Dean Ornish Program for Reversing Heart Disease
Cost Effectiveness Summary

1. Multicenter Lifestyle Demonstration Project (Mutual of Omaha Study)

a. Study Design: 333 patients presenting for revascularization – either coronary artery bypass grafting (CABG) or percutaneous transluminal coronary angioplasty (PTCA) - were reviewed. 194 entered the Dean Ornish Program, while 139 in the control group underwent bypass surgery or therapeutic angioplasty (66 PTCA, 73 CABG).

b. Results

i. In addition to their initial revascularization, the control group required 34 additional procedures in the following 3 years (23 PTCA's and 11 CABG). Thus, the control group underwent a total of **173 procedures (89 PTCA and 84 CABG)** in the 3-year trial period at an estimated cost of **$6.6 million (or $47,647 per patient**). This number reflects only the cost of the procedure and no other medical costs (ED visits, meds, etc.)

ii. The Dean Ornish Group underwent a total of **57 procedures (31 PTCA and 26 CABG)** during the 3-year study period at a total cost of **$3.5 million (or $18,119 per patient**). This reflects a cost reduction of 47% or $3.1 million total (and $29,000 per patient) over a 3-year period.

c. This study was published in the American Journal of Cardiology in November 1998.

2. David Eddy, MD, PhD Review

a. In a report published July 12, 2000 entitled, "Assessment of Intensive Lifestyle Changes for the Treatment of Coronary Artery Disease," Dr. Eddy completed a meta-analysis of existing literature on the Dean Ornish Program. He concluded that, "… the program is at least cost-neutral, and is probably cost saving, is robust under a wide range of assumptions and sensitivity analyses. While it is never possible to know the exact financial effects of a treatment (or its exact clinical effects, for that matter), all the available evidence suggests that the Comprehensive Lifestyle Program is highly likely to be cost saving, and is extremely unlikely to be cost increasing."

3. Highmark Data

a. Early Research Findings. The Actuarial staff of Highmark undertook an analysis of the impact the Dean Ornish program had on Highmark members. Using one-year results from the first 242 patients enrolled in the program, they projected the actual cost savings at Highmark using the expected rate of procedures in this population. They concluded that the Ornish program is likely to save **$17,687** over a three-year period for Highmark patients who are ill enough to require an intervention (angioplasty or CABG).

b. Emergency Department (ED)/Inpatient Admissions Study. In an additional Highmark study, 88 patients in managed care programs (with similar benefit structures) for which complete claims data were available for a two-year period (1 year prior to entry into the Dean Ornish Program and 1 year post entry) were reviewed. The results are as follows:

	Prior Year	**Year After Entry**	**% Change**
ED Visits (chest pain/angina)	150	121	**- 19.3**
ED Visits (all causes)	451	201	**- 55.4**
Admissions (chest pain/angina)	123	13	**- 89.4**
Admissions (all causes)	505	80	**- 84.1**

c. Per Member Per Month (PMPM) Cost Study. In another study, Highmark reviewed 110 patients for whom complete claims data were available for a 1 year prior to entering the program and 1 full year afterwards.

i. Participants must have documented evidence of heart disease by having a history of a heart attack, PTCA or CABG. (These patients were not necessarily in need of an acute procedure and thus contain a mix of Group I and Group II patients.)

ii. Results

1. Claims cost the year prior to entering the program = $546 PMPM
2. Claims cost the year after entering the program = $273 PMPM
3. Results: **50 % reduction in claims cost** after entering the Ornish program.
4. A control group of similar patients had virtually no change in their PMPM costs over the same period.

d. Rate of Inpatient Admissions. Three-year analysis of Ornish patients vs. Control group (n=130). Non-randomized design, but patients with similar motivation and similar utilization. Purpose of the study is to monitor the rate in inpatient admissions for angina for the year prior to entering the Ornish program and for 2 years afterward. Admits are listed as "Admits/1000" to allow for ready comparison of the two groups.

i. Results

	Year 1	**Year 2**	**Year 3**
Ornish Patients	125	25	**0**
Control Group	96	48	52

ii. As can seen by the above table, not only did the Ornish patients experience decreased hospitalizations during the first year after entering the Ornish Program, but they continued to experience ongoing benefits from the lifestyle change even into year 2 (while the control group's rate started to edge back up).

e. Care Cost Using DxCG Analysis

i. Care costs for 256 Ornish participants were predicted using DxCG (Diagnostic Cost Group) modeling software.
ii. DxCG software uses diagnostic information on claims data to predict costs for the following year on selected patients.

iii. Based on this analysis, DxCG predicted these patients would experience a 16% reduction in care costs the following year (if there was no intervention).
iv. Instead, the Ornish patients were found to have an actual reduction of 46% in care costs (similar to other findings suggesting a significant drop in costs.)

f. High Cost Member Study. A significant contributor to high health care costs is the "very high cost" patients. To determine if the Ornish Program could help impact this problem in heart disease, we undertook a study of 78 Ornish patients compared with 78 controls selected through DxCG matching

i. Results: In the year after entering the Ornish program, only 1% of these patients incurred claims costs in excess of $25,000. However, among the matched control group, 4% experienced greater than $25,000 in claims during the same period (representing **a four-fold difference**!)

In conclusion, we have evaluated the Ornish program from a variety of different approaches with very similar conclusion. That is, the evidence to date supports the presumption that comprehensive lifestyle changes for the treatment of CAD save money, as well as improve the clinical status of the patient.