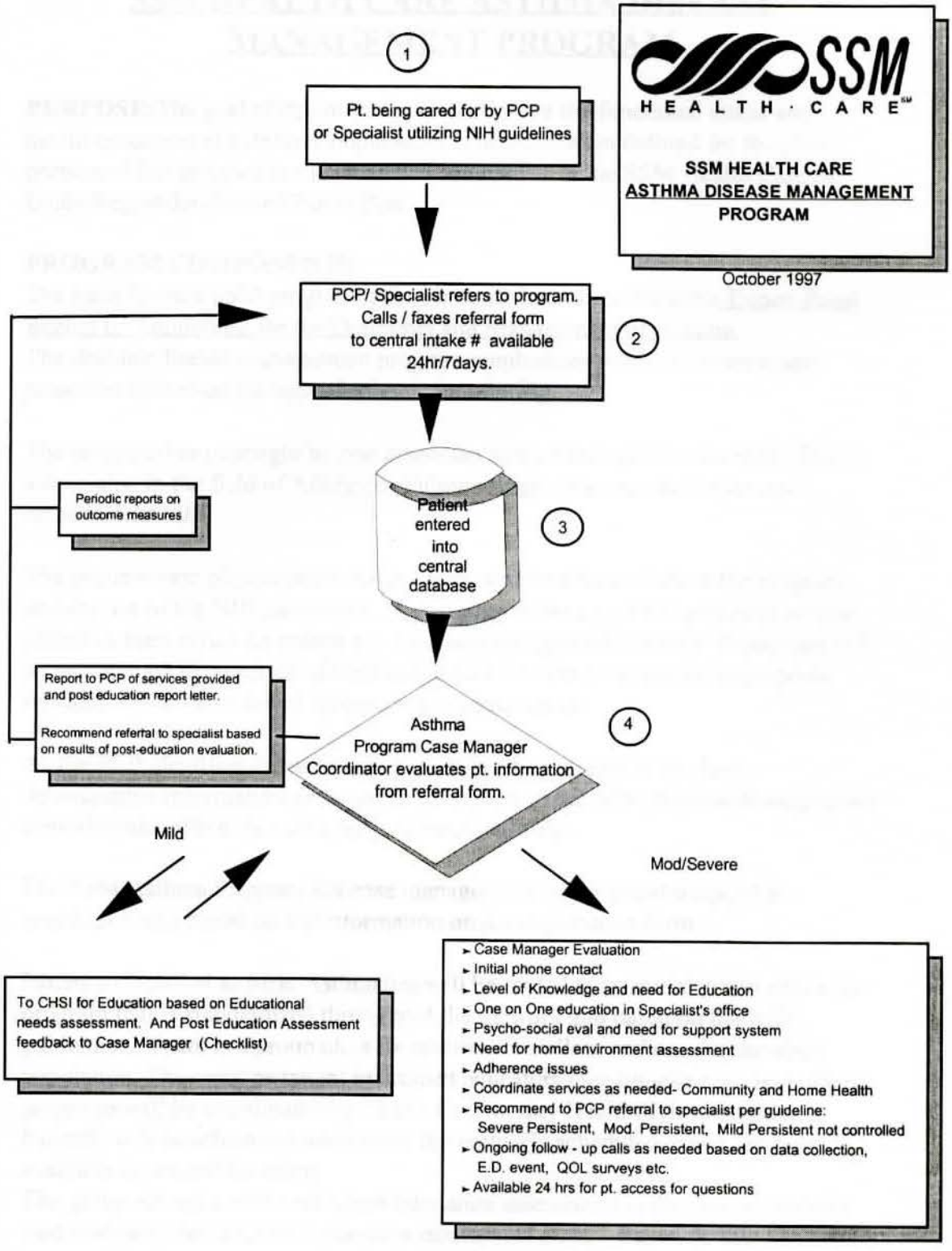
Counselors are trained to help you deal with a variety of problems and emotions. Your health-care provider can give you a referral.

LEARN AS MUCH AS YOU CAN ABOUT HEART FAILURE

Understanding what is happening to your body may lessen anxiety and fear.

APPENDIX III

Samples of forms used by the Asthma Disease Management Program. The forms used in the patient care process were also placed in the final manual for display.


SSM HEALTH · CARE
SSM HEALTH CARE
ASTHMA DISEASE MANAGEMENT
PROGRAM
October 1997
1
Pt. being cared for by PCP
or Specialist utilizing NIH guidelines
PCP/ Specialist refers to program.
Calls / faxes referral form
to central intake # available
24hr/7days.
2
Periodic reports on
outcome measures
Patient
entered
into
central
database
3
Report to PCP of services provided
and post education report letter.
Recommend referral to specialist based
on results of post-education evaluation.
Asthma
Program Case Manager
Coordinator evaluates pt. information
from referral form.
4
Mild
Mod/Severe
To CHSI for Education based on Educational
needs assessment. And Post Education Assessment
feedback to Case Manager (Checklist)
► Case Manager Evaluation
► Initial phone contact
► Level of Knowledge and need for Education
► One on One education in Specialist's office
► Psycho-social eval and need for support system
► Need for home environment assessment
► Adherence issues
► Coordinate services as needed- Community and Home Health
► Recommend to PCP referral to specialist per guideline:
Severe Persistent, Mod. Persistent, Mild Persistent not controlled
► Ongoing follow - up calls as needed based on data collection,
E.D. event, QOL surveys etc.
► Available 24 hrs for pt. access for questions

SSMart CARE
SSM HEALTH CARE ASTHMA DISEASE MANAGEMENT PROGRAM

PURPOSE: The goal of this program is to improve the functional status and health outcomes of a defined population. The population defined for the pilot portion of this program is the identified asthmatic's in the SSM Health Care St. Louis Region Exclusive Choice Plan.

PROGRAM COMPONENTS:
The basis for this SSM program is the National Institute of Health's Expert Panel Report II: Guidelines for the Diagnosis and Management of Asthma.
The Asthma disease management program emphasizes patient education and proactive follow-up through telephonic monitoring.

The program has oversight by one physician in the Medical Director role. This is a specialist in the field of Allergy or Pulmonology. *(See attached roles and responsibilities).*

The primary care physicians in our network will be educated about the program and the use of the NIH guidelines. A one page summary of the guideline will be placed in their office for reference. *(See attached guideline sheet)* Physicians will be encouraged to enroll all of their asthmatics into the program for appropriate services and to be included in outcome measurement.

As the PCP identifies the asthmatic patient he/she will call or fax basic demographic information per a registration form to the SSM Disease Management central intake office *(See attached registration form).*

The SSM Asthma Program RN case manager will do an initial triage of the enrollees needs based on the information on the registration form.

Patient's classified as Mild Asthmatics will be routed to an initial group education program that is standardized throughout the network and based on the NIH guidelines. There is a group class for pediatric enrollees and one for the adult population. They will be taught by trained educators *(See attached outline).* These programs will be coordinated by SSM's Community HealthStyles Institute. Patient's will be scheduled into one of the regularly scheduled group sessions available in several locations
The group educator will send a post education assessment to the central Asthma case manager *(See attached education assessment form).* Based on this assessment, the case manager will send a letter of successful education to the PCP

or recommend to the PCP that the pt. receive one on one education in a specialist's office. On approval of the PCP, the case manager will schedule this more intense level of education in the office of a specialist that can provide this in his/her office.

At anytime, the PCP can request that the case manager coordinate a referral to a specialist for full consultation or other level of diagnostic consultation.

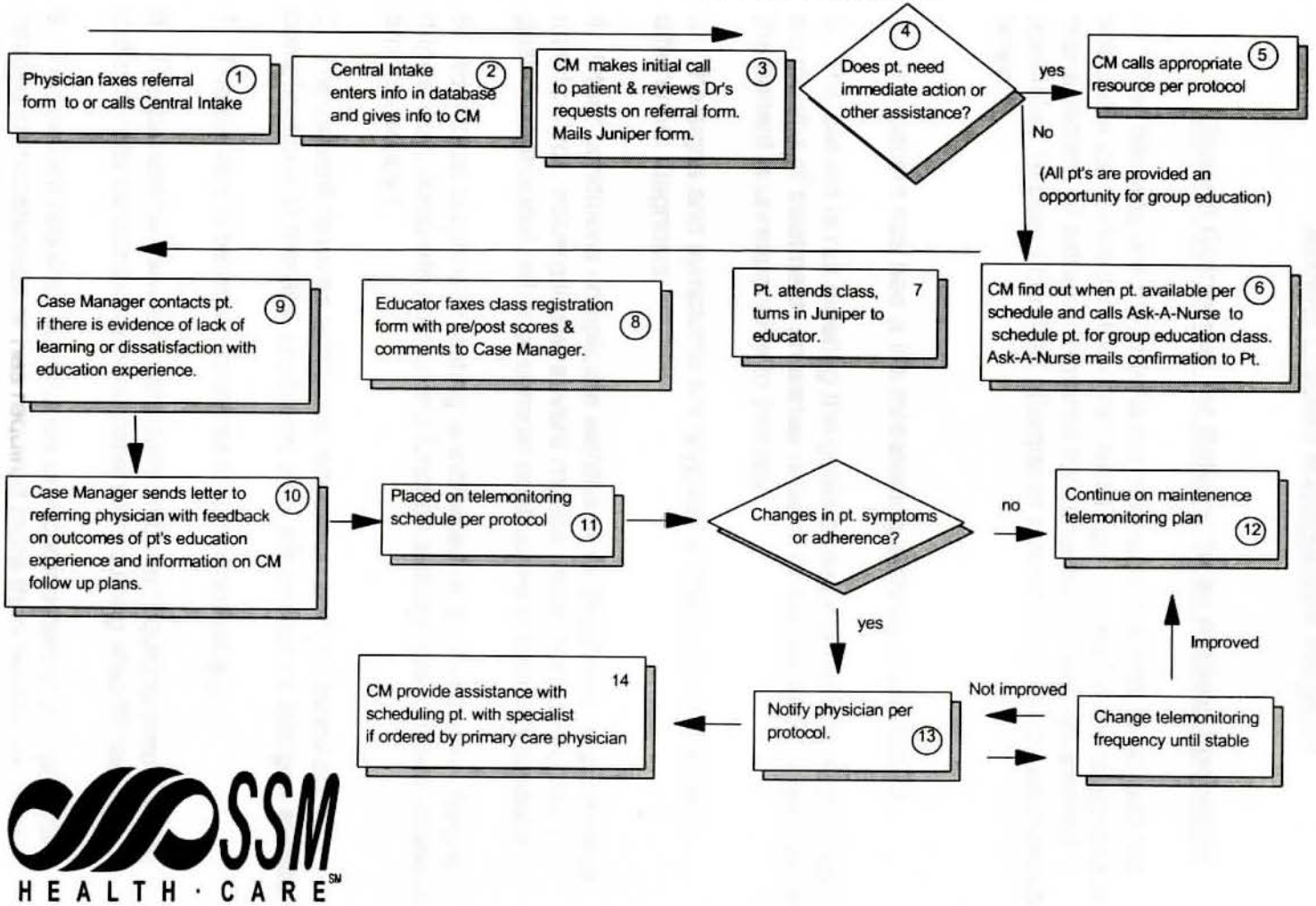
If the initial registration form identifies the patient as a Moderate or Severe Asthmatic, the case manager will complete an extensive assessment of needs by phone and by home visit as needed.
The assessment tool also serves as a resource for outcome data gathering. *(See attached assessment survey).*
An important part of the program is the telephonic follow-up on a regular basis by the case manager. The success of this process is supported by the literature. The frequency and content of these calls will be guided by the case manager's assessment and the physician treatment plan.

OUTCOMES MEASUREMENT:
The specific monitors that the program will track to show success are: Hospital Admits, Hospital readmits, ED visits, Quality of life as measured on the Juniper Asthma Quality of Life Questionaire.

The program includes quarterly reports on these measures to the PCP's and specialist's that have patient's in the program.

These reports are in addition to the communication to the physicians from the case manager as outlined in above process.

SSMart Care ASTHMA DISEASE MANAGEMENT PROGRAM



"SSMart Care"
Asthma Disease Management Program

General Guidelines for Referral to an Asthma Specialist

The following are the criteria for referral of patients to an asthma specialist as outlined in the 1997 NAEP guidelines for the diagnosis and management of asthma. Referral for consultation with an asthma specialist (a board certified allergist or pulmonologist) is recommended when:

1. The patient has had a life-threatening asthma exacerbation.

2. The patient is not meeting the goals of asthma therapy after three to six months of treatment; an earlier referral or consultation is appropriate if the patient is unresponsive to therapy.

3. The signs and symptoms are atypical or there are problems in differential diagnosis.

4. Other conditions complicate asthma or its diagnosis (e.g. sinusitis, nasal polyps, aspergillosis, severe rhinitis, vocal cord dysfunction, gastroesophageal reflux or chronic obstructive pulmonary disease.)

5. Additional diagnostic testing is indicated (e.g. allergy skin testing, rhinoscopy, complete pulmonary function testing, provocative challenge, bronchoscopy.)

6. The patient requires additional education and guidance on complications of therapy, problems with adherance or allergen avoidance.

7. The patient is being considered for Immunotherapy.

8. The patient has severe, persistent asthma requiring step IV care (referral may be considered for patients requiring step III care).

9. The patient requires continuous oral corticosteroid or high dose inhaled corticosteroids or has required more than two bursts of oral corticosteroids in one year.

10. The patient is under age three and requires step III or IV care. When the patient is under age three and requires step II care or inhalation of daily long-term therapy, referral should be considered.

11. The patient requires confirmation of a history that suggests that an occupational or environmental inhalant or ingested substance is provoking or contributing to asthma.

12. The patients have significant psychiatric, psychosocial or family problems that interfere with asthma therapy; referral to an appropriate mental health professional for counseling or treatment is recommended.

SSMart Care
SSM Health Care
Asthma Disease Management Program

To: Dr. _____

Your Patient, _____
Has completed the initial assessment and group education as part of the SSMHC SSMart Care Asthma Disease Management Program.

Your patient will be receiving follow-up phone calls to reinforce your plan of care and to evaluate progress. He/She will be on the following phone follow-up schedule:

- Weekly or as needed until stable for severe asthmatics
- Semi-monthly for two months, then every other month for moderate asthmatics
- Monthly for two months, then every three to six months for mild asthmatics

Any variance, i.e., medication changes, hospital admissions, etc., would change the call schedule to:

- Weekly for four weeks
- Then back to protocol for severity

The SSMart Care Asthma Disease Management Program is based on the National Asthma Education and Prevention Program (NAEPP) Expert Panel Report II.

Other recommendations for your patient according to these guidelines are:

_____

_____

Signature _____ Date: _____

Asthma Disease Management Recommendations Checksheet

Pt. Name:
Doctor
Year:

Please mark the month the patient evaluation/education took place

Level of Asthma Severity	Symptoms/ Signs (see classification of severity)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Severe Persistent	*continual symptoms *FEV1 or PEF <60%												
Moderate Persistent	*daily symptoms *FEV1 or PEF>60%												
Mild Persistent	*symptoms>2X a week but < once a day *FEV1 or PEF > 80%												
Mild Intermittent	*symptoms< 2X a week *FEV1 or PEF > 80%												
Program Measure	Comment/changes :												
Bronchodilator use: Med_____ freq_____													
Anti-inflammatory use: Med_____ freq_____													
Peak flow: best flow_____ observed_____													
Peak flow assessment sheet:: Freq of use____/wk													
Asthma Management Plan Education:													
MDI													
Environment													
Exercise/activity													
Psycho-social adjustment													
Attendance: (school/work)													

Patient Objectives Relative to Asthma Management	Medications

Patient Name: _____
Date: _____

SSM Health Care
Asthma Disease Management Program
Telemonitoring follow-up questions

1. How do you feel you are doing?

_____

2. What are your current asthma medicines?

_____

_____

3. When was the last time you had a flare-up?

_____

_____

4. What did you do to treat your flare-up?

_____

_____

5. Were you or your child seen in the ED for asthma?

_____

6. Were you or your child hospitalized for asthma? If yes, where, when and how long?

_____

7. How often have you had any of these symptoms? (cough, chest tightness, wheezing, sputum, palpitations, or SOB)
_____ daily _____ weekly _____ monthly

8. Number of times quick relief medication is used: 0-1 times/week _____
2 times/week or more, less than daily _____ daily or more _____

9. Do you use your long-term controller medicine daily?_____ yes _____ no

10. Are your medications causing you any problems? _____ yes _____ no

11. Do you use a peak flow meter? _____ yes _____ no

12. How often do you awaken at night with an asthma attack?
_____ per week _____ currently _____ when having a flare-up

13. Has your asthma or your child's asthma interfered with a physical or social activity? _____ yes _____ no

14. How many times has your child been absent from school since the last doctor appointment or within the last four weeks?

_____

15. How many times have you been absent from work within the last four weeks due to your/your child's asthma?

_____

16. Do you have a written plan that you and your doctor have discussed to know what to do when you have an asthma attack?

_____

_____

17. Describe for me how you know when to call your MD or go to the hospital.

_____

_____

18. Have you noticed anything in your home, work or school that makes your asthma worse (ex.: pets, or smoking)?

_____

19. Have you attended an asthma education program? If yes, do you feel the instruction was adequate or do you need further instruction (information)?

_____

20. What other questions do you have for me?

_____

_____

21. What is your overall feeling about your asthma control?

excellent _____ good _____ average _____ poor _____

SSM HEALTHCARE
PATIENT SELF-ASSESSMENT FOR ASTHMA CARE FOLLOW-UP

NAME_____
DATE_____

1. How many **days** in the past week have you had chest tightness, cough, shortness of breath, or wheezing (whistling in your chest)?
Number of days are:_____

2. How many **nights** in the past week have you had chest tightness, cough, shortness of breath, or wheezing (whistling in your chest)?
Number of nights are:_____

3. Do you find using your peak flow meter helpful? Yes ____ No___

4. If yes, did you bring your peak flow chart?

5. How many days in the past week has asthma restricted your physical activity?
Number of days:_____

6. Have you had any asthma attacks since your last visit? Yes ___ No ___

7. Have you had any unscheduled visits to a doctor, including to the emergency department, since your last visit? Yes____ No_____

8. How many puffs of your short-acting inhaled (quick relief medicine) do you use per day? Average number of puffs per day_____

9. How many of your short-acting inhalers did you go through in the past month?
Number in past month_____

10. How well controlled is your asthma in your opinion? _____
_____

11. How satisfied are you with your asthma care?_____
_____

12. What questions or concerns would you like to discuss with the doctor?_____

SSMart Care
SSM Asthma Education Program

Table of Contents

SECTION 1:
INTRODUCTION TO ASTHMA

Greet Participants as they arrive and introduce yourself. Hand out name tags and folders containing all handouts.

Welcome to this three-hour session in which we hope to teach you more about your or your child's asthma and how to control it. Whether asthma is a new problem or you've had it for years, this session can help you improve asthma management by taking a new look at your own behaviors (or your child's) and by sharing ideas with others who have asthma.

Introduce behavioral approach.

Introduction of Program

For most of you, your asthma may not be as well controlled as you would like. If managing asthma were easy, none of use would be here. The goal of this program is to help you learn the skills you need to decrease your asthma symptoms and live more comfortably with your asthma. We will:

- Focus on difficulties people have with asthma
- Help identify things that will minimize problems (triggers)
- Not focus on ideas like willpower or self-control.
- Focus on behaviors --actions you can take to help prevent and control asthma symptoms.

Explain what benefits will come from asthma self-management

The NIH created an expert panel to develop guidelines for the diagnosis and management of asthma to be used by all health care providers.

The self-management skills you learn here will help you meet the goals established by the National Institutes of Health; expert panel.

- Prevent chronic and troublesome symptoms (such as coughing, breathlessness in the night or in the early morning or after exertion).
- Maintain (near) "normal" lung exertion.
- Maintain normal activity levels (including exercise and other physical activity).
- Prevent recurrent flare-ups of asthma and to minimize the need for emergency department visits or hospitalizations.
- Provide the best possible medication with minimal or no adverse effects.
- Meet patients' and families' expectation of and satisfaction with asthma care.

These skills will also enable you and your physician to work together in partnership to manage your asthma effectively on an ongoing basis.

Explain that improvement will take time.

Although we expect your asthma self-management skill to improve a great deal, this doesn't mean that your asthma will be in perfect control by the end of this course.

- We'll only be together for this one session. You will need to practice these new behaviors at home to master thoroughly.
- Do not be discouraged if change is not immediate. Some very important self-management behaviors take a fairly long time to pay off in terms of changes in the underlying condition of your lungs and in symptom control.

Define for the group how you want to structure group participation. Either have participants raise their hands, speak in turn, or allow a less structured, free-flowing discussion.

Asthma Physiology

I want to begin by going over some basic information about what goes on inside your body when you have asthma. Some of you may know this information. Whether you know a little or a lot, I hope you will feel free to contribute to our discussion.

Let's start with the structure of the lungs and how they work. Then we can learn what happens to your lungs during an asthma attack, which will help you understand how prevention and control work through the action of your asthma medications.

Let's look at Handout 2 - About Your Lungs and Asthma. Look at the drawing of normal lungs at the top, it looks like an upside down tree. As you breath in -

- Air moves down your windpipe - *trachea.*
- It goes into the airways that get narrower and narrower - *bronchial tubes* and *bronchioles.*
- Tiny air sacs at the end of each tube fill up with air.

Asthma is a chronic or persistent lung disease that causes recurring trouble in breathing. It has the following characteristics:

- **Airway inflammation** is present in all people with asthma. Airway inflammation leads to the development of the next two characteristics of asthma.
- **Extra-sensitive airways** that may react to a variety of stimuli such as allergens, smoke, other irritants, and exercise.
- Airway narrowing that is reversible (but not completely in some patients) with treatment or without it. Airway narrowing causes the **symptoms of asthma:** coughing, wheezing, tightness in the chest, and shortness of breath.

Asthma is considered reversible because:

- Symptoms can be relieved with medications or by avoiding triggers.
- When a person with asthma is not having symptoms, *the lungs return to normal or near normal.* They do not show signs of permanent damage, although an underlying inflammation may persist that is not always felt as symptoms.

Asthma is a chronic condition because:

- Whether or not symptoms are evident, **airway inflammation and sensitivity are still there.** Thus, asthma does not go away in the short term; it persists over time.

  Asthma severity can change over a lifetime. A person's asthma can change from severe to mild and vice versa. For example, as some people with asthma get older, their symptoms can become less severe or may disappear. On the other hand, symptoms may begin in some adults who never had symptoms before.

Asthma is an exaggeration of a normal protective response because:

- Most people will experience some coughing or tightness in the chest when exposed to noxious stimuli such as smoke or fumes.
- This response is a momentary narrowing of the airways that can save the lungs from damage.
- In the person with asthma, this response is prolonged and exaggerated and can occur in reaction to many types of triggers, including exercise.

Heredity plays a role in the tendency toward asthma.

Where does asthma come from? There is no clear answer to this question but -

- Sensitive airways tend to run in families, which suggests that, in part, asthma may be hereditary.
- Not everyone in the same family will have asthma.
- Some people with asthma don't have any relatives with the condition.

What can you do about it? Asthma can't be cured, but you *can* control or prevent its symptoms. This class is designed to help you do that.

Briefly review the movement of the air through the respiratory system, naming each structure as you go. Explain bronchospasm, mucus, edema, and inflammation.

People with asthma have extremely sensitive, "twitchy," airways. If you are exposed to something that triggers your asthma, four things can happen to your bronchial tubes to make it more difficult for air to flow through:

1. The muscles wrapped around the bronchial tubes go into spasm, called *bronchospasm* (shown in the handout).
   When something irritates the lungs, these small muscles tighten up and constrict or narrow the bronchial tubes.
   Air can no longer travel freely into and out of the lungs.
2. The bronchial tubes fill with *mucus*.
   Lining the bronchial tubes are mucus membranes, like those in the nose and throat.
   These membranes make mucus to keep airways moist and trap bits of dust and other foreign particles that are in the air you breathe.
   When the lungs are irritated, these membranes make too much mucus.
   That mucus clogs the airways and the flow of air is obstructed.
3. The lining of bronchial tubes swells - *edema*.
   When irritated, the lining of the bronchial tubes often swells up with too much fluid.
   This causes the airways to narrow and blocks the flow of air.
   This swollen condition of the airways is called *edema*.

4. The *inflammation* process begins.
   - White blood cells enter the tissue in and around the bronchial tube walls.
   - These cells release chemicals that cause tissue irritation in the area and loss of the lining membrane of the bronchial tree.
   - These areas that have lost their lining membrane lead to the airways being extra-sensitive, so bronchospasm and other asthma symptoms will occur more easily and frequently.
   - The process may take 6 to 8 hours to fully develop.
   - It can last for weeks or months after your asthma symptoms have stopped.

Emphasize that all four lung reactions contribute in varying degrees to asthma symptoms.

Breathing becomes increasingly difficult with these four reactions - bronchospasm, mucus, edema, and inflammation - going on in your lungs. At any given time, one of these reactions may be more responsible for your asthma symptoms than the others. But usually all four happen together.

Explain that typical asthma symptoms are coughing, wheezing, chest tightness, and shortness of breath.

Symptoms of Asthma

Your body gives you signals that something is not going on inside as it should. These signals are called symptoms.

Common symptoms of asthma are coughing, wheezing, chest tightness, and shortness of breath.

Coughing:
- Results from direct irritation of the sensory nerve endings by mediators or nonspecific irritants such as cold air, smoke, noxious odors, perfumes, etc.
- Is the body's effort to clear the lungs of mucus or direct environmental irritants.
- May itself trigger bronchospasm, because of increased bronchial irritability - setting up a vicious cycle.

Wheezing:
- Occurs as air attempts to squeeze through narrowed bronchial tubes.
- Comes from the chest, not the throat.

Chest tightness and shortness of breath:

During bronchospasm there is more difficulty pushing air out of the lungs (exhaling) than pushing air in.

Air becomes trapped in air sacs.

Lungs become overly inflated (like a balloon getting tighter and tighter as it's filled with air).

As the chest wall stretches, you begin to take short, shallow breaths.

Since trapped air can't escape, fresh air can't come in.

Introduce the concept of delayed bronchospasm. Explain the difference between mast cells producing histamines (immediate reaction) and other mediators (delayed reaction).

Have any of you had time when you had symptoms, took your medicine and got relief, then a few hours later your symptoms come back?

This is called *late-onset* reaction. Late-onset (delayed) reactions occur because of inflammation of the bronchial tubes.

Immediate reactions - An initial trigger causes certain cells in your lungs *(mast cells)* to produce a special substance or *mediator* called *histamine.*

Late-onset reactions - A trigger causes the mast cells to produce and release additional mediators other than histamine. These mediators cause inflammation in the tissue surrounding the bronchial tube.

An example of inflammation occurs when a person falls and scrapes a knee. The next day the area of the injury may become red and swollen. White blood cells have migrated to the area of the injury.

This same process, inflammation, occurs in the lungs when mediators are released. White cells migrate into the area around the bronchial tubes, causing inflammation. It may last weeks or months after you've experienced an acute attack.

Inflammation in the lungs will make your lungs extra-sensitive to nonspecific irritants or triggers, so that you may develop symptoms again, *even after* you have taken your symptomatic medicine and your symptoms have stopped.

SECTION III.
DETERMINING ASTHMA SEVERITY

Some people have asthma that is more severe than others. How severe your asthma is, will differ from someone else. Your asthma will even differ from one time to another. Asthma "severity" is based on how often you have symptoms, what type and how much medicine is necessary to control your asthma symptoms, and what your lung function measurements are. A treatment plan can be developed based on the severity of your asthma and adjusted as the severity changes over time.

National Institute of Health Severity Classification

Mild, intermittent: refers to asthma which occurs infrequently and with little decrease in lung function. Individuals with mild, intermittent asthma have symptoms twice per week or less (or more frequent if related to exercise) and peak flow measurements are greater than 80% of normal.

Mild, persistent: refers to asthma in which symptoms occur intermittently, twice per week or more but less than every day. Peak flow measurements are greater than 80% of normal.

Moderate, persistent: refers to asthma in which symptoms occur on a daily basis, peak flow measurements are between 50-80% of normal or night-time awakenings due to asthma occurs more than once per week.

Severe, persistent: refers to asthma in which there are fairly continuous symptoms, frequent flare-ups of symptoms, frequent night-time awakenings due to asthma or peak flow measurements are less than 50% of normal.

SECTION IV.
ASTHMA "TRIGGERS"

Asthma "triggers' are things which may cause your asthma to worsen. There are many potential triggers for asthma and it is important to identify your or your child's specific asthma triggers.

- Infections.
- Inhalant allergens:
  animal allergens
  house dust mites
  cockroach allergen
  indoor fungi (molds)
  outdoor allergens - pollens and molds.
- Irritants:
  tobacco smoke
  Indoor/outdoor pollution
- Medications:
  aspirin
  nonsteroidal anti-inflammatory drugs
  b-blockers.
- Occupational exposures.
- Other factors:
  exercise
  cold air exposure
  emotional stress (crying and laughing)
  gastrointestinal reflux ("heartburn")
  night-time (nocturnal asthma).

Infections

The most common infections leading to increased asthma symptoms are viral respiratory infections. 10-30% of asthma flare-ups occur are caused by viral respiratory infections, most frequently a "common cold". Bacterial infections of the respiratory tract can affect asthma but much less commonly than viral infections. Chronic bacterial sinus infections may also affect asthma control.

Inhalant allergens

Allergic responses to dust mites, cockroaches and cat dander may trigger asthma symptoms. Other allergens include grass, tree and wee pollens and molds. Allergen exposure may directly trigger a flare-up of asthma or frequent exposures may increase the amount of inflammation in your airway so that another trigger causes a flare-up more quickly.

Irritants

Irritants are substances which directly irritate the airways of all people, however, asthmatics are more sensitive to the effects of these irritants which may trigger asthma flare-ups. Studies have show that asthmatics may have more difficulty when outdoor air quality is poor, particularly with high levels of ozone and sulfur dioxide pollutants. Asthma is often triggered by exposure to tobacco smoke as well. Studies have show that **cigarette smoke exposure is the most important indoor irritant** and is a major cause of asthma symptoms in children and adults. Other irritants, such as perfumes, fumes from kerosene or wood-burning stoves or fireplaces and other strongly scented substances, amy trigger asthma as well.

Medications

Certain medications used for older medical conditions may interfere with asthma control. The two most common groups of medicines which may cause problems are beta-blockers and aspirin and the related nonsteroidal anti-inflammatory medicines such as ibuprofen (and many others). Beta-blockers, which are used to treat high blood pressure, various heart conditions and glaucoma (In an eyedrop formulation) may lead to worsening asthma in some patients. These medicines are generally avoided in asthmatics but may be used cautiously in some individuals. Aspirin and nonsteroidal anti-inflammatory medications may cause severe asthma flare-ups in some asthmatics; this occurs most often in asthmatics who also have nasal polyps and occur rarely in children.

Exercise

Exercise will trigger asthma in most asthmatics. For some individuals exercise is the only cause of asthma symptoms. Exercise-induced asthma (sometimes referred to as exercise-induced bronchospasm or EIB) is caused by the loss of heat and water from the airways which occurs because of rapid breathing during exercise. EIB mot often occurs after about eight minutes of vigorous exercise and usually reaches its peak five to ten minutes after stopping activity. EIB will usually resolve within 20-30 minutes even without treatment and is not thought to make the airways more sensitive or inflamed. Exercise in cold, dry air will generally cause more difficulty than in warm, humid conditions, thus running outdoors in the winter is far more likely than swimming during the summer to provoke exercise-induced asthma. There is very effective treatment for EIB; so end goal of asthma treatment is that asthma should not limit either participation or success in sports.

Nite-time (nocturnal asthma)

Asthma symptoms often worsen during sleep. This occurs most commonly at 3-4:00 a.m. and may lead to awakening from sleep due to asthma symtpoms. This is probably related to the cycle everyong experiences in which the lungs work slightly less well during th early morning hours. Nocturnal asthma is a sign that your asthma is not under control. One of the goals of asthma treatment is to prevent night-time awakenings.

SECTION V.
CONTROL / AVOIDANCE OF TRIGGERS

It is very important to avoid anything you know will trigger asthma symptoms or if you cannot avoid the trigger, than steps can be taken to lessen their effect. Exposure to dust mites, cockroach allergens and pet allergens may be reduced by a variety of methods. Additionally, total avoidance of cigarette smoke exposure is strongly recommended for all asthmatics.

House Dust and Dust Mites

Allergens found in house dust are among the most important causes of asthma. House dust contains a multitude of substances including fibers, food debris, scales of human and animal skin, bacteria, mold spores, inorganic dusts, dust mites and other insect parts. Dust mites and pet allergens in house dust are the most likely irritants of asthma patients. Dust mites are microscopic members of the spider family. They do not bite or string humans or animals, they are actually digestive enzymes. Dust mites thrive on the shed skin of humans and animals but can feed on other substances. They increase when the relative humidity is high. Mite concentrations are greatest in bedding, upholstered furniture and carpeting.

If house dust mite exposure is decreased there may be less asthma symptoms. Efforts to control exposure in the bedroom are particularly helpful because so many hours are spent there. Special attention should be paid to bedding and flooring since dust mites are found in large quantities in pillows, mattresses and carpets. There are several effective measures for reducing dust and dust mite level sin the home environment:

- Remove dust with a cloth dampened with water or one of the commercial products for dust removal. Reduce clutter to facilitate dusting.\
- hardwood or tile are the most desirable flooring for dust control. It is very difficult to decrease dust mite infestation of carpeting; short pile carpeting and frequent vacuuming are recommended if carpet cannot be removed.
- Washable curtains and window shades are recommended. Slat blinds (venetian) are more difficult to keep free of dust.
- Allergen-proof encasings for pillows and mattresses are effective in reducing dust mite exposure.
- Wash sheets and blankets in hot, not cold or warm water.
- Heating and air conditioning vents in the bedroom may be covered with cheese cloth or other filter material. Consider closing vents entirely and using electric radiator heat.
- The HEPA (high efficiency particulate air) filter may be effective for single room use, usually the bedroom; however, the door to the room must be closed most of the time for effectiveness. For whole house air cleaning a high-efficiency central filter maybe helpful.

Animals

Allergy to animals is often severe. Intermittent exposure may cause an explosive onset of symptoms while long-term exposure, as occurs with a pet in the home, may result in more gradual and persistent symptoms. The most important animals causing asthma symptoms are cats and dogs but sensitivity to rabbits, horses and pet rodents (mice, gerbils, guinea pigs) is not uncommon.

Surveys indicate that in the United States 28% of homes have at least one cat. It has been calculated there are approximately 50 million cats in American homes. Cat allergen is so prevalent that it is impossible for someone allergic to cats to completely avoid exposure. Some cat allergen has been found in studies of public places where cats are not allowed including shopping malls, hospital corridors and even allergist's offices, suggesting that cart allergen is spread on the clothing of people with pet cats. The primary sources of this allergen is now believed to be from the cat's skin originating from sebaceous glands (oil glands) at the base of the hair roots. Cat allergen is also derived from the cat's salivary glands. Virtually no efforts short of removing pets from he home will entirely satisfactory in eliminating pet-induced asthma problems. Washing cats once a month with tepid water results in a progressive reduction of cat allergen in the wash water; unfortunately, the practice of washing cats has not turned out to be very useful for most cat-allergic asthmatics. It is interesting that individual cats very greatly in the amount of allergen shed but there have been no studies suggesting a difference in shedding by breed. Cat allergen in the home is very persistent. Generally it takes about 2 week s after cat removal for cat allergen to be reduced to levels comparable to homes where there have been no cats removal for cat allergen to be reduced to levels comparable to homes where there have been no cats but this reduction may take a year or even longer. A spray of 3% tannic acid (allergy control solution and other commercial products) will denature cat allergen temporarily. Cat allergen accumulates in carpets and unfortunately steam cleaning is not effective in its removal. Allergy injections for cat allergy has been proven to reduce but not eliminate bronchial sensitivity and allergy test reactivity to cat in individuals with asthma.

There has been less scientific study of dog allergy than cat allergy. Dogs kept outside are not likely to cause severe allergy symptoms. Dog allergen is found in dog dander. The lick of a dog will cause an immediate allergic skin reaction in some dog sensitive patients. Studies indicate that dog allergy may be breed specific but materials for testing dogs by breed are not commercially available to allergists. Washing to remove dog dander may be helpful but the best allergy by injections is currently hampered by the absence of standardized treatment extracts similar to those available for cat allergy treatment.

SECTION VI.
ASTHMA MEDICATIONS

GOAL: Asthma medications are used for two basic reasons:

* To *prevent* symptoms - these are called ***long-term control medicines or controllers***
  - Medications taken regularly every day or every other day even when you don't have symptoms
  - Medications taken in anticipation of exposure to something that could cause

* To *prevent* symptoms - these are called ***long-term control medicines or controllers***
  - Medications taken regularly every day or every other day even when you don't have symptoms
  - Medications taken in anticipation of exposure to something that could cause

* To *relieve* symptoms once they've started - these are ***quick relief medications***
  - Medications taken after symptoms begin

Asthma medications may be inhaled, given by mouth, or injected depending on the purpose and type of medicine.

TYPES: Asthma medicines can be divided into two groups:

* Bronchodilators - relax tight muscles surrounding the bronchial
  tubes and "open the

* Anti-inflammatory - reduce swelling of the inner lining of the airway

Most people with asthma who have asthma which is more severe than "mild, intermittent" will need both an inflammatory medicine to prevent or control asthma symptoms and a bronchodilator to relieve symptoms.

BRONCHODILATORS

Bronchodilators relax and open the airway by working on the muscles of the airways either directly or through the nerves that control these muscles. There are different types of bronchodilators described as short-acting beta- agonists, long acting beta-agonists, theophyllines, and anti-cholinergics.

Short-acting beta agonists - quick relief of acute asthma symptoms such as wheezing,

Generic	Brand Name
Albuterol	Proventil, Ventolin, in combination with Atrovent - Combivent
Bitolterol	Tornalate
Metaproterenol	Alupent, Metaprel
Pirbuterol	Maxair
Terbutaline	Brethine, Brethair

Side effects: May cause tremor or increased heart rate, headache, nervousness much like the feeling of too much coffee or caffeine. Serious side effects are rare.

Key Points:

- Used for *quick relief* of asthma symptoms. These medicines work quickly but not for a long period of time.
- The need to use these medications more often than usual or more than prescribed should tell you that your asthma is not under control and to contact your physician. Use of more than one canister a month indicates further treatment may be needed with the long-term control medicines.

Long-acting beta agonists - used to prevent or control asthma symptoms over a longer period of time.

Generic	Brand Name
Albuterol	Proventil Repetabs, Volmax
Salmeterol	Serevent

Key Points:

- Serevent is NOT to be used for acute symptoms. It does NOT provide quick relief.
- May be beneficial when added to corticosteroid therapy (controllers), especially to control nighttime symptoms.
- These medications do not take the place of an anti-inflammatory medicine.

Theophyllines - generally taken on a daily basis to control asthma symptoms.

Generic	Brand Name
Theophylline	Slobid, Theodur, Unidur, Uniphyl

Side effects: Side effects from theophyllines are common and are related to the amount of these medications used. The most common are nausea, vomiting, headache and restlessness. If levels become too high irregular heart rhythms and convulsions may occur.

Key Points:

- Theophylline blood levels must be checked occasionally by having your blood drawn and tested.
- Theophylline blood levels may be effected by changes in smoking habits and some medications, such as antibiotics. Further blood levels will need to be checked so that dangerous blood levels will not go undetected.

Anticholinergics - open the airway for quick relief of symptoms by working on the nerves which contol the airway muscles.

Generic	Brand Name
Ipratroprium bromide	Atrovent, in combination with albuterol - Combivent

Side effects: Rare but may include dry mouth, cough, nervousness, palpitations and stomach upset. It is used in caution with patients who have glaucoma.

Key Points:

- It is considered a quick relief medicine but it is most often used as a regularly scheduled medicine for patients with chronic bronchitis or emphysema.

ANTI-INLFLAMMATORY MEDICINES

Anti-inflammatory medicines are used to decrease swelling in the airways. These medicines are used for long-term control or prevention of asthma symptoms. They decrease swelling,mucus production and irritability of the airways. They are recommended for all patients with mild, moderate, or severe persistent asthma. Recent studies suggest these medicines may prevent permanent damage to the airways in some asthmatics.

Corticosteroids - the most powerful and effective anti-inflammatory medicines for asthma. They suppress the production of inflammatory substances by the cells. They are available in inhaled, oral, and injectable forms.

Generic	Brand Name
Inhaled:	
Beclomethasone	Beclovent, Vanceril
Budesonide	Pulmicort
Dexamethasone	Decadron, Hexadrol
Flunisolide	AeroBid
Fluticasone	Flovent
Triamcinolone	Azmacort
Oral:	
Methylprednisolone	Medol
Prednisolone	Pediapred, Prelone
Prednisone	

Side effects:
Inhaled: A yeast infection (thrush) of the mouth and throat, and hoarseness. (High doses of inhaled steroids may cause side effects similar to oral steroids)
Oral: Short term - appetite stimulation, weight gain and mood changes.
Chronic use - bone changes, eye problems muscle aches, blood pressure changes, increased blood sugars, and growth inhibition in children.

Key Points:
Inhaled Corticosteroids:

- These are long-term control medicines trhat need to be taken every day. It will take days to weeks before they will reach maximum effect. They do NOT provide quick relief of asthma symptoms.
- To prevent yeast infections: a spacer or holding device should be used to administer and rinse mouth after using.

Oral corticosteroids:

- The lowest possible dose that is effective should be used to reduce the chance of certain side effects. Post-menopausal woman may need supplements of calcium and Vitamin D or estrogen to prevent bone changes.
- When taken appropriately, oral cortticosteroids shorten and lessen the severity of asthma flare-ups, prevent emergency room visits, hospitalizations, and even death from asthma.

These medicines do NOT provide quick relief of asthma symptoms. Some improvement will be noted a few hours after they are taken.

Cromoglycates - inhaled medications that are used for long-term control of asthma. They are frequently used for the prevention of exercise-induced asthma.

Generic	Brand Name
Cromolyn sodium	Intal
Nedocromil	Tilade

Side effects: Rare. There have been some complaints of an unpleasant taste from Tilade but only infrequently.

Key Points:

- **These medicines do NOT provide quick relief of asthma symptoms**. They may take days to weeks to be effective in decreasing symptoms.

Leukotriene Modifiers - long-term control medicines which either block the formation of leukotrienes or prevent them from adding to airway inflammation. Leukotrienes are substances found in the airways which cause tightening of the airway muscle and mucous production and inflammation or swelling.
These medications have been shown to reduce exercise and cold-induced asthma symptoms and to prevent aspirin-induced asthma attacks. They have only been released recently and it is still unclear who will benefit from using these medications.

Generic	Brand Name
Zafirlukast	Accolate
Zileuton	Zyflo

Side effects: Rare: Accolate: headache, dry mouth, drowsiness. Zyflo - stomach upset, increase in liver enzymes.

Key Points:

- **These medicines do NOT provide quick relief of asthma symptoms.**
- Available in tablet form and must be taken every day
- Periodic blood tests to monitor Zyflo may be recommended to monitor liver function or theophylline levels if patient is on theophylline.

SECTION VII.
A STEP-WISE APPROACH TO ASTHMA MEDICATION USE

The NIH recommends a "step-wise" approach to deciding what type of medications to use based on the severity of the asthma. Your doctor will work with you to decide how these general guidelines can be used to decide which medicines are appropriate and when they should be used.

Step One (mild, intermittent):

- Treated with a quick relief medication such as an inhaled beta-agonist on an as needed basis when symptoms occur or to prevent symptoms, ie. prior to exercise. If you find that you are using the quick relief medication more than twice per week (other than to prevent exercise induced asthma) indicates asthma may no longer be mild, intermittent and further treatment is needed.

Step Two (mild, persistent):

- Treated with a "long-term control medication" which is an anti-inflammatory medicine. These patients will still need a "quick relief" medication for the occasional flare-up but not as frequently.

Step Three (moderate, persistent):

- These patients generally require a higher doses of anti-inflammatory "long-term control" medications, particularly inhaled corticosteroids. The use of a long-acting bronchodilator such as Serevent is often very helpful for individuals with moderate, persistent asthma. These patients will still need a "quick relief" medication on an as needed basis for symptoms and prior to exercise.

Step Four (severe persistent):

- These patients may receive even higher doses of corticosteroids and a long-acting bronchodilator such as Serevent. Additional medications, including oral corticosteroids, may be necessary. These patients will still need a "quick relief" medication on an as needed basis for symptoms and often require them on a daily basis.

The goal of the "step-wise" approach to asthma treatment is to gain control of asthma as quickly as possible with the use of appropriate medicines and then to determine the least amount of medication possible to maintain good asthma control.

SECTION VIII.
TECHNIQUES FOR USING INHALED ASTHMA MEDICATIONS

Many asthma medications are taken by inhaler. The proper use is very important for maximum benefit. If inhalers are not used correctly, the medications don't help much because they can't get all the way down into the narrow airways where the asthma attack is taking place. Many times patients stop using their inhalers (or overuse their inhalers) because they think the medicine is not working. It is not working because it is not being used correctly.

There are several different types of devices through which these medications can be delivered. It is important to know the correct way to use the "spacer" or "holding chamber" so that you will get the full benefit of the medication and minimize side effects. It is important to have your technique checked during your doctors visits to make sure the "holding chamber" or "spacer" are being used correctly.

Steps for Using a Metered Dose Inhaler:

1. Remove the cap and hold inhaler upright.
2. Shake the inhaler.
3. Tilt your head back slightly to straighten the airways in your lungs.
4. Breathe out slowly to empty your lungs.
5. Place the inhaler one to two inches away from your mouth. It is also acceptable, but generally less desirable, for the inhaler to be placed directly in the mouth with lips closed around it.
6. Press down on the inhaler and release the medication as you start to breathe in slowly.
7. Breathe in slowly for three to five seconds.
8. Hold your breath for ten seconds. This allows the medicine to reach deeply into your lungs.
9. Repeat puff(s) as directed waiting 30-60 seconds between puffs.
10. If you use more than one inhaler medicine, use them in the order and dose directed by your doctor.
11. If you use a corticosteroid inhaler, rinse your mouth after use to help prevent white spots in the mouth ("thrush").

Steps for Using a Metered Dose Inhaler with an Aerochamber

1. Remove protective cap from both the metered dose inhaler (MDI) and the mouthpiece of the aerochamber (spacer, holding chamber).
2. Visually check aerochamber for foreign objects before each use.
3. Insert MDI mouthpiece into adapter at end of aerochamber.
4. Shake up the canister of medicine while holding aerochamber.
5. Breath out.
6. Place the aerochamber mouthpiece between your teeth, and seal your lips around the tube.
7. Squeeze the canister down to release the medicine into the aerochamber (holding chamber).
8. Breathe in slowly over three to five seconds.
9. Hold your breath for ten seconds to allow the medicine to reach deeply into your lungs.
10. Let all your air out slowly.
11. Wait 30-60 seconds and repeat the entire routine as prescribed by your doctor.

Follow These Inhaler Tips

1. Breathe out *before* pressing your inhaler.
2. Inhale *slowly*.
3. Breathe in through your mouth *not* your nose.
4. Press down on your inhaler at the *start* of inhalation (or within the first second on inhalation).
5. Keep inhaling as you press down on the inhaler.
6. Press your inhaler only *once* while you are inhaling (one breath for each puff).
7. Make sure you breathe in evenly and deeply.
8. If you have used your inhalers as directed and still have difficulty breathing, contact your doctor managing your asthma. It may be dangerous to take the inhalers differently than instructed.

Remember to clean your spacer weekly. Remove the cap and rubber end from the spacer and soak cap, rubber end and spacer in warm soapy water for 20 minutes. Rinse in a basin of water. (Do not put under running water.) Air dry completely before re-assembling. Replace when inside flap valve begins to harden and curl.

PEAK FLOW METERS

A peak flow meter is a portable, hand held device used to measure how air flows from your lungs in one "fast blast." In other words, the meter measures your ability to push air out of your lungs. The predicted values are determined by age, sex and height. Some "personal best" values can be either above or below the "predicted values." Therefore, it's better to use your "personal best" when your asthma is under its best control. During as asthma episode the airways of your lungs usually begin to narrow slowly. The peak flow meter may tell you if there is narrowing in the airways, hours (sometimes even days) before there are any asthma symptoms. It is recommended that all patients with moderate to severe asthma use a peak flow meter at home to monitor their asthma. If your asthma is mild or you do not use daily medication, a peak flow meter may not be necessary for asthma management. Patients age five and older are usually able to use a peak flow meter.

There are many kinds of peak flow meters. Specific instructions are contained in the folder that comes with each meter. Because different brands and models often produce different values, bring your peak flow meter when you go to your doctor.

Remember a peak flow meter is just another tool that can help you to control your asthma!

By taking medicines early, before symptoms start, but when the peak flow rate is lower than acceptable, it may be possible to stop an asthma episode quickly and avoid a more severe episode.
The peak flow meter can also be used to help you and your doctor:

- identify changing flow rates after exposure to a trigger.
- decide if your (or your child's) treatment plan is working well
- decide when to add or stop medicines
- decide when to use emergency care

How to Use a Peak Flow Meter

1. Before each use, make sure the sliding marker or arrow are at the bottom of the numbered scale.
2. Stand up straight. Remove gum or any food from your mouth.
3. Take a deep breath filling your lungs completely.
4. Place the mouthpiece in your mouth and close your lips tightly around the mouthpiece.
5. Blow out as hard and fast in a single blow. Blow a "fast hard blast" rather than a "slow blowing" until nearly all the air is out of your lungs.
6. Repeat the entire routine three times.
7. Take the highest number and write it down in a peak flow diary. If your cough or make a mistake, don't write down the number. Do it over again.

How to Find Your Best Peak Flow Number

Your "personal best" peak flow number is the highest peak flow number you can achieve over a two to three week period **when your asthma is under good control!** Good control is when there are no asthma symptoms. Each individuals asthma is different and your best peak flow may be higher or lower than the peak flow of someone of your same height, sex and age, although individuals with the same physical characteristics and age will usually have relatively similar best peak flow rates. This means that it is important to find your (or your child's) own best peak flow number. Treatment plans are based on your (or your child's) personal best flow number.

To find out your (or your child's) personal best peak flow number, take peak flow readings at least once a day for two to three weeks.

To find out your personal best peak flow number, take peak flow readings:

- At least twice a day for 2-3 weeks.
- When you wake up, *before* taking medicine and /or between noon and 2:00 p.m.
- Before and after you take your short-acting inhaled beta-agonist for quick relief, if you take this medicine.
- As instructed by your doctor.

SECTION X.
DEVELOPING AN ACTION PLAN

Whatever action plan you choose to use, remember that all action plans go by the same number guidelines. It is very important in managing asthma to keep track of your symptoms, medications, and peak expiratory flow (PEF). You can use the colors of a traffic light to help learn your asthma medications.

- **Green** means Go- Everything is all right. Continue to use preventive (anti-inflammatory)
- **Yellow** means Caution- Additional measures are recommended. Starting to have
- **Red** means Danger-Take action immediately and call the doctor managing your asthma.

In the SSM Asthma Attack Home Management Plan you will notice that the **zones** look like a pyramid, with green being the smallest and red being the largest. There is a very specific reason that the zones are this way. As you begin to have more symptoms, the boxes get bigger indicating that more action steps should be taken. The yellow zone is where most of the action starts taking place. In this zone you are instructed to take your reliever medicine for three doses separated by twenty minutes apart. So in one hour you will have had three reliever treatments. The plan is to try to open your airways and keep them open. This is usually followed by an increase of your inhaled corticosteroid, or beginning an oral steroid until the inflammation is under control. As we discussed earlier, the red zone is considered the danger zone, because if you're in this zone, your airway is already half way closed. In order to keep it open, you need to take your reliever medicine one time and wait twenty minutes. If after that time there is no improvement, then you need to go to the emergency room right away. If there is some improvement, then continue the schedule as in the yellow zone.

At the bottom of the attack plan, you will see a stop sign with very specific instructions according to your response of your treatments. If there was a good response(no more wheezing and the peak flows have returned to the green zone), then continue your medication routine the way you would normally; if the response is fair (wheezing is better, but not gone, and peak flows are still in the yellow zone), continue your medication and also call your doctor or the doctor managing your asthma; if the response is poor (medication did not help and the person is continuing to have increased breathing difficulties) *go to the emergency room right away!*

REMEMBER the asthma action plan is a guide to help you better manage your asthma. Always check with your doctor first for any change in your treatment.

HANDOUTS:

1. Section 1: Self-management skills
2. Section 2: About your Lungs and Asthma
3. Section 2: Symptom Sheet
4. Section 3: Asthma Severity
5. (Sections 4-7 to be determined)
6. Section 8: Techniques
7. Section 9: How to Use a Peak Flow Meter
8. Section 10: Developing an Action Plan

The Use of Outcomes in the Diabetes Disease Management Program

An essential part of disease management is tracking outcomes. These outcomes include the medical status of the patient, costs, and functional status (the patients ability to perform normal activities). Outcomes are important both as a means of demonstrating the value of the disease management effort, and as a guide to follow as we continually work to improve the program.

The Disease management team carefully determined the primary outcomes for diabetes to be:

*Hemaglobin A1c
*Yearly eye exams

Outcomes will be presented quarterly to physicians in summary form as well as a patient-by-patient breakdown.

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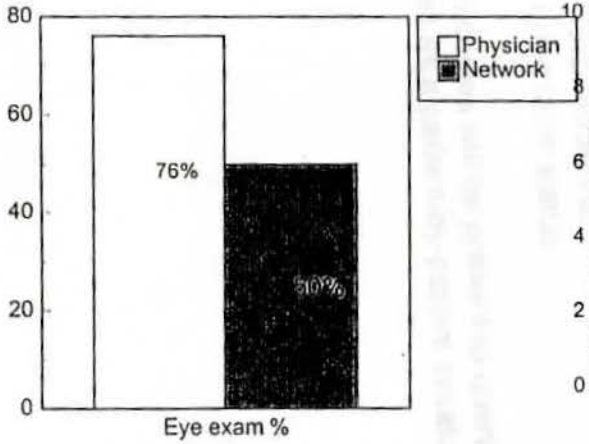
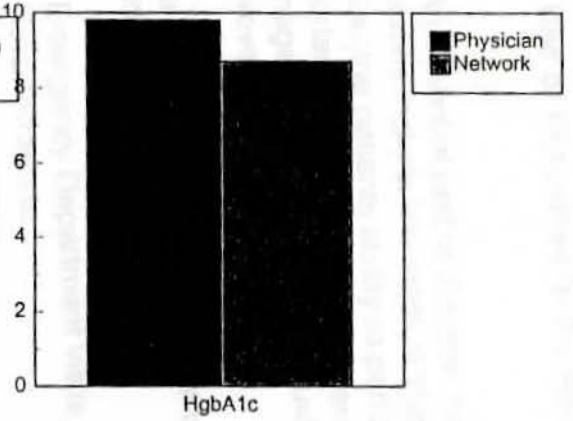
Physician Report for Diabetic Patients





Patient's Name	Education Classes	Eye Exam	Hgb A1c value
John Do	12/1/97	11/17/97	12.1 on 7/9/97
Jean Smith	10/9/97 113/97	12/1/97	10.8 on 7/11/97 9.1 on 12/3/97
Jim Doe	None	None	7.3 on 7/23/97 7.1 on 12/3/97
Mary Door	9/19/97 9/29/97	10/30/97	6.8 on 10/3/97

The Use of Outcomes in the Asthma Disease Management Program

An essential part of disease management is tracking outcomes. These outcomes include the medical status of the patient, costs, and functinal status (the patients ability to perform normal activities). Outcomes are important both as a means of demonstrating the value of the disease management effort, and as a guide to follow as we continually work to improve the program.

The disease management team carefully determined the primary outcomes for Asthma to be:

* Emergency Department visits
* Hospitilizations
* Functional status

Outcomes will be presented quarterly to physicians in summary form as well as a patient-by-patient breakdown.

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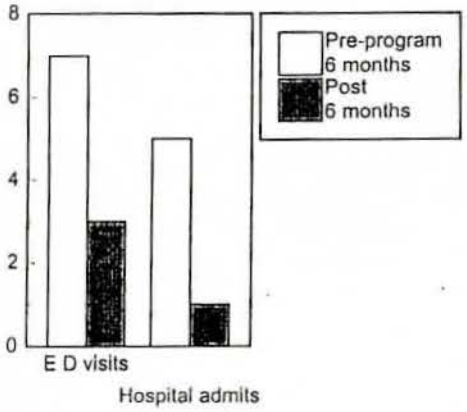
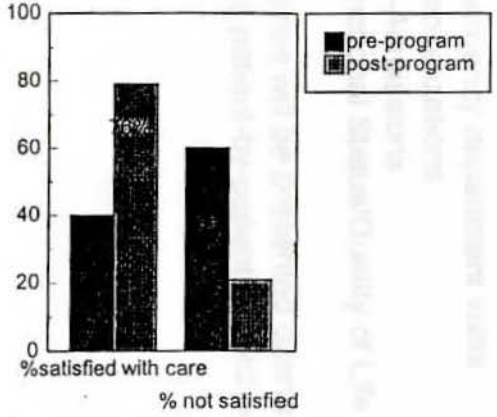
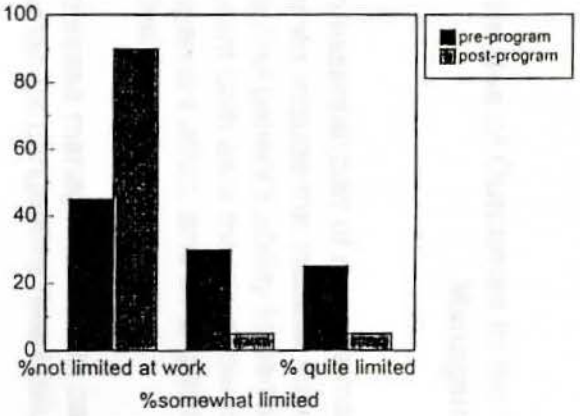
Physician Report for Asthma Patients







Patient's Name	Education Classes	ED visits	Functional Status Scores pre - post	Hospital admits
Jean Do	12/1/97	11/17/97	3 - 3.7	None
Edward Smith	10/9/97 113/97	None	3- 5	None
Jim Jones	None	None	2.5 - 3.8	None
Mary Do	9/19/97 9/29/97	10/30/97	5.1 - 6.2	7/11/97 11/2/97

The Use of Outcomes in the Congestive Heart Failure Disease Management Program.

An essential part of disease management is tracking outcomes. These outcomes include the medical status of the patient, costs, and functional status (the patient's ability to perform normal activities). Outcomes are improtant both as a means of demonstrating the value of the disease management effort, and as a guide to follow as we continually work to improve the program.

The disease management team carefully determined the primary outcomes for congestive heart failur to be:

* Emergency department visits
* Hospitalizations
* Re-Admissions
* Functional Status/Quality of Life

Outcomes will be presented quarterly to physicians in summary form as well as patient-by-patient breakdown.

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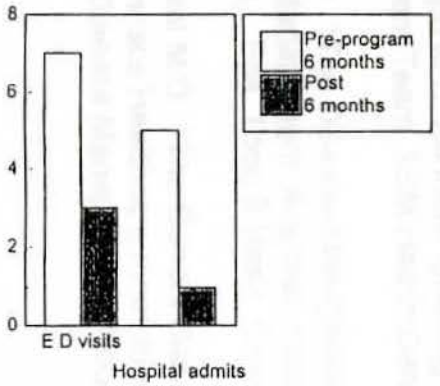
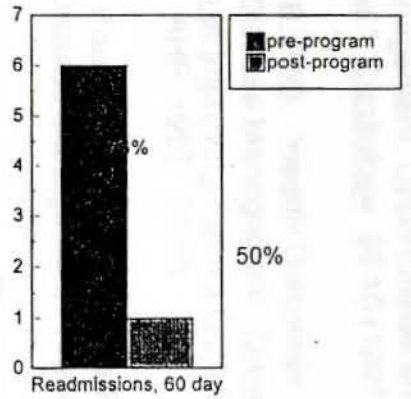
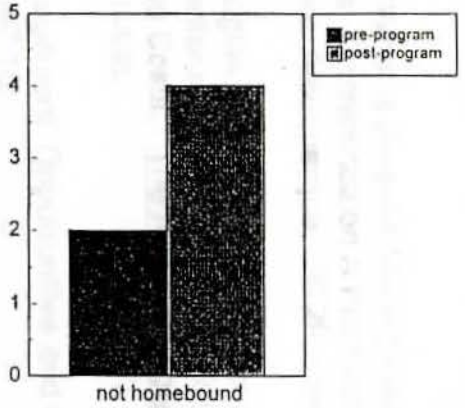
Physician Report for the Patient with Congestive Heart Failure







Your Patient's	Readmission, 60 days	ED visits	Functional Status Scores pre - post	Hospital admits
Jean Do	None	11/17/97	45 -64	None
Edward Smit	None	None	31 - 54	None
Jim Jones	None	None	65 - 74	None
Mary Do	1	10/30/97	27 - 43	7/11/97 11/2/97

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