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An Analysis of a Cardiac Disease Management Program

Laurene Jan Powers

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AN ANALYSIS OF A CARDIAC DISEASE
MANAGEMENT PROGRAM

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AN ANALYSIS OF A CARDIAC DISEASE MANAGEMENT PROGRAM

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Introduction

This thesis reports on the analysis of a cardiac disease management program. The program targets members with coronary artery disease, also called heart disease. The cardiac disease management program was set in a medical health maintenance organization (HMO) of approximately 45,000 people. The name of the HMO is being withheld, as some of the material presented is proprietary information.

The disease management program was offered directly through the HMO and the nurses involved were employed by the plan. The disease management program was proactively offered to members identified as having heart disease, but was not advertised or marketed to members. Members were offered the program in addition to the standard benefit coverage.

The purpose of this analysis is to look at elements in the program itself as well as the effect of the program. The focus is on determining effective methods of engaging members in a disease management program. Elements of the program analyzed include risk assessment of members based on available information, methods of contacting members, and topics for nurse intervention. Emphasis is placed on how the program itself operated rather than the actual outcome of the intervention on the members or impact on their health status and utilization of services.

Background

Disease management programs became a popular concept in managed care during the 1990s. As managed care organizations attempted to manage costs and utilization of health care services, chronic illnesses were looked at for their role in managing medical
expenses. Chronic illnesses are of importance as they contribute to the burden of illness within a covered population and represent a substantial share of the utilization of services. Unlike acute illness, these are ongoing and will continue to require medical services.

Chronic illnesses are also suited to disease management interventions because they are greatly influenced by a member’s self care, lifestyle, and compliance with physician recommendations. Clinical management and self-care can play key roles in successfully preventing acute exacerbations and maintaining the patient in a healthier state. Therefore, chronic illnesses have the potential to decrease cost and utilization by impacting the members’ role in managing their disease.

There are various models of disease management programs in the health care industry. These differ in their approach as well as in their levels of intensity. A literature search found a number of models of disease management programs.

Some disease management programs may take a multi-faceted approach involving various caregivers, support services and health educators. This may even involve use of on-site nurses in the patient’s home or services of a home health care agency. The program may work with both the patient as well as caregivers in the family. Such a program can include an educational component as well as clinical care and assistance with activities of daily living.

Some disease management programs take a pharmaceutical approach, as compliance with medications is an important part of managing chronic illness. Approaching the disease through proper use of medications can help in reducing problematic episodes and be effective in avoiding exacerbations.
The medications that a patient is taking, for both the chronic illness being targeted as well as comorbidities, can provide information on the health status of the patient. The list of medications can be used to help assess the risk status of the patient as well as to document the illnesses and conditions that affect overall health status of the member. Information on compliance with taking the medication can be gathered from tracking the dates of prescription renewals.

Lifestyle and behavior modification can be included in a disease management program. Services can be offered to help patients avoid risk behaviors. An example of such a service is a support program for smoking cessation. Services may also be offered to help with compliance on positive behaviors such as cardiac rehabilitation or diabetes education.

A disease management program may also provide health education or nurse counseling services. Such services not only offer patient information but they also can be used as a support system to help set goals with the patients and encourage them to achieve their goals for helping to control their illness. These services may be in-person or telephonic.

Disease management programs may include any number of these items along with any other components or variations.

The cardiac disease management program described in this paper used a telephonic nurse counseling service and mailed educational information rather than a multi-faceted approach to disease management. This was due to limits in available resources and budget.
Objective

This initiative was a pilot to evaluate methods of designing and implementing a disease management program. Objectives of the program included identifying members with heart disease, determining risk levels based on severity of illness, involving primary care physicians, designing and refining methods of intervention for management of heart disease, and improving members' practice of self-care.

The project intended to improve member understanding of heart disease, improve self-care and compliance with physician recommendations, and impact health services utilization, which would result in cost control. Areas of health services utilization on which efforts focused included increasing the utilization of routine office visits as well as decreasing emergency room visits and inpatient stays. Emphasis was placed on encouraging routine office visits, even in an asymptomatic disease state, and strengthening the interaction of the member with the primary care physician. The program was designed to complement the role of the primary care physician and reinforce compliance. The program did not replace or override the role of the primary care physician.

Program Overview

The cardiac disease management program was set in an HMO based in a mid-size city and its surrounding suburbs. The program was initiated in late 1995. There were approximately 45,000 members in the HMO. Members selected a primary care physician (PCP) and any needed specialists from a network. The PCP was responsible for coordinating and managing member health care and health services utilization through the
HMO. Member referrals to specialists were obtained through the primary care physician. Preventive services and office visits to both PCPs and cardiologists were covered by the plan with a member co-payment.

The HMO looked upon the disease management program as an opportunity to increase the quality of care and services provided to members. An analysis of claim data identified coronary artery disease as an area of high cost and utilization of services related to chest pain and coronary artery disease. The cardiac disease management program was initiated in response to these findings.

Although there is no definitive cure for heart disease, medical management and a healthy lifestyle can impact progression of this illness and improve quality of life. The cardiac disease management program was developed to incorporate self-care and compliance with physician recommendations through nurse counseling for members with coronary artery disease to help manage their illness.

Evidence exists that clinical management and self-care strategies can successfully prevent acute exacerbation. Coronary artery disease has a strong component of self care and lifestyle associated with it. Health promotion literature suggests that high-risk individuals, including the chronically ill, benefit from focused screening, education, and follow-up. Members determined to be at moderate and high risk based on claim and pharmacy data may offer the most opportunity for targeted nurse assessment and counseling regarding their disease process and encouraging self-care strategies identified in the literature.
Identification of Members with Coronary Artery Disease

Work developing the program began in June of 1995. Members were identified as having coronary artery disease through medical claim data. Records from claim systems were gathered from 1/1/92 to 6/30/95 for all services to identify members with a diagnosis of ischemic heart disease based on CPT-6 and ICD-9 Codes. (See Appendix 1.) These members were also verified for current enrollment in the HMO. This effort provided the names of 720 members with claim codes for ischemic heart disease who were currently enrolled.

For these members who were identified with a claim for ischemic heart disease, all of their claims were obtained for ER encounters and hospitalizations including the CPT codes for these claims. Co-morbidities of congestive heart failure, hypertension, diabetes and hypercholesterolemia were also identified due to the associated risks with heart disease. Cardiac surgeries and events were gathered from the claim data. This information was used for risk stratification of the study population and identification of members at increased need for nurse intervention. The risk stratification sorted the population into high, moderate, and low risk. One of the goals of the program was to determine if those members categorized as high risk were appropriate and could benefit from the program.

Demographic and enrollment information was collected for the members. This included the member’s age, sex, address and phone number, name and address of the primary care provider and cardiologist where applicable, date of enrollment, and member identification number. The dates of the member’s last visit to the PCP and cardiologist and the last cholesterol test were collected if there were claims within the last 12 months.
Pharmacy data was also acquired on members where available. However, not all HMO members had pharmacy data available as not all policies offered that benefit.

A one-page patient profile was created for each member in the program that summarized the information gathered from claim data. The one-page profile was used as a reference sheet for risk stratification, targeting, and nurse intervention. (See Appendix 2.)

**Physician Assessment**

Involvement of the PCPs was considered a key part of the program. This was both to increase physician support of the program coming from the HMO as well as to reinforce compliance and follow through with the participants.

Primary care physicians were requested by mail to provide baseline data and assist in categorizing members by risk along with making recommendations for participation in the program. The PCPs were asked to provide information about the members and to reinforce self care and lifestyle behaviors along with medical management of coronary artery disease. A one-page assessment form was sent for each member identified as having coronary artery disease. The physicians were asked if the members had a history of cardiac related comorbidities, events, or surgeries. Clinical information on cholesterol levels, blood pressure, height, weight and obesity was also collected and as was information on compliance with regular office visits, medication, exercise, and diet. In addition, questions were included asking the member’s risk for progression of illness and recommendation for participation in the program. (See Appendix 3.)
One purpose of the assessment was to gain additional information on the members that was not available in claim data. This included events, comorbidities, and surgeries that occurred prior to the claim data period (or prior to enrollment in the HMO) and those that occurred after the claim data period. The HMO claim data had a 2-4 month lag between services provided and the availability on the claim reporting system. Physicians were also able to provide information that was not included in the claim data, such as comorbidities for members with multiple comorbidities. They were also able to address incomplete coding and coding errors in the claim system.

Another purpose of this activity was to involve the physicians. The involvement of the PCPs would help alleviate the perception that the HMO was challenging the role of the PCP in caring for the member. It was also thought that by involving the primary care physicians they might also help by reinforcing elements of the program and self-care to their patients.

Lastly, the physicians were able to provide subjective information on recommendations for member participation or the appropriateness of mailings of educational materials.

A one-page assessment form for each member was sent to the physician with a cover letter asking for this information. The physician or office staff other than the physician was asked to fill out the assessment. If office staff had completed the form, the physicians were asked to review it and to assess member risk level and make a recommendation for participation in the disease management program. The physician’s office was compensated $5 for each completed assessment. Physicians were also given
the opportunity to refer members for the program that the HMO was unable to identify from claim data.

**Findings from Physician Assessments**

Most of the assessments were received between three and four weeks from mailing. At four weeks following the mailing, assessments were received for 260 members from 120 physicians. A letter was sent to all of the physicians at this point which stated the number returned, thanked those physicians for returning them, and requested other physicians to complete and return the assessments if they had not done so already.

The physician responses seemed to be independent of the number of assessment forms to be completed. Physicians had between 1 and 12 members identified with coronary artery disease. Some physicians did call the HMO or return blank assessments indicating they did not have time to fill these out.

Additional comments were not asked for, but many assessments had additional information written on the assessment form. This information varied but frequently noted were tests that the physician has recommended, other health problems, and prior smokers who had quit.

Of 269 physicians, 156 (59%) responded to the assessment. This accounts for 360 of the 720 members (51%) identified as having coronary artery disease.

No physicians called the HMO with questions or concerns about the program, other than a few who called to state they did not wish to participate. No physicians proactively referred additional members into the program.
Several physicians filled out some, but not all of the assessments for their patients. There did not appear to be a relationship between those members for whom assessments were filled out and severity of illness or recommendation for participation.

Assessments for 12 members mentioned that they were managed by a cardiologist. Most of these assessments were completed. Several assessments did not have completed sections on patient compliance and physician recommendation for participation in the program. Three hundred eighty-two (53%) of the members were listed as having a cardiologist in the network. Of these, 216 (30%) had a visit identified from claim data in the year prior to the cardiac program.

Six physicians (2%) informed the HMO that they were not interested in participating in the program. It is unclear if they did not want to participate in completing the assessments or did not want their patients involved in the program. These members were excluded from the program.

Approximately 15% of the assessments were returned partially or totally incomplete. Reasons for this, as stated on the assessments, included lack of time, no interest from the physician to support the program, has never or not recently seen the member, is not the member’s current PCP, or the member expired.

The assessments provided much additional information on the members. This was especially true for recent enrollees, because their claim data covered only a short time period. Although many members had coronary artery disease prior to enrollment in the HMO, the claim data began at the time of enrollment. Thus, any cardiac events or procedures prior to the time of enrollment in the HMO were captured. The physician
assessments were able to provide the information on events and procedures prior to enrollment.

**Risk Levels**

The information from claim data and the physicians was used to determine risk levels for members. Risk was determined as potential for future cardiac event, exacerbation or progression of illness. (See Appendix 4.)

The disease management team including the medical director for the HMO developed the risk levels. The purpose of the risk categories was to provide information on the severity of illness of the study population and to target members who would most benefit from nurse intervention.

Based on the claim data runs only, the members fell into the following categories: 243 high risk, 77 moderate risk, and 386 low risk. Information received from the physician assessments caused a notable number of members to be reclassified at higher risk levels than had been determined from claim data alone. This was mostly due to cardiac events or surgeries not included in the HMO claim data. Many of these occurred prior to enrollment with the HMO and some recent enough that they were not yet available on claim data systems. When the information from the physician assessments was taken into account there were 386 high risk, 132 moderate risk, and 188 low risk members.

The PCPs also identified eight members as having expired prior to receiving the assessment form. Twelve members originally identified as having coronary artery disease from the claim date did not actually have the illness. Members were shown to have been
mislabeled due to coding errors or suspected diagnoses that were later determined to not be heart disease.

Targeting for Participation

The information from claim data and the physician assessments, where available, were used to prioritize members for nurse intervention. Limitations on nurse resource time to contact and work with members made it necessary to prioritize members who would be most likely to benefit from and participate in the program. Members were still included if their physician did not return a completed baseline assessment. However, selection of members for nurse intervention was based on the available data, and in some cases only claim data was available.

Members identified as inappropriate for participation were excluded from the program. Reasons for inappropriateness were both the situation of the member as well as inability of the program to address needs other than cardiac illness. This included members who disenrolled from the HMO prior to attempted contact, expired, were under age 18, were in a nursing or long term care facility, were currently under individual case management through the HMO or had terminal illnesses such as advanced stages of cancer or AIDS. Those whose claim data/physician pre-assessment did not indicate the presence of ischemic heart disease, or whose physicians asked that the members not participate for stated reasons were also excluded.

Members given priority for nurse intervention were those who were identified as having the greatest severity of illness, risk of an exacerbation, and potential for future high utilization of medical services. Members with potential high utilization included
those with multiple emergency room visits, especially with no follow-up office visits; no recent office visit, especially if there were cardiac related risk factors; and no recent cholesterol testing. These characteristics suggested possible under-utilization of primary care and preventive services and therefore a risk of uncontrolled illness.

Members were also prioritized for nurse intervention if they had congestive heart failure, diabetes with hypertension and/or hyperlipidemia, or a recent myocardial infarction. These were members with increased severity of illness due to their comorbidities and potential for exacerbation.

Lastly, members were prioritized for nurse intervention if the physician who recommended them for participation in the program designated them as high or moderate risk. Other members would be targeted in the future if nurse resources permitted.

Members who had identifiable psychiatric or substance abuse problems were not prioritized for nurse intervention. The program was not structured to address all needs that could not be anticipated. Members who had a history of severe stroke or paralysis, especially cases involving speech complications, were not prioritized due to questionable ability to participate in a telephonic based program. (See Appendix 5.)

Limitations in resources required the exclusion of these groups. The characteristics of those groups not prioritized may make them at higher risk for non-cardiac problems that are not addressed through the program. For example, members with terminal illnesses were excluded. Any change in their health status, compliance, or utilization of services would more likely be from the terminal illness rather than the cardiac disease.
Members who were not targeted to be contacted by a nurse received an intervention by mail. This included members who were at low risk or whose physicians stated they were non-compliant or unlikely to benefit from nurse intervention. These members did not receive any additional follow-up or evaluation.

The intervention by mail consisted of written patient education materials. These written materials contained the same topics that the nurse intervention covered such as diet and exercise, medication compliance, recognition of early signs of problems, smoking cessation and others. The materials were selected based on content as well as readability. Criteria for member appropriateness included reading level, clear information as to why these behaviors are important, and encouragement and facilitation for discussion between the members and their physicians.

**Nurse Intervention**

The cardiac disease management program used telephonic nurse counseling to provide information about managing heart disease. No recommendation of treatment, information on benefits, claim or coverage, or referrals and authorization were provided. The nurse intervention consisted of a baseline assessment, member counseling and education, written educational materials, and follow-up. (See Appendix 6.) Areas covered included compliance with medications, utilization of health services, exercise, nutrition, smoking, recognition of and response to early signs of exacerbations, and barriers to compliance.

Barriers are factors that limit the members from complying with or demonstrating the desired behavior. Common barriers were knowledge deficits, determination or will
power, or time. Other barriers were physical, cognitive, or cultural limitations that prevent the member from complying with the recommended self-care. The nurse attempted to determine the reasons for non-compliance and to address any barriers that could be influenced. Barriers such as knowledge deficits may be overcome through nurse counseling and education. Barriers such as cognitive or physical impairments may be overcome by working with another person who is a caregiver at home, such as a family member. Barriers are often unique to the individual and may not be readily identified through telecommunication.

At the first call, the nurse completed the baseline assessment and determined if the member had areas of limited or significant deficits. Some counseling was provided on all deficit areas, especially those areas in which the member expressed interest. Written education materials were then sent to the member. These included general information as well as targeted information for individuals identified as needing further education on specific topics. Over the next few weeks the member was contacted for further counseling, education, and reinforcement as needed. At six months and 12 months following baseline, the same questions were used to assess change. Members had the option of calling the nurse on a toll free number for any additional information or questions they might have. The nurse was available during both daytime and evening hours until 10:00 PM.

Outreach to the members began on a rolling method in order to test different forms of contacting members. Several different methods of contacting members for program participation were used to learn which was most effective. Methods of contact included direct calls to members, invitations to call the nurse, letters describing the
program followed by a call from a nurse, and letters describing the program that included return mail post cards for members wanting to participate.

The first type of contact was an invitation to participate. Members targeted were sent a letter briefly describing the cardiac disease management program. These members were invited to contact the nurse to participate and were given a toll-free number to call weekdays between 2:30-10:00 PM. Of those invited to call the nurse, 10% (1/10) responded. The nurse proactively contacted the remainder by telephone four weeks later. An additional four members participated, for a total of 50% (5/10) of this group. This method of contact was not continued due to the poor response rate to the invitations, even though there was a small number of members in this group. (See Appendix 7.)

The second method of contacting members involved a return mail post card. Targeted members were sent a letter briefly describing the cardiac disease management program and were asked to return a postage paid card to participate. Members were asked to indicate the time they would like the nurse to call and their current phone number. Thirty percent (9/30) returned the post card. The nurse telephoned the remainder four weeks later. Two additional members participated for a total of 37% (11/30). (See Appendix 8.)

Another method of contacting members was cold calls from the nurse counselor. The nurse telephonically called the members without a prior introduction, thus explaining the program at the first contact. Of this group, 52% participated (34/64).

The last method of contacting members was a letter sent to members prior to nurse telephonic contact, also termed a warm call. The letter described the cardiac disease management program and stated that the nurse would be contacting them within
the next two weeks. No reply from the member was necessary. A copy of “Guide to Your Healthy Heart” from the American Medical Association accompanied the letter. This group had a 50% participation rate (20/40). (See Appendix 9.)

Of the total members targeted for nurse contact, 20.1% were never reached, despite attempts to contact them both during the day and evenings. At least five attempts were made to contact each member. Reasons for failing to reach members included: phone not in service, phone number on record not current/correct, and messages left not returned.

**Member Participation**

Of the 64 members that agreed to participate, 60 (95%) continued to work with the nurse and participated in a follow-up assessment. The remainder terminated coverage with the HMO. Follow-up contact was made 3-4 weeks after the baseline assessment for additional counseling. All follow-up calls were outbound (to members) with the exception of five inbound calls to the nurse initiated by the member.

The nurse attempted to call members at various times of the day, including evening hours. If the members were not reached themselves, messages were left with people who answered the phone asking the member to call the nurse. The nurse made several attempts to contact the member before leaving a message on an answering machine. The following describes the number of attempts it took before the nurse made telephone contact with the targeted member:

<table>
<thead>
<tr>
<th>Attempts</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 attempt</td>
<td>41.9%</td>
</tr>
<tr>
<td>2 attempts</td>
<td>26.4%</td>
</tr>
</tbody>
</table>
The initial calls ranged in length from 15-85 minutes, with an average of 28 minutes.

Of participating members, 46.6% (28/60) preferred to be called during the daytime, between 10:00 a.m. and 5:00 p.m. These members ranged in age from 48-73, with an average age of 61.2. Most of these members were either retired or unable to work outside the home due to health reasons.

Slightly more, 53.3% (32/60) of the members, preferred to be called in the evening hours, between 5:00 p.m. and 9:00 p.m. These members ranged in age from 33-68, with an average age of 55.5. Most of these members were employed either part time or full time.

The level of interaction with the nurse was also assessed. Twenty-five percent (15/60) of members participated in intensive counseling. The nurse and member developed a plan to work on deficit areas. Interactive teaching took place in these deficit areas at follow-up and future contacts. In addition to receiving counseling from the nurse, those members frequently asked for more written educational materials and asked questions about the information already received. The nurse instructed members to ask their physicians for medical recommendations where indicated. All members were encouraged to discuss the information provided with their physician.

Seventeen percent (10/60) of members participated in nurse counseling on a single topic. Counseling for these members tended to be covered in a single conversation. Follow-up was planned in 2-3 months for on-going support and new needs.
A third (20/60) expressed no current need for nurse counseling but requested follow-up in the future. The nurse reviewed with them the educational materials they had previously received and encouraged them to call her as needed. Follow-up with the member was planned in 2-3 months for on-going support and new needs.

Twenty-five percent (15/60) of members declined additional counseling at first follow-up. The nurse reviewed the educational material sent at that time and encouraged them to call as needed in the future. Reasons stated included the belief they already knew this type of information or lack of interest in the program.

Only one member to date has asked the primary care physician about participation in the program and has been encouraged by the physician participate.

Tracking and Recording Information

The project was initially implemented using a paper based tracking and recording system with some record keeping on computer spreadsheet files. A tracking tool on an Excel spreadsheet was initially developed to record information on participants including risk level, type of intervention and ability to contact. Later an Access database was developed to house the information on the Excel spreadsheet along with additional data. This additional data included information obtained by the nurse during assessments and counseling sessions.

Each patient had a paper file which included the claim data/patient profile, physician assessment if received, baseline assessment, record of contact, copy of the baseline assessment and case summary tool.
Findings from Nurse Intervention

The nurses were able to identify areas of improvement with compliance and self-care among participants. Information was tracked on probable deficit areas as well as member-acknowledged deficits. Probable deficits are areas that were identified prior to member contact. Acknowledged deficits are areas that the member refers to in working with the nurse. The nurse did not count an area as an acknowledged deficit unless the member stated information confirming the deficit. Probable deficits provided a check for the self-reported deficits, because members tended to under-report problems and over-report compliance. In many cases, members said they were not having trouble, although their patient profile and physician assessment suggested otherwise. Although the discrepancies may be due to inaccuracies in interpreting claim data, it is more likely that members do not acknowledge certain self care deficits, either intentionally or unintentionally. Members may also have a different perception of their illness or underlying risk factors than their physician or medical history indicate.

The most impact on improving self-care was seen in areas which happened to be the most prevalent deficit areas, including exercise, nutrition and weight management, and recognition of early signs of chest pain. One of the advantages of the program was that participants were offered in-person nutritional counseling, which otherwise would not be covered under their HMO benefits. This exception was made because weight loss and diets are complex problems that cannot be adequately addressed by telephonic contact. Those members referred for nutritional counseling were at least 50% above recommended body weight and expressed interest in weight loss. The program worked
with these members’ PCPs to facilitate participation in such a program. The referral to a nutritional counseling program came from the PCPs and had their full support.

The least impact was seen in smoking cessation. Fifteen percent of the counseled members reported smoking, but only one reported a decrease in smoking following nurse intervention. The intention of nurse counseling on the risk of smoking was to refer members to their PCP for intervention.

The nurse counseling also included some information on the comorbidities that also impact health status of participants. Of the members who were counseled on diabetes control, 75% reported a change in compliance with blood glucose monitoring and in identifying and responding to blood glucose problems, eye care and foot care. Of the members who were counseled on congestive heart failure, 73% showed a change in ability to recognize/respond to fluid retention and reported they are now examining their feet and ankles for fluid retention. There were two instances where the member attributed a prevented hospital stay to nurse counseling on the importance of examining ankles for fluid retention. In both cases, the members had previous problems that were not addressed and resulted in hospitalizations. The nurse directed these members back to their PCPs to address the problem right away. Both cases resulted in changes in medication and no further complications.

The following table presents the findings from the nurse counseling. The chart includes the deficit areas and the results. The column of probable deficits reports the percentage of members suspected as having a deficit for each particular issues as determined by claim data, the physician assessment, or inferred by the nurse. The member acknowledged deficits are those that the member actually stated as problems to
the nurse. The last column describes the changes in behavior or compliance that the member reported or nurse observed.

<table>
<thead>
<tr>
<th>Deficit Area</th>
<th>Probable Deficit</th>
<th>Member Acknowledged</th>
<th>Member Reported and Nurse Observed Change</th>
</tr>
</thead>
</table>
| Effective Utilization of Primary Care Services | 37% (22/60)      | 7% (4/60)           | 25% (1/4) spoke with PCP about frequency of office visits  
25% (1/4) initially stated insufficient information about cardiac and diabetes management with physician and is now working with the nurse on better communicating with the physician.  
50% (2/4) stated intention to ask primary care physician about the need for routine office visits  
Comment: Many of these members have frequent office visits due to the severity of their illness. Some members state that their physician recommends only 2 routine office visits per year. In these high-risk members, 4 visits per year are reasonable. |
| Avoiding acute exacerbation         |                  |                     | Intensive counseling with one member with diabetes and CHF and another with CHF prevented two hospitalizations.  
Members worked closely with their PCPs and the disease management nurse.                                                                 |
| Exercise                           | 50% (30/60)      | 35% (21/60)         | 43% (9/21) have started or increased their exercise regimen  
5% (1/21) reported exercise compliance because she knew the nurse would be calling back.  
Other members have expressed intention to begin exercising or increase compliance with exercise regimen |
<table>
<thead>
<tr>
<th></th>
<th>Diet and Nutrition, Cholesterol</th>
<th>Medication Compliance</th>
<th>Diabetes Control</th>
<th>Congestive Heart Failure Control</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>72% (43/60)</td>
<td>2% (1/60)</td>
<td>43% (12/28)</td>
<td>76% (16/21)</td>
</tr>
<tr>
<td>13% (5/40)</td>
<td>10% (4/40)</td>
<td>29% (8/28)</td>
<td>52% (11/21)</td>
<td>73% (8/11)</td>
</tr>
<tr>
<td></td>
<td>have lost weight</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10% (4/40)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>have been referred to a weight management program</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some members report using the recipes for low-fat meals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some report they are more conscious of meal planning, including cholesterol intake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some members report intentions to better control their diet and nutrition but still have not been consistently compliant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5% (2/40) members have reported lower cholesterol levels since first contact</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>95% (38/40) have had a cholesterol screening within the past year</td>
<td></td>
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<td></td>
<td>100% (1/1) spoke with physician about medication compliance and reports improved compliance and understanding of medicines</td>
<td></td>
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<tr>
<td></td>
<td>Suspect that members are under-reporting non-compliance with medications</td>
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<td></td>
<td>75% (6/8) can identify hypo/hyperglycemia</td>
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<td></td>
<td>75% (6/8) report compliance with blood glucose monitoring</td>
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<td>75% (6/8) report compliance with foot care</td>
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<td></td>
<td>75% (6/8) report compliance with eye exams</td>
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<td></td>
<td>73% (8/11) can recognize fluid retention</td>
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<td></td>
<td>73% (8/11) can respond to fluid retention</td>
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<td></td>
<td>73% (8/11) report examining feet and ankles for fluid retention</td>
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<tr>
<td></td>
<td>45% (5/11) report monitoring for weight gain</td>
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</tbody>
</table>
| Smoking | 7% (4/60) | 15% (9/60) | 11% (1/9) report a decrease in smoking  
11% (1/9) has spoken with PCP about a smoking cessation program  
100% (9/9) members report desire to decrease or quit smoking  
100% (9/9) members express understanding of the need to decrease or quit smoking  
Comment: Many other members not identified with a smoking deficit state a history of smoking but quit due to CAD. |

The members who were in the intervention group had 7 hospitalizations during the follow-up time period, compared to 14 hospitalizations for the control group. The average length of stay for the control group was 4.2; for the intervention group, 6.1.

The intervention group had 3 visits to the emergency room while the control group had 5. All of these emergency room visits were for chest pain or congestive heart failure.

While these results are not conclusive due to differences in the two groups, the utilization appears to be lower in the intervention group compared to the control group.

The program also looked at routine visits to the PCP. These visits were difficult to track because of the inability to differentiate among routine visits, unplanned visits of cardiac nature, and visits due to other illnesses. Although ICD-9 codes are used with office visits, these are often not specific enough to determine the reason for visit, especially for members with multiple co-morbidities. Some members also reported being followed more by a cardiologist than a PCP for their cardiac condition.

Members were suspected to be under-reporting problems with medication compliance. Only one member admitted to not following instructions for taking
medication. It is not known if the suspected under-reporting was intentional or unintentional.

The nurse identified some of the barriers to self-care in order to address the problems and improve the patient’s ability to comply with recommended self-care. The most common barriers to self-care identified were physical handicap, did not understand self-care plan, lack of willpower, and lack of perceived severity of disease. Some but not all barriers had potential for impact. Based on nurse observation, will power was a significant barrier to compliance with physician recommendations. Many members expressed a readiness to modify behaviors or previous attempts to comply with physician advice but had trouble doing so.

Limitations

The disease management program was not set up for an ideal health services research study. This is due to limitations of operating the program within the managed care business and the availability of nurse resources.

For example, those who declined participation may be different from those who participated. Members not interested in the program may not want to work on self-care, may already be in a program such as cardiac rehabilitation, or may be in a disease state that prevents them from participating. However, the groups were similar in age, gender, and risk status.

Members for whom a physician assessment was returned were assigned risk categories based on the additional information. They were more likely to be assigned to a higher risk category based on that information, which also created a bias. Since members
in the higher risk category were targeted for the intervention, members for whom a physician assessment was received were more likely to be in the intervention group. Another potential source of bias may be that physicians who were more positive about the program were more likely to return the assessment. They may also have been more inclined to stress similar self-care and positive health behavior to their patients. Thus the intervention group members potentially may have been more likely to have a physician who provides similar information as the program.

Much of the information was member reported. Since members were presenting this information to their managed care carrier, the information may have been biased because of their concern about the denial of benefits. For example, they may have been more likely to over report compliance.

**Discussion**

The HMO was able to implement a telephonic nurse counseling disease management program. Both members and primary care physicians were receptive to this type of program. However, participation rates were not as high among members and PCPs as anticipated.

Overall, pro-active telephonic contact was acceptable to members. Even if someone did not want to participate, no one expressed dissatisfaction with being called. Those who did not want to participate simply stated so. The study also showed the importance of having the nurse available both daytime and evening hours. These are important findings that can be incorporated into other types of member outreach programs.
The cold calls were the most effective method of contacting members and having them participate. Members were receptive to a call from the HMO asking them to participate in the program and offering nurse counseling. This was also the most economical method of contacting members.

The study showed that administrative claim data alone is not enough to determine health status and appropriateness for participation in a targeted program. It provided an initial identification of potential participants and some insight into comorbidities that may make an individual more or less appropriate for the program. The percentage found to be at high risk of a cardiac event/rapid progression of illness based on the physician assessments was greater than that anticipated from claim data alone. Based on claims only, 51% of members were shown to be at low risk and 35% at high risk. When data provided by the physicians on cardiac health history and comorbidities was factored in for 308 members, 26% were shown to be at low risk and 55% at high risk.

The risk categories also had some value. The members targeted in the high-risk group expressed knowledge deficits and difficulties complying with recommendations from their physicians. There appeared to be a relationship between the behaviors for which there were knowledge deficits and difficulties complying and heart disease. These behaviors are risk factors for heart disease and an increased severity of illness. Members may be in the high risk group because of these behaviors. This shows that the higher risk categories identified members who could benefit from the program. This also illustrates that the risk categories were effective in identifying members who were appropriate for participation in the disease management program.
Although there was a good response rate from the PCPs, with 59% returning the physician assessments, the physicians did not become involved with the program. No additional members were referred by their PCPs, including those newly joining the HMO or newly diagnosed with coronary artery disease. No physicians contacted the HMO for information on the program for themselves or their patients.

The physician assessment demonstrated that claim data alone did not provide a complete picture of risk status or cardiac history of the members, especially of those recently enrolled. In addition, the subjective information on appropriateness of the program was very helpful.

The risk categories are discrete groupings, and do not represent a continuum through which members progress as their illness worsens. Members in the low risk group can move to the high-risk group from a cardiac event or surgery, without progressing through the moderate risk group. One does not necessarily need to experience a condition in the moderate risk group in order to move into the high-risk category.

However, the risk categories alone are not enough to determine risk of a future cardiac problem. One low risk member may have lifestyle factors not being addressed that may lead to a severe cardiac event or surgery. A different low risk member may have those same lifestyle factors under control and never experience an exacerbation. A high risk member, such as one with a history of a CABG, may be well controlled and have lowered risks due to self-care and life style. Often those members who recently had cardiac events or surgeries are more conscientious about following physicians' recommendations or are participating in a cardiac rehabilitation program.
Targeting members for participation was also difficult. Coronary artery disease may be either asymptomatic or without exacerbation for long periods. Members often have high risk factors and then a sudden and severe exacerbation such as a myocardial infarction.

Some of the information in claim history was meaningful on its own. For example, members who have not had a visit to a PCP or cardiologist in the past year and have a history of comorbidities and/or cardiac problems are less likely to be well controlled. The level of control and current compliance are as important as the member’s cardiac history.

The data available on cardiac history was limited to the time period during which the member had been enrolled in this specific plan. Many employers have switched insurance or managed care plans over the last several years. Members may also change their place of employment or be able to change plans if their employer offers choices. For this reason, many past cardiac events were not known about unless provided on the physician assessment. However, physician assessments were not received for all members. Since there was an average of 30-90 day lag period for the claim data to be available, the most recent data also is not provided. These factors impacted the completeness of the data on cardiac history.

Due to the high turnover of members at the end of a calendar year, members are best offered the program during the early months of the calendar year.

The member responses to the nurse were biased, as they were self-reported. Members may have tended to over-state compliance with self-care activities such as medication regimen, exercise, and diet. Information on frequency of office visits may
also have been inaccurate due to limitations in memory. Members may also have had
difficulty remembering if an office visit was unplanned or regularly scheduled. Members
may also have confused visits to the doctor for problems not directly related to their
cardiac condition, such as cold or flu, and reported these as visits for cardiac purposes.

The nurse played a supportive as well as an educational role. Although members
had previously heard most of the information presented by the nurse, she provided a
review of self-care and encouraged both self-care and follow-up from the physicians.
Most of the members already understood how to take their medication and how lifestyle
influences their cardiac illness; and they usually were aware of the harmful effects of
obesity and smoking, especially with a diagnosis of coronary artery disease. While self-
reported compliance with medication, exercise, and diet were probably overstated from
the members, the nurses were able to provide encouragement and reinforcement for
members who were ready to modify their behaviors. The nurse was also able to prepare
them for discussions with their physicians concerning recommended treatment. The
specific goals and plan for achieving them could be worked out with the nurse.

Some behaviors could not be modified through nurse education alone. Although
the nurse may provide encouragement or answers to questions on selected topics, the
motivation to alter behavior and lifestyle requires significant commitment from the
member. For example, behaviors such as smoking, excess weight or dietary problems,
and lack of exercise are risk factors for cardiac problems but take a considerable amount
of effort to overcome in one’s daily life. The nurse may reinforce positive behaviors, but
telephonic nurse counseling alone may not be enough to impact a long-term change.
The nurse was also disadvantaged without a face to face interaction with the members. The nurse worked with a limited set of information, mostly claim data and the one-page physician assessment, when available. The other information is presented by the member, more so as the relationship between the member and the nurse develops, but the nurse was unable to assess other information that might be pertinent to managing coronary artery disease. The nurse generally relied on members bringing up issues such as barriers to self-care. Factors such as the member’s support system, cultural influences, and responsibilities affecting one’s ability to deal with a chronic illness but may not be easily identified through telephonic contact alone.

The program illustrates that the telephonic nurse counseling is effective in addressing some factors for self-care and compliance in managing cardiac disease. However, telephonic counseling alone is not sufficient to address some of the difficult lifestyle challenges that can help members optimally manage their illness.

**Recommendations and Conclusion**

The cardiac disease management program was able to be integrated into the HMO and had value for the participants. The program was initiated in 1995 and has been operating for over five years. Several other HMO’s including plans specifically for senior citizens have integrated the disease management program into their offerings.

This initiative has been successful in demonstrating the HMO’s concern for improving the health status of its members with cardiac disease. The program has been well received during accreditation reviews of the plan. It is also thought that the program
may be saving utilization of services for those members participating, although this needs to be analyzed.

Coronary artery disease is a chronic illness that is impacted by self-care, compliance with physician instructions and lifestyle. However, many of the lifestyle factors impacting coronary artery disease occur over time and results may not be measurable during a short follow-up period. For example, weight loss in a member who is overweight will impact that person's health. It is difficult to demonstrate this through claim and utilization data. Instead, long-term effects from improved health status would have to be measured.

Impacting specific health problems through self care and compliance is only possible if the needed services can be offered. For example, the expectation of fostering smoking cessation is much lower without being able to offer an effective program or mechanism. Telephonic counseling can reinforce such a program, but would not be enough alone to expect a high rate of success. Services offered such as nutritional counseling, diabetic education, and cardiac rehabilitation as covered benefits are more likely to help members. The role of the nurse would be to encourage and reinforce members to continue with their progress.

A telephonic disease management program may be better for measurable behavioral change or goals of smaller magnitude. A telephonic program is able to impact some behaviors, but may not be effective as a comprehensive heart disease program.

Simpler changes such as facilitating PCP visits to members who are not regularly followed or teaching members to identify and respond to chest pain are reasonable goals
for a telephonic program. Programs aimed at total lifestyle impact are too complex to have long term effect with only telephonic nurse counseling.

Based on the preliminary findings of this program, the HMO can take a more comprehensive role in offering preventive programs and services to address behavioral issues that affect cardiac illness. The program may consider expanding to offer more preventive services and in-person counseling such as programs for smoking cessation and exercise. These behaviors and lifestyle factors are difficult to change and may need more efforts than can be offered through a telephonic program.

The program should also conduct studies to assess the cost-effectiveness of the program overall. These studies could also measure the cost-effectiveness of offering in-person services such as nutritional counseling that are not ordinarily covered benefits of the HMO. The HMO can determine if such services improve the health of the members and manage costs.

Overall, the cardiac disease management program offers valuable services to its participants. It is recommended that the HMO continue the program with some enhancements, modifications as mentioned above, and cost effectiveness studies.
Endnotes


References


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Appendix 1
CPT and ICD-9 Codes Used in Identification and Risk Stratification

**CPT Codes**

**Angioplasty**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>92982</td>
<td>Percutaneous transluminal coronary balloon angioplasty; single vessel</td>
</tr>
<tr>
<td>92984</td>
<td>Each additional vessel</td>
</tr>
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</table>

**Coronary Artery Bypass Surgery**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33510</td>
<td>Coronary artery bypass, vein only; single coronary venous graft</td>
</tr>
<tr>
<td>33511</td>
<td>two coronary venous grafts</td>
</tr>
<tr>
<td>33512</td>
<td>three coronary venous grafts</td>
</tr>
<tr>
<td>33513</td>
<td>four coronary venous grafts</td>
</tr>
<tr>
<td>33514</td>
<td>five coronary venous grafts</td>
</tr>
<tr>
<td>33515</td>
<td>six or more coronary venous grafts</td>
</tr>
<tr>
<td>33517</td>
<td>Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (list separately in addition to code for arterial graft)</td>
</tr>
<tr>
<td>33518</td>
<td>two venous grafts</td>
</tr>
<tr>
<td>33519</td>
<td>three venous grafts</td>
</tr>
<tr>
<td>33521</td>
<td>four venous grafts</td>
</tr>
<tr>
<td>33522</td>
<td>five venous grafts</td>
</tr>
<tr>
<td>33523</td>
<td>six or more venous grafts</td>
</tr>
<tr>
<td>33530</td>
<td>Reoperation, coronary artery bypass procedure or valve procedure, more than one month after original operation (list separately in addition to code for primary procedure)</td>
</tr>
<tr>
<td>33533</td>
<td>Coronary artery bypass, using arterial graft(s); single arterial graft</td>
</tr>
<tr>
<td>33534</td>
<td>two coronary arteries</td>
</tr>
<tr>
<td>33535</td>
<td>three coronary arteries</td>
</tr>
<tr>
<td>33536</td>
<td>for or more coronary arterial grafts</td>
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</table>

**ICD-9 Codes**

**Heart Disease**

<table>
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<th>Code</th>
<th>Description</th>
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<tr>
<td>410-410.9</td>
<td>Acute myocardial infarction</td>
</tr>
<tr>
<td>413</td>
<td>Angina pectoris</td>
</tr>
<tr>
<td>413.0</td>
<td>Angina decubitus</td>
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<tr>
<td>413.1</td>
<td>Prinzmetal angina</td>
</tr>
<tr>
<td>413.9</td>
<td>Other and unspecified angina pectoris</td>
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<tr>
<td>414</td>
<td>Other forms of chronic ischemic heart disease</td>
</tr>
<tr>
<td>414.0</td>
<td>Coronary Atherosclerosis</td>
</tr>
<tr>
<td>414.8</td>
<td>Other specifies forms of chronic ischemic heart disease</td>
</tr>
<tr>
<td>414.9</td>
<td>Chronic ischemic heart disease</td>
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</tbody>
</table>
429.2 Cardiovascular disease, unspecified

**Congestive Heart Failure**
428 Congestive heart failure
428.1 Left heart failure
428.2 Heart failure, unspecified

**Hypertension**
401-401.9 Essential hypertension
402-402.9 Hypertensive heart disease
403-403.9 Hypertensive renal disease
404-404.9 Hypertensive heart and renal disease
405-405.9 Secondary hypertension

**Diabetes**
250 Diabetes mellitus
250.0 Diabetes mellitus without mention of complication
250.1 Diabetes with ketoacidosis
250.2 Diabetes with hyperosmolar coma
250.3 Diabetes with other coma
250.4 Diabetes with renal manifestations
250.5 Diabetes with ophthalmic manifestations
250.6 Diabetes with neurological manifestations
250.7 Diabetes with peripheral circulatory disorders
250.8 Diabetes with other specified manifestations
250.9 Diabetes with unspecified complication
## Appendix 2
### One Page Member Profile

<table>
<thead>
<tr>
<th>Member Name</th>
<th>PCP Name</th>
<th>Cardiologist Name</th>
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<tbody>
<tr>
<td>Member Address</td>
<td>PCP Address</td>
<td>Cardiologist address</td>
</tr>
<tr>
<td>Member Phone Number</td>
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<td></td>
</tr>
<tr>
<td>Enrollment Date</td>
<td>Last PCP Office Visit</td>
<td>Last Cardiologist Visit</td>
</tr>
<tr>
<td>Age</td>
<td>Last Cholesterol Test</td>
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</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
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<tr>
<td>Total Cost</td>
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</table>

### High Risk Factors  Moderate Risk Factors  Low Risk Factors

### Drug Profile:

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<th>Drug</th>
<th>1st Fill Date</th>
<th>Last Fill Date</th>
<th># Scripts</th>
<th>Average Days</th>
<th>Average Quantity</th>
<th>Average Paid</th>
<th>Pharmacy</th>
<th>Physician Name</th>
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</table>

### ER Visits

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<th>Date</th>
<th>Primary ICD-9</th>
<th>Secondary ICD-9</th>
<th>Tertiary ICD-9</th>
</tr>
</thead>
</table>

### Hospitalizations

<table>
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<tr>
<th>Date</th>
<th>Primary ICD-9</th>
<th>Secondary ICD-9</th>
<th>Tertiary ICD-9</th>
</tr>
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</table>
Appendix 3
Letter to Physicians Asking to Complete Member Assessment

Dear Doctor:

(HMO Name) will be featuring an additional service for members who have coronary artery disease. The program is designed to support participants with medical self-care and supplement information you provide to your patients.

We would like your help by asking your staff to complete the enclosed questionnaire using the medical records for your patients with coronary artery disease who are listed on the enclosed form. Your staff will receive $5 for each returned completed form. Please check the accuracy of this form after it is completed and answer the final question about how valuable you think a support program would be for this member. Your information, along with any other comments you think may be helpful, will be used to determine what type of intervention your patients will receive. If you have any other (HMO Name) members who are not on the list, but may benefit from this program, please call us at the number listed below.

Targeted members at moderate to high risk will be contacted by a Nurse Consultant. Participants can speak with the nurse about topics such as early signs and symptoms of a problem, identifying questions to be directed to you and improving self-care activities such as exercise, nutrition, and medication compliance. With the member’s consent, we will contact you to communicate any information that may require your attention.

Members with good compliance and low risk will receive written educational material and a self assessment tool designed to help identify problems or knowledge deficits they may need to discuss with you. Selected members with high risk of exacerbation may be referred to (HMO Name) Individual Case Management Program.

In the future we will be asking your assistance in helping us evaluate the program and its impact on member self-care activities and health status, and your satisfaction with it.

If you do not want to have your patients participate, please call us in the next 10 days at (phone number). Otherwise we will begin to send information to the patients listed.

Sincerely,

Medical Director
(HMO Name)
Physician Assessment

Date: 

1. Has this member ever had chest pain? ___ Yes ___ No
2. Has this patient ever had:
   ___ a myocardial infarction
   ___ a stroke
   ___ congestive heart failure

3. a. Does the patient have:
   ___ diabetes
   ___ hypertension
   ___ hyperlipidemia

   b. Has the patient ever had:
      ___ coronary artery bypass surgery
      ___ angioplasty of 2 or more cardiac vessels
      ___ carotid endarterectomy (without stroke)
      ___ history of TIA
      ___ atherectomy or angioplasty for peripheral vascular disease
      ___ bypass for peripheral vascular disease

4. Has the patient ever had:
   ___ angioplasty of 1 cardiac vessel
   ___ intermittent claudication

5. Does the patient smoke? ___ Yes ___ No
6. What medications is the patient currently taking?

7. What is the patient’s cholesterol? _____ Total _____ HDL _____ LDL

8. Do you consider the patient overweight? ___ No ___ Yes, pounds overweight: ___

9. Is the patient’s blood pressure: ___ high ___ low ___ normal

10. Has this patient been compliant with your advice on:
    Taking medication ___ Yes ___ No
    Regular office visits ___ Yes ___ No
    Diet ___ Yes ___ No
    Exercise ___ Yes ___ No

11. Is there a reason why this member can not participate in an exercise program?
    ___ Yes ___ No

12. Patient’s risk for a cardiac event or progression of illness: ___ low ___ moderate ___ high

13. Your recommendation for participation in the cardiac disease program:
    ___ This patient has good compliance, nurse education not needed but please mail educational materials to the patient
    ___ This patient could benefit from nurse education and support
    ___ This patient not likely to benefit from nurse educational support, exhibits persistent poor compliance, but please mail educational materials
Appendix 4
Definitions of Member Risk Levels

**High Risk Members:** All those with a history of a morbid event consistent with atherosclerotic disease: myocardial infarction, stroke, or congestive heart failure.

**Intermediate Risk Members:** Those with one of the following:
- diabetes mellitus with a concurrent diagnosis of either hypertension, hyperlipidemia, or smoking.
- coronary artery bypass surgery (without known MI).
- angioplasty of 2 or more coronary vessels (without known MI).
- carotid endarterectomy due to transient ischemic attacks (without known stroke history).
- history of TIA (but not stroke).
- lower extremity angioplasty or other surgical treatment for peripheral ischemia due to atherosclerosis.

**Low Risk Members:** Those with a history of one or more of the following:
- intermittent claudication with smoking and/or hyperlipidemia.
- diabetes mellitus.
- single vessel coronary angioplasty.
- hypertensives being treated with medication.
- all others
Appendix 5
Prioritization for Targeting Members

I. Members who will not be contacted at all by mail or telephonically:
   A. Members whose physicians specifically stated not to contact their patients
   B. Members currently in nursing home/long term care facilities
   C. Members with terminal illness, such as advanced stages of cancer, AIDS, renal failure
   D. Members currently being case managed with complex cases
   E. Pediatric members under the age of 18
   F. Members whose claim data/physician pre-assessment does not indicate the presence of ischemic heart disease
   G. Members who have disenrolled/expired prior to date of contact.

II. Prioritize for nurse intervention:
   A. Members with inappropriate utilization including:
      1. multiple emergency room visits for cardiac or related diagnoses, especially with no follow-up office visits
      2. no recent office visits, especially with other risk factors such as diabetes, hyperlipidemia, smoking, and/or hypertension
      3. no cholesterol test during 1994, especially with hyperlipidemia
   B. Members with congestive heart failure
   C. Members with diabetes and hyperlipidemia or/and hypertension
   D. Members at moderate or high risk as defined by the attached criteria, especially if the physician recommends that the patient will benefit from nurse education
   E. Members who have had an MI in 1994 or 1995

III. Do not prioritize for nurse intervention:
   A. Members who have had severe strokes causing paralysis or speech complications
   B. Members with recognizable complex psychiatric or substance abuse problems
   C. Members whose physician assessment stated that the patient was unlikely to benefit from nurse educational support, especially due to persistent poor compliance

IV. Members prioritized for mailing intervention only, no nurse intervention:
   A. Those at low and lowest risk with no utilization problems
   B. Members, excluding those with diabetes and/or congestive heart failure, with a history of MI or CABG with no inpatient or ER utilization, PCP visit in the past 12 months, and controlled blood pressure, weight, and cholesterol and physician states compliant.
   C. Members with no inpatient or ER utilization, recent PCP visit in the past 12 months, controlled weight, cholesterol, and blood pressure (except for members with CHF)
   D. Members with non-cardiac debilitating co-morbidities and whose primary nurse intervention needs would not be cardiac
   E. Members who have had organ transplants
   F. Members who the physician states is non-compliant and unlikely to benefit from nurse intervention
   G. Members who have had severe strokes or dementia or senility whose physician feels would benefit from receiving mailed information
Appendix 6
Patient Education Materials

Standard Materials
"Guide to Your Healthy Heart"- American Medical Association

Supplemental Materials
Indication: Patient has high blood pressure/hypertension
"About High Blood Pressure" American Heart Association

Indication: Patient has high cholesterol/hyperlipidemia
"So You Have High Blood Cholesterol"-National Heart Lung and Blood Institute, NIH

Indication: Patient has nutritional deficits
“How to Read the New Food Label”- American Heart Association
“Exchange Lists for Meal Planning”- American Diabetes Association and American Dietetic Association
“Recipes for Low-Fat, Low-Cholesterol Meals”- American Heart Association
“Nutritious Nibbles”-American Heart Association

Indication: Patient reports poor exercise compliance
"E is for Exercise" - American Heart Association

Indication: Patient has diabetes
"Take Charge of Your Diabetes" - U.S. Department of Health and Human Services
“Exchange Lists for Meal Planning”- American Diabetes Association and American Dietetic Association
“Understanding Diabetic Eye Care”- (HMO Name)
“Foot Care, Day-by-Day #33”- American Diabetes Association

Indication: Patient has congestive heart failure
"Congestive Heart Failure, What You Should Know" - American Heart Association

Indication: Patient smokes
"Guide to Stop Smoking"- American Medical Association

Indication: Patient has not had blood pressure checked in 12 months
As You Decide- High Blood Pressure Screening-(HMO Name)

Indication: Patient has not had cholesterol checked in 12 months
As You Decide/Check It Out- Cholesterol Screening-(HMO Name)

Indication: Patient has been recommended or referred for CABG, coronary laser angioplasty, or coronary angiography
"As You Decide"-(HMO Name)
Coronary Artery Bypass Surgery
Coronary Laser Angioplasty
Coronary Angiography
Appendix 7
Letter Inviting Member to Call the Cardiac Nurse

Dear Member:

As someone with heart disease, maybe you've faced something like this:
- You realize there were more things you wanted to know...after you left your last doctor’s visit.
- You may have questions about your medicines or when to call your doctor.
- You'd like to read more about heart disease and how to take care of yourself.

(HMO Name) is pleased to provide a new service for members who have heart disease or chest pain (angina). We are also asking your doctor about what information will be helpful to you.

We would like you to call 1-800-(phone number) to use this service. The service offers you:
1. My services as a nurse consultant. You can call me toll-free to talk about heart disease, recognizing early signs of a problem and preparing for visits to your doctor to get the most out of them. I can also help you with questions about diet, exercise and self-care.
2. Free information that can be sent to you about heart disease and related topics such as cholesterol, high blood pressure and diabetes.
3. Convenient hours for talking with me through (Service Name)® 1-800 number afternoons and evenings Monday through Friday. You can dial directly to my extension (XXXX) or simply ask for (nurse’s name).

1-800-(phone number)
2:30 p.m. to 10 PM, Mon-Fri

Please call me soon so I can begin working with you on positive steps in caring for your health.

Sincerely,

Nurse Consultant
(HMO Name)
Appendix 8
Member Letter with Mail Back Post Card

Dear Member:

As someone with heart disease, maybe you've faced something like this:
- You realize there were more things you wanted to know...after you left your last doctor’s visit.
- You may have questions about your medicines or when to call your doctor.
- You'd like to read more about heart disease and how to take care of yourself.

(HMO Name) is pleased to provide a new service for members who have heart disease or chest pain (angina). We are also asking your doctor about what information will be helpful to you.

Just return the post card telling us when to call you. The service offers you:
1. The services of a nurse consultant you can talk to about heart disease, recognizing early signs of a problem and preparing for visits to your doctor to get the most out of them. The nurse can also help with questions about diet, exercise and self-care.
2. Free information that we can send you about heart disease and related topics such as cholesterol, high blood pressure and diabetes.
3. Convenient hours for talking with the nurse including early evenings or weekends.

*Please return the enclosed post card soon* telling us the best time to call you. I'd really like to begin working with you on positive steps in caring for your health.

Sincerely,

Nurse Consultant
(HMO Name)
Member’s Name

An (HMO Name) nurse will be calling you to talk about the active role you can take in managing your health. Please fill out the info. below:

The best time(s) to call me:

Weekdays: ___ mornings ___ afternoons
Evenings: ___ 5-7 p.m. ___ 7-9 p.m.
Weekends: ___ Saturday ___ Sunday

at (___)______________
area code phone number

Thank you!

Business Reply Mail
First Class Permit NO. XXX Hartford, CT

Postage will be paid by addressee

HMO Name
Address
Appendix 9
Letter Preceding Proactive Call by Nurse ("Warm Call")

Dear Member:

Lowering risks for heart problems is a positive step we can all take for ourselves. (HMO Name) is ready to help you take those steps.

Risk factors for heart disease include high cholesterol, smoking, high blood pressure, stress, diabetes, being inactive and being overweight. You can make a difference by lowering any of these risks. Even small changes can help lower your risk of heart problems. And small changes add up.

Heart disease is a problem that affects the normal function of the heart. It is caused by a buildup of fatty materials, including cholesterol that narrow the arteries and decrease blood flow. The heart must work harder and this may cause heart problems or chest pain.

(HMO Name) is pleased to provide a new service to help members lower the risks of heart problems, whether or not you have heart disease. We are also asking your doctor about what information will be helpful to you.

I have sent you a self-test called Coronary Artery Disease. You can take the self-test to see how you are controlling your risk factors for heart problems. I have also sent you a booklet called "Guide To Your Healthy Heart". This booklet talks about keeping your heart healthy and taking an active role in your health.

I will be calling you in the next two weeks. We can talk about any questions you may have from the self-test or booklet when I call you. I can also mail more information to you. I look forward to working with you on positive steps in caring for your health.

Sincerely,

Nurse Consultant
(HMO Name)