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Emerging Data on Consumer-Driven Health Plans

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American Academy of Actuaries
Consumer-Driven Health Plans Work Group



AMERICAN ACADEMY *of* ACTUARIES



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*Prepared by the American Academy of Actuaries
Consumer-Driven Health Plans Work Group*

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The American Academy of Actuaries is a professional association with over 16,000 members, whose mission is to assist public policymakers by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

Executive Summary

Consumer-driven health (CDH) products have been marketed in various forms since the early 2000s. While emerging data is not entirely conclusive, general directional conclusions can be drawn from the studies published to date. This monograph summarizes the results of some of those studies, focusing on the ones that are based on historical claims data, that use credible methodologies, and that provide reasonably detailed and relevant results. The studies reviewed were:

- *Making an Impact—Aetna Health Fund* (2008)
- *CIGNA Choice Fund: Two Year Experience Study, 2005-2006* (March 2008)
- *Reden & Anders—Consumer Directed Health Care: A Look at Current Experience* (November 2006)
- *Uniprise—2008 CDHP Results Discussion* (March 2008)

This monograph focuses on the most recent version of each study identified above, but it should be noted that many of the studies included have been repeated multiple times for growing data sets over the past few years. In general, the previous versions of these studies show similar results as the ones that are discussed in this monograph.

The observations of this monograph are organized around four main questions that are frequently raised regarding CDH plans:

- Do CDH designs result in any first-year cost savings and/or favorable effects on cost trends beyond the first year?
- Are the apparently positive results presented by market participants real or the result of favorable selection?
- Are cost savings generated at the expense of necessary care or the result of delayed or inappropriate avoidance of care?
- Are CDH plans merely a device for employers to shift more of the total benefit cost to employees?

With regard to first-year cost savings, all studies showed a favorable effect on cost in the first year of a CDH plan. CDH plan trends ranged from -4 percent to -15 percent. Coupled with a control population on traditional plans that experienced trends of +8 percent to +9 percent, the total savings generated could be as much as 12 percent to 20 percent in the first year. All studies used some variation of normalization or control groups to account for selection bias.

For savings after the first year, at least two of the studies indicate trend rates lower than traditional PPO plans by approximately 3 percent to 5 percent. If these lower trends can be further validated, it will represent a substantial cost-reduction strategy for employers and employees.

Generally, all of the studies indicated that cost savings did not result from avoidance of inappropriate care and that necessary care was received in equal or greater degrees relative to traditional plans. All of the studies reviewed reported a significant increase in preventive services for CDH participants. Three of the studies found that CDH plan participants received recommended care for chronic conditions at the same or higher level than traditional (non-CDH) plan participants. Two studies reported a higher incidence of physicians following evidence-based care protocols.

Finally, the studies indicated that while the possibility for employer cost-shifting exists with CDH plans, (as it does with traditional plans) most employers are not doing so, and might even be reducing employee cost-sharing under certain circumstances.

Further research will need to be performed to further validate many of these conclusions. The most significant areas for further study include:

- Additional validation of ongoing trend differences, including more studies, years of experience, and members;
- The factors that contribute to enrollment elections in a “choice” environment;
- How the utilization of wellness services is affected by first-dollar coverage and the impact wellness utilization has on total health costs; and
- How trends and cost levels for underwritten CDH plans in the individual coverage marketplace compare to those for employer-provided coverage.

INTRODUCTION

Consumer-driven health (CDH) products have been marketed in various forms in the United States since the early 2000s. Actuaries often have been asked if these plans can reduce inappropriate utilization and lower health care cost, and if any adverse effects might result. Finally, sufficient experience studies are available to help answer these questions.

The American Academy of Actuaries' Consumer-Driven Health Plans Work Group ("work group") has reviewed several experience studies, drawn conclusions, and documented the actuarial issues involved. This monograph presents the results of this effort and includes recommendations for future studies to further increase the actuarial knowledge base.

The primary indications are that properly designed CDH plans can produce significant (even substantial) savings without adversely affecting member health status. To the knowledge of the work group, no data-based study has emerged that presents a contrary view.

It is important to note that the determination of the "best" plan for any individual or plan sponsor depends on one's perspective, objectives for the plans, and many variables (objective and subjective). There is no definitive study that shows any one plan type (CHD, HMO, PPO, POS, or other) to always be the best choice of health plans.

Definition of a CDH Plan

For the purposes of this monograph, a CDH plan is broadly defined as a high-deductible health plan (HDHP) offered in combination with a CDH fund as part of the overall benefit design. The work group relied on the studies' designations of plans as either CDH plans or control group (traditional) plans. All traditional plans will be referred to as "traditional" plans, which may include PPO, POS, HMO, and indemnity plans.

The two primary versions of CDH funds are health reimbursement arrangements (HRA) and health savings accounts (HSA).

An HRA is an employer-provided notional¹ account that typically reimburses some portion of the claims that would otherwise be the participant's responsibility under the provisions of the high-deductible health plan. At the employer's discretion, other qualified health expenses may also be reimbursed from the HRA. An HRA may be packaged with any type of health benefit plan. Because an HRA is owned by the employer and administered by the health plan, funding levels and utilization are generally available.

An HSA is a member-owned account that can be opened and funded, as long as the member is also enrolled in a qualified HDHP for which the Internal Revenue Code (IRC) gives specific requirements. The HSA enables tax-free contributions by both participants and employers, and tax-free withdrawals by participants, for qualified health expenses, including health plan deductible and out-of-pocket expenditures. Because HSAs are owned by the member, complete funding and utilization data for the HSA is generally not available.

Purpose/Actuarial Perspective

While CDH products are often described as "new" or as having "limited experience," the products in various forms have been marketed for almost 10 years. Numerous multiyear studies of experience that include hundreds of thousands of health plan members have been performed. While the data may not be entirely conclusive or complete, directional or general conclusions can still be drawn. Most of the available reports have been developed by companies directly participating in the market for these plans and have not been published in peer-reviewed

¹ A notional account is an unfunded account with a specified value established by the employer for the benefit of the employee. It is notional in that there is an account established that is not pre-funded, so it is, in effect, a promise to pay up to a specified amount rather than a cash account. In most cases, the full amount of the account value is available at all times to pay qualified health claims, but amounts are only funded by the employer when claims are incurred.

journals. However, neither has much of the actuarial literature for traditional plans. Skilled actuaries are accustomed to evaluating emerging data and drawing conclusions from partially credible or incomplete data sets.

The work group's primary goals were to review these studies, draw conclusions, and document the actuarial issues and perspectives surrounding the experience to date for CDH plans. This monograph evaluates the results from only those studies available in which the study design and methodology was likely to yield credible and meaningful results from an actuarial perspective. The studies included also use similar methodologies in order to be able to better compare the results from more than one study for consistency. Finally, the monograph identifies some of the actuarial considerations and issues that create complexity and technical difficulty when analyzing the results of these programs.

Due to differences in data or design, the results of each study generally are not directly comparable. While there are disparities between these studies, general themes are identifiable and consistent conclusions can be drawn. The analysis of the various studies focuses on four key topics that are important in evaluating whether the plans have been successful:

- Whether CDH plans produce significant cost savings in the short-term (first-year results) and in the long-term (multi-year results).
- Whether the observed cost savings with CDH plans are the result of market participants choosing to include only favorable results, or whether the favorable results are due to the CDH plans attracting healthier members.
- Whether positive cost savings are achieved through reduced quality of care. If recommended care or needed care is delayed or avoided, then the positive short-term results may result in higher costs in the long term.
- The financial impact of CDH plans on members. If the positive financial results of CDH plans for employers are simply a result of additional cost shifting to members, then employers may be able to achieve similar results by simply increasing cost-sharing provisions in traditional plans without the increased complexity of account-based plan designs.

While not the main focus, this monograph also provides comments on some studies (not included in the work group's analysis but frequently cited in the media and literature) in which the results are not particularly credible or compelling. This is not intended to be critical of those studies, their design, or the authors, but merely to point out limitations or areas where care may need to be taken in interpreting or drawing conclusions from them.

Finally, the monograph includes recommendations on future studies that may further increase the quality and credibility of future work in this area.

ACTUARIAL CONSIDERATIONS/BARRIERS TO CONSISTENT EVALUATIONS

There is a great diversity of plans that fall under the heading of CDH products. Even though this monograph is confined to those that are "account-based," there is still much variation in other aspects of the studies, such as plan design, participant premiums/contributions, population characteristics, communication material and education efforts, other options available, and the relative participation among the options, etc. The various studies were developed and performed independent of one another, so there is little consistency as to how these other aspects were taken into account. The handling of these other aspects makes it difficult to combine results from multiple-employer groups or different studies without actuarial adjustment. Actuarial adjustment of the specific study results was beyond the scope of this brief.

Timing differences

There were different exposure periods for the various studies and therefore different underlying medical trend forces for both the CDH and traditional plans. In addition to disparities in cost per person, these timing issues may also affect the relative trends between CDH and traditional plans.

Non-homogenous populations

It is commonly understood that medical plan claims vary substantially depending on participant age, gender, family status, geography, and industry. Some studies attempt to adjust for one or more of these factors by constructing a statistically similar population from their traditional participants. Others may apply actuarial adjustments to the results before making comparisons and drawing conclusions. Both methods are reasonable approaches, but neither is 100 percent reliable. None of the studies reviewed indicated that all of these factors were taken into account.

CDH plan design

There are significant differences between CDH offerings in the marketplace, particularly in the self-insured arena and especially for HRA-based plans. Some plan designs may achieve the goals of managing costs and improving health, whereas others may be ineffectual. Hopefully, successful CDH plan designs will be identified through this process and others will be discarded.

Up to this point, carriers have typically combined all their CDH plan results in order to increase the credibility of the results, with the exception that HRA- and HSA-based results are often reported separately. Going forward, the plans could be categorized and reported by major plan features to help in this process.

Competing traditional plan design

In the large employer market—the source of most of the reported data—it is common to offer a CDH plan as one option among several. The alternative plans may include PPO, POS, and HMO plan designs that generally, but not always, provide richer benefits than the CDH plan options. It is not unusual for employers to subsidize the CDH plan option more than the traditional plans in order to steer employees to those plans. This may imply to employees that the CDH plan is even less rich than it is in reality, which may intensify employee selection.

The effectiveness of CDH plans is commonly determined by comparing CDH plan experience to that for traditional plans. Unfortunately, traditional plans are not static either. Ongoing changes to traditional plans, including borrowed elements of CDH designs, will render these measures less valid as a reasonable way to evaluate CDH programs.

Selection Issues

Whenever individuals have a choice of coverage and are required to make a contribution, they will tend to choose the option that they perceive to be in their best interest. Employer pricing policies heavily influence the employee's perceived value of any plan. In general, those individuals who expect to have the greatest need for medical services will be most likely to choose the richest benefit available; and those with little perceived need will opt for the least expensive or even no coverage. These selection tendencies are reflected in average costs for the plans that are higher and lower, respectively, than would be expected if participation by plan was random.

The degree to which selection will affect plan costs varies depending on many factors, including the number and range of value of the plans offered, how much participant contributions vary, and how well the plans are understood—all of which is largely determined by the quality of communications and evaluation tools available—and, of course, the actual participation rates by plan.

When CDH plans are offered as the lowest-price (and presumably the lowest-value) option in a choice environment, it should be expected that this plan will benefit from positive selection. Of course, the degree of selection can vary substantially from plan to plan and group to group, depending on a variety of factors. This

positive selection must be taken into account in any claim evaluation. Unfortunately, the CDH plan carrier often does not have all of the desired information to adequately assess this selection issue.

Various methods have been applied to adjust for selection, such as risk-assessment methodologies, age/gender factors, etc. However, the most straightforward approach used by the studies reviewed was to simply focus on the change in cost per person (i.e., trend rates) for CDH versus traditional plans. A lower trend rate for the CDH contingent is taken as an indicator that the program is successful.

Interestingly, using the difference in trend rates may understate the true impact of consumer-driven plans. If the lower cost individuals opt for the CDH plan, it is expected that the trend rates would be higher than for the general population since the positive selection wears off over time (i.e., regression to the mean). Also, where offered in a choice environment, participation in CDH plans has generally increased from year to year. Each subsequent cohort would be less select than the previous one, which increases the average cost of the CDH block of business. Before the CDH plan experience can exhibit lower trend than the traditional business, it must first overcome these two obstacles.

It might be possible to design a study that would negate selection as a factor by examining total cost rates and trends for employers who offer a CDH plan versus those that do not. Assuming the control group was constructed to mirror the traditional plan offerings for the study population, the difference in trend rates would truly indicate CDH plan value (also assuming the other considerations discussed in this section are appropriately adjusted for). If the study population was large enough, one could look at how trend rate differences correlate (or not) with the CDH participation percentage. Note, however, that many of the considerations cited above would also be concerns for such a study, although perhaps to a lesser extent.

CHARACTERISTICS OF STUDIES INCLUDED

The work group used multiple criteria for deciding if a particular study would be included in the summary:

- The first was simply a time qualification: the study had to be available to the public by April 4, 2008. Studies released after this date that fulfill the remaining criteria will be included in future updates to this monograph.
- The studies had to be based on actual plan experience and historical claims data. Thus, the studies had to be quantitative in nature, not qualitative or theoretical.
- The studies had to use a credible methodology. This meant the studies had to compare CDH plan claims experience to either the study groups' previous coverage or to a traditional plan control group.
- Finally, the results from the studies had to be detailed and relevant. In other words, there had to be sufficient detail in the study to draw meaningful conclusions. Many studies contained conclusions that were valuable, but for purposes of this comparative summary were unrelated to the three focus areas or had no other points of comparison in other studies.

Based on these criteria, results from the following studies were included:

- *Making an Impact—Aetna Health Fund* (2008)
- *CIGNA Choice Fund: Two Year Experience Study, 2005-2006* (March 2008)
- *Reden & Anders—Consumer Directed Health Care: A Look at Current Experience* (November 2006)
- *Uniprise—2008 CDHP Results Discussion* (March 2008)

FOCUS AREAS, KEY QUESTIONS, AND FINDINGS

This monograph focuses on four key questions or concerns that are frequently raised regarding CDH plan experience:

- Do CDH designs result in meaningful cost savings in the first year of the program, and is there a favorable continuing effect on consumer behavior that may result in additional cost savings in the ongoing cost trend compared to traditional plans?
- Are the observed cost savings the result of a positive bias by market participants having an interest in the success of the plans or the result of selecting healthier members who generate lower costs?
- Are the cost savings generated at the expense of necessary care or merely the result of delayed care or inappropriate avoidance of care?
- Are CDH plans simply a device for employers to shift more of the total benefit cost to their employees?

The expected cost savings of a CDH plan in the first year can be modeled using standard actuarial techniques. Actuarial pricing models generally include expected utilization reductions tied to changes in member responsibility associated for the given plan design, whether a traditional HMO/PPO or a CDH design. These actuarial assumptions are based on the consistently measured tendency for plans with higher levels of cost-sharing to exhibit lower overall utilization and cost levels.

The expected cost savings associated with a CDH plan are based on the same actuarial principles, with one key difference. The basic theory behind CDH designs is that similar savings will occur in plan designs that utilize an account mechanism alongside the higher cost-sharing plan. This allows the benefit of lower cost and utilization achieved with a stand-alone high cost-sharing plan while maintaining benefit levels similar to traditional low cost-sharing plans. This premise is plausible if members treat HRA or HSA account balances as their own funds, and are more careful in their spending. Provisions such as rollover of HRA balances and the full ownership and portability of HSA accounts reinforce the difference between these accounts and traditional expense-incurred benefits.

This concept is frequently misunderstood. The cost savings associated with higher cost-sharing plans are well-understood, so the new concept to be measured for CDH designs is whether a similar magnitude of savings will be observed for products with an account component as for similar plans without an account component. CDH designs need not produce more savings than a comparable stand-alone high cost-share plan to be considered successful. In some cases, actuaries have assumed the CDH designs will achieve slightly lower savings than a stand-alone benefit with the same level of cost-sharing, recognizing that the account funds (particularly HRAs) are a proxy for member-owned funds, rather than an exact substitute.

Beyond the first year cost savings with CDH designs, is there is a continuing favorable effect on cost over a multiple year timeframe? Traditional actuarial models assume that cost savings from plan design changes are persistent over time (i.e., the differential cost of a given benefit remains lower by a similar amount), but the utilization difference for changes in cost sharing is not assumed to compound or result in lower trends over time. It has been suggested that the favorable utilization changes associated with CDH designs may also create reduced demand for health care services over a multi-year period and further reduce the ongoing trend when compared with traditional plan trends. This reduced trend may not be unique to CDH designs and may be a component of all higher cost-share designs. However, unlike the first-year result, reduced multi-year trends have not been established previously as a core actuarial principle that is applied consistently to all plan designs.

Because many studies of CDH plan experience have been developed and analyzed by market participants who could be viewed as having a bias towards demonstrating the success of the plans, it is important to assess whether the results of the studies are credible and do not appear to have been selected for their favorable results. It is also important to assess what controls and analysis methodologies have been used in the study design to control for the effects of differences in health status of members who choose to enroll in different health plans. If healthier

members tend to choose CDH plans, it is possible that the observed effects (if not controlled for) could be the result of differences in the enrolled population rather than differences caused by the CDH plan.

Concerns are often expressed that the utilization changes driven by CDH designs may be negative or that members will utilize less care of all types, including services that are generally considered medically necessary or indicators of high quality. Additionally, it may be possible that some necessary care with these plans is merely delayed and will result in higher costs down the road when these untreated or undertreated conditions become more serious. It should be noted that this concern may be equally applicable to changes in traditional plan benefits (given that the same behavior change mechanism applies to all plan changes), so it is not unique to CDH designs.

While it is possible that a CDH plan may improve the quality of care experienced by members, it is not a necessary criterion for the plans to be considered successful in reducing costs. This is especially true if increases in cost sharing under traditional plan designs also result in lower-quality metrics for some members. If CDH plans merely provide similar levels of quality as the traditional plans they replace, that may be an acceptable outcome.

The last area of focus in this monograph discusses some of the considerations around member cost sharing in health benefit plans and how those considerations may be similar or different for CDH plans versus traditional plans. Concerns have been expressed that CDH designs are merely a cost-shifting mechanism and that employers may use these plan designs to increase the portion of the total health care expense that employees pay out of pocket. The level of cost sharing for a CDH design is flexible and employers utilize many different strategies in determining the appropriate cost-sharing levels for the plans that they offer to employees. From this perspective, CDH plans are just another offering that can be established at various benefit levels in order to meet an employer's needs, similar to what is done with traditional plans.

Although this monograph is focused on the findings of the most recent studies of CDH plans from each of the sources, it should be noted that many of the studies have been repeated many times for growing populations of members. The key findings have remained consistent over multiple study timeframes. The CIGNA study now has been released three times (with the third version released after the cutoff date for this monograph). Similarly, the Aetna study includes five years of longitudinal data with similar results, while the Uniprise study includes selected results that have remained consistent over a four-year study period.

Impact on total cost

In general, the studies included in this monograph have analyzed experience for continuously enrolled members before they enrolled in a CDH plan and for one or more years after they enrolled in a CDH plan. The studies also usually evaluate the experience for a similar cohort of members that remained enrolled in a traditional plan design for the same time periods as a control group.

Because, historically, health care costs have increased significantly from year to year for all plans, it is important to include a control population to evaluate what the increase in cost (or trend) may have been in absence of the adoption of the CDH plan. In order to measure the true impact of the CDH plan, the trend in its claim costs needs to be compared to the expected trend for a similar traditional plan. It is the difference in the two trend rates that represents the true cost savings for the CDH plan. Not all studies explicitly state the difference in trend rates for the traditional and CDH populations, so the actual value of cost savings is not always available.

Some studies also make a distinction between experience for “full-replacement” employer groups versus those that offered the CDH benefit as an option alongside other traditional plan design choices. The significance of utilizing full-replacement experience is that there should be more limited risk-selection effects in such an analysis when all members in a group have moved from a traditional plan to the CDH plan at the same time. This may result in more credible results than results from studies that include members who choose a CDH design compared with those who do not. Many studies that utilize the latter approach further adjust the data to minimize the effects of positive or negative risk selection on the results.

Because exact values could not be established from some of the studies, it is difficult to definitively state the absolute cost savings for CDH product introductions. However, the evidence from the various studies suggests that first-year cost savings expected from traditional actuarial models is being realized to varying degrees. The magnitude of results in some studies may actually be somewhat greater than what we would expect. However, some of this difference may be due to differences in plan design, health risk, or other factors that may not be entirely evident from the limited data and description available in the studies.

The savings in the first year of adopting a CDH plan ranged from a year-over-year reduction in costs of 4 percent (Cigna) to as much as a 10 to 15 percent reduction in costs (Aetna, Uniprise). These results are before comparison to the traditional plan trend, which may be an increase in costs of as much as 7 percent to 9 percent (Uniprise, Cigna). When the relative costs are compared, the total cost savings for members moving to a CDH plan could range from a 12 percent reduction in cost (Cigna) to as much as a 17 to 21 percent reduction in cost (Aetna, Uniprise) in the first year of experience. These results are summarized in Table 1 below.

Table 1: Summary of First-Year CDH versus Traditional Plan Trend Results

Study	CDH Trend	Traditional Trend	% Difference (1)
CIGNA	-4%	9%	-12%
Aetna	-10%	8%	-17%
Uniprise	-15%	7%	-21%
Reden & Anders	N/A	N/A	N/A

(1): % Difference is calculated as $[(1 + \text{CDH trend}) / (1 + \text{traditional trend}) - 1] \times 100\%$

Results for continuing cost-savings experience with CDH designs are often difficult to interpret, but the studies do seem to indicate that there may be a favorable effect on ongoing cost trends as well. Some studies have combined multiple years of results together and indicated that the overall trend over a two-year period has been less than the corresponding traditional product trend over the same time period. The Cigna study specifically identified the trend for the second year of CDH plan experience and compared it to the corresponding traditional plan trend. It found that the second-year trend in the CDH plan was nearly 5 percent lower than the traditional plan trend. The Uniprise study measured trend savings over a four-year period and suggests that the trend for the CDH plan is about 3 percent lower per year on average over the four-year period.

If this favorable trend effect can be further established as significant (e.g., 3 percent to 4 percent or more per year) and persistent over a multiyear period, this would be a strong argument for the further adoption of these plans. There are few other alternatives available to employers that demonstrate this degree of ongoing savings and trend reduction. It is possible that the favorable trend effects currently being observed are merely due to residual risk-selection effects or other factors that may cause this apparent trend to erode or disappear over time as larger data sets become available. It is also possible that this apparent trend-dampening feature of higher cost-sharing plans is a consistent element of all plans (similar to the first-year effect which has been well-measured), but one that has not been measured historically because the differences in cost-sharing levels for traditional plans is relatively small.

In summary, while there continues to be difficulty in establishing a consensus value for the cost-savings impact of CDH designs, there is much evidence that the plans do offer some degree of savings compared to traditional plan options over both the short- and longer-term time horizons. As more data becomes available for these plan designs, we hope that carriers would continue to publish and present their findings so that more accurate conclusions might be drawn in the future.

Impact of potential selection bias on results

The favorable cost results described in the previous section could be a result of two possible forms of selection bias. Because the studies have been performed by market participants, who could be perceived to benefit by the increased adoption of CDH plans, it is important to assess whether the populations studied may have been selected to produce a favorable result. In addition, the health status of members who select a given health plan may also affect the observed results, so it is important to assess how the studies have controlled for these effects to ensure that the results are credible.

In the studies we reviewed for this paper, populations included were generally a carrier's entire CDH population, so there was no evidence that the studies excluded populations of members that would have shown less favorable results. When subsets of membership were employed, the criteria were generally objective and part of a reasonable study methodology (e.g., the use of continuously enrolled members to address health status differences) rather than an apparent attempt to choose populations that would provide a more favorable result. In this approach, all CDH plan members who were continuously enrolled were included and all who were not were excluded. While there is no way to be certain that carriers did not exclude members or cases with less favorable results from the analysis, there is no evidence that this occurred.

The relative health status of members choosing different health plan options when choices are available can lead to significantly different observed results. The studies we reviewed in this paper all included elements in the study design to reduce or eliminate these potential differences. The most common approach to limiting selection effects is to utilize continuously enrolled members (e.g., members who were enrolled for the entire study period) to assess the differences in cost over time for those same members. Because the same set of members is included explicitly, the underlying health status can be assumed to be unchanged and observed differences from period to period can be inferred to be a result of enrollment in different plans. The most common approach further compares a study population (continuously enrolled members who switched to a CDH plan) with a control population (continuously enrolled members who stayed in a traditional plan). Some studies take the additional step of further comparing the trend rates for population cohorts of similar health status and adjusting or standardizing the observed trends to those that could be expected if the health status of both the study and control populations were similar.

Some studies include results separately for members enrolled in a plan-choice environment and those where all members were enrolled in a CDH plan (referred to as total or full replacement scenarios). Because all members were previously enrolled in a traditional plan and subsequently enroll in a CDH plan in this scenario, the health risk of the entire population can be assumed to be uniform and further adjustment is not required. Because there is less need for potentially judgmental adjustments with this approach, many actuaries feel that the full replacement results are more credible than results obtained with other methods. These results are generally similar to those found using the other approaches, which gives greater confidence that the adjusted results are valid and not a result of healthy membership self-selecting into the CDH plan options.

Indicators of consumer behavior change / effect on quality of care

A primary concern of opponents of CDH plans is that they will encourage participants to forgo preventive care, neglect management of chronic conditions, or not seek care early in the development of disease. The consequences of these negative behaviors would lead to higher costs in the future that would more than offset any initial savings the plans produce. While only time will tell if this criticism is valid, there are encouraging signs that this will not be the case.

Quality in health care can be analyzed from a multitude of perspectives, such as following best-practices provider protocols, receiving the right care at the right intensity level, patient compliance with treatment plans, health-status improvement, etc. The studies in this review did not consider quality of care in these specific terms, but addressed quality indirectly by comparing utilization of different services between CHDP and control populations. For example, comparisons of utilization rates and expenditures for preventive services, lab tests,

inpatient or emergency room usage, and prescription drugs pervaded the studies. To the authors of the studies, these differences were suggestive, but not conclusive, regarding changes in the quality of care CDH participants received.

The results presented generally suggested that CDH plans have higher rates of usage for preventive services and generic drugs in chronic conditions, and lower rates of usage for inpatient services, emergency room, and acute care spending (as shown in Table 2 below).

Table 2: Reported Indicators of Consumer Behavior Change/Effect on Quality of Care

Study	CDH over Traditional Plans			
	Preventive Care	Recommended Chronic Care	Evidence-Based Care	Prescription Drug Utilization
Cigna	+12%-14%*	Increased use of maintenance medications	92% of 300 rules for evidence-based care same or higher*	Cost and utilization slightly higher*
Aetna	+23%	Similar diabetic testing and chronic care script utilization	N/A	Generic utilization and substitution higher
Uniprise	Higher	Better compliance for chronically ill	Better compliance with evidence-based care	Prescription trends 3% higher
Reden & Anders	+4%	N/A	N/A	N/A

*Second CDH year

Preventive Care

All of the studies reviewed reported a significant increase in preventive services for CDH participants. This is likely due to the fact that most CDH plans provide commonly recognized preventive care with no charge to the participants. Several of the studies discussed increased messaging to CDH participants, which may account for some increased uptake in promoted preventive services. Increased messaging and no-cost preventive care is consistent with CDH proponents' view that individuals need to become better informed, proactive participants in their health regimen. It should be noted, however, that many traditional plans are also attempting to make preventive care more accessible and promoting wellness, although this is still less common than it is among CDH plans.

Recommended Chronic Care

Three of the studies found that CDH plan participants received recommended care for their chronic conditions at the same (Aetna) or higher (Cigna, Uniprise) level than traditional plan participants.

Evidence-Based Care

Two studies (Cigna, Uniprise) reported a higher incidence of physicians following evidence-based care protocols. The studies did not explore whether this was due to changes in physician behavior, participants selecting different physicians, or some other explanation.

Prescription Drug Utilization

The Aetna study noted that CDH members use generic drugs at a higher rate than control group members, which is evidence of behavior change that should result in lower cost without associated quality declines.

Similarly, the Cigna study found that drug utilization was higher, but the cost per prescription was lower, which implies that it is likely that CDH participants favor generics. This latter study also stated that both Rx cost and utilization for second-year CDH members is higher than for traditional plan members—which, when taken

together with lower medical costs, may mean that they are substituting drug therapies for more costly treatments. Consistent with this finding, the Uniprise study stated that prescription trends were higher for CDH plans.

Overall, whether CDH programs drive quality of care is an area that warrants further analysis. Hopefully, this will become easier as health care quality measures continue to evolve beyond their current early stage of development.

Financial Impact/Member Cost Share Impact

Another common concern with CDH plans is whether a high-deductible plan with an account is merely a mechanism for employers to shift more of the plan cost to their employees. CDH designs can be used as a cost-shifting mechanism, but the same can be said for traditional plans. CDH plan designs can be developed with relatively high employee cost share or relatively low cost share, depending on the employer's objectives and the relative richness of the other plans that are offered. The richness of plans offered by any employer is not unique to CDH plans, but is a decision balanced across the entire portfolio of plans that are offered, depending on the needs of the employer. The actual cost-share results for CDH plans being offered in the market suggests that overall cost share for CDH plans is similar to the levels for corresponding traditional plans. This suggests that most employers are enlisting CDH plans for their potential utilization savings rather than as a mechanism to shift more of the benefit cost to employees.

CDH designs are sometimes incorrectly described as "high-deductible plans." While it is true that CDH designs usually incorporate a high-deductible element as an important component, this description ignores the relatively equal importance of the account feature (HRA or HSA) that is included in the plan design. Such characterizations have led to the perception by some that CDH plans are simply a cost-shifting vehicle for employers and will result in employees paying a higher proportion of benefit cost out of their pockets. While some CDH designs may include greater member cost sharing, others may include the same or less when considering both the fund and high-deductible components.

Employer strategies for benefit plan richness vary considerably depending on philosophy, industry norms, the competitive market for employee compensation and benefits, etc. In most cases, the relative benefit comprehensiveness represents a compromise between offering high-value, attractive benefits and balancing affordable employer and employee contributions to the plan. It is common for larger employers to offer more than one benefit design of varying richness or cost-share for different levels of employee contribution. The same considerations apply when offering CDH designs. Employers may choose to offer a relatively comprehensive CDH design or a relatively lean design depending on their overall benefit strategy and which employees they are seeking to attract to the new plan.

Limited data exist on the actual impact of CDH benefits on member cost-sharing amounts. In 2004, the American Academy of Actuaries' Defined Contribution Health Plan Work Group modeled various CDH designs, including one that was expected to be actuarially equivalent or to have approximately the same member cost-share amount for both a traditional PPO plan and the modeled CDH design.² This exercise illustrated that account funding is a significant portion of the total benefit. In this illustration, the traditional PPO benefit paid about 82 percent of the total allowed cost while the member was responsible for approximately 18 percent. With the CDH design, the high-deductible component alone would pay only 59 percent of the total cost, but the account (not considering rollover amounts) would pick up about 23 percent. When including the fund contribution, the total amount paid by both plans is equal. Further modeling in that report showed the potential impact of decreasing the fund amount and increasing the deductible amount, both of which increase member cost sharing above that offered by the traditional plan.

² American Academy of Actuaries. *The Impact of Consumer-Driven Health Plans on Health Care Costs*. (January 2004) http://www.actuary.org/pdf/health/cdhp_jan04.pdf.

Only two studies (Cigna, Uniprise) included actual historical data on member cost-share levels with traditional and CDH plans. The Cigna study indicates that for HRA plan designs, the member cost share, including the amounts paid from the HRA, was about the same as the cost share for the traditional plan designs that the member migrated from in prior years. This study also breaks out the average cost-share percentage for members with different levels of low, medium, and high total claims and suggests that the out-of-pocket costs are approximately the same for the higher claim levels when compared with traditional plan experience. The same study further indicates that member cost-share amounts were similar for members of different age and gender levels and also for members with chronic or acute episodes.

The Uniprise study identifies the average out-of-pocket amounts for CDH plans versus PPO plans for several levels of low, medium, and high total claims. This study suggests that per-member out-of-pocket expenses are significantly lower for all levels of claimants. Even members with greater than \$10,000 in total claims had nearly 17 percent lower out-of-pocket expense than PPO members, a savings of over \$400 per member.

Table 3 below illustrates the member cost sharing for CDH and traditional plans for low, medium, and high levels of total allowed cost.

Table 3: Relative Member Cost Sharing by Claim Size

		Total Allowed Cost Level			
		Low ^{1,2}	Medium ^{1,2}	High ^{1,2}	Total
Cigna ³	CDH	18%	23%	8%	13%
	Traditional	27%	20%	8%	13%
Uniprise ⁴	CDH	\$30	\$534	\$2,168	N/A ⁵
	PPO	\$131	\$804	\$2,604	N/A ⁵
Aetna		N/A	N/A	N/A	N/A
Reden & Anders		N/A	N/A	N/A	N/A

Notes:

1. CIGNA study includes total allowed cost breakouts of \$0-\$1,000, \$1,000-\$8,000, and greater than \$8,000.
2. Uniprise study includes total allowed cost breakouts of \$0-\$1,000, \$1,000-\$10,000, and greater than \$10,000.
3. CIGNA study includes member cost share as a percentage of total allowed cost.
4. Uniprise study includes member cost share as dollars per member per year.
5. Uniprise study did not include totals, although breakouts imply that cost sharing would be significantly lower in total.

Both study findings are interesting given the level of concern over CDH plans creating higher cost-share amounts for older or less healthy members or for those with relatively high levels of claims. These studies indicate that members with all levels of claims may fare the same or better with a CDH design than they did when enrolled in traditional plans. It should be noted that these study results are based on average plan-design levels across a broad population, so not all members or employers may see the same results depending on the actual plan designs they have in place.

Finally, it must be noted that there is currently a general tendency for employers to reduce their share of medical costs (reversing a decades-long trend). These changes take the form of increased deductibles, copays and coinsurance requirements, as well as required contributions from payroll. If, in fact, an employer implements a CDH plan that increases employee cost share, one must consider whether or not employee cost share would have increased more or less in the absence of the CDH plan introduction. As noted above, cost sharing in the employee benefit context includes not only plan provisions but also required payroll deductions. Generally, surveys of employers have shown that employees pay significantly less for CDH plans, as illustrated by the following table.

Table 4: Employee Premium Cost Sharing

Number of Participants = 1,753

Employee-only coverage	Average Monthly Employee Contribution	
	Amount	% of Premium
PPO/POS	\$98	23%
HMO	\$92	22%
HSA-eligible CDHP	\$46	19%
HRA-eligible CDHP	\$58	18%

2008 Mercer National Survey of Employer-Sponsored Health Plans, all participating employers with 500 or more employees

OTHER STUDIES

Some studies that did not satisfy the criteria for inclusion in this review suggest that CDH designs create unfavorable cost sharing for women³ or that HSA designs will result in lower total cost-sharing amounts and are thus unlikely to create positive behavior change.⁴ Both of these studies are based on theoretical modeling of plan-design outcomes, and neither includes historical data from actual plan experience. As illustrated by the work group's analysis, modeled plan designs can include either increased or decreased cost sharing, depending on the plan designs modeled. The result of such modeling scenarios is entirely dependent on the plan designs chosen for the modeling. When actual experience for plan designs offered in the market is examined, we find that employers are generally offering CDH plan designs with levels of cost sharing that are similar to traditional designs. While it is possible to construct CDH plan designs that result in cost shifting, it appears from the studies reviewed that most employers have not done so in practice.

Another study not included in this monograph examined actual claims experience to assess CDH cost savings, but did not include sufficient analyses of other area to be comparable to the studies included.⁵ This study is worth noting because it showed that the CDH plans analyzed achieved utilization reductions consistent with, or even bigger than, the associated high-deductible health plans. This is despite the availability of a spending account that could be used to pay part or all of the deductibles. Five of the six CDH plans in the study achieved savings (ranging from 2.6 percent to 15.5 percent on an adjusted allowed claims basis) and four of the six had savings in excess of what was expected with just a high deductible plan (ranging from 0.4 percent to 12.1 percent more).

RECOMMENDATIONS FOR FUTURE STUDIES/OTHER ISSUES

While the studies reviewed were the best of the available studies, there remained wide variances in terms of which results were discussed and the amount of supporting detail available.⁶

If one were to review the results from the perspective of an actuary who works on CDH plan pricing, such an individual may ask questions like:

- Are results from this study transferable to my application?
- What differences are there between the study populations and the population that is being studied (or worked on)?
- What do those differences mean for the applicability of the result?
- What adjustments should be made for my application?

³ Woolhandler, Steffie. *Consumer Directed Healthcare: Except for the Health and Wealthy It's Unwise*. Harvard University, April 2007.

⁴ Remler, Dahlia K. and Sherry A. Glied. *How Much More Cost Sharing Will Health Savings Accounts Bring?* Health Affairs, July/August 2006.

⁵ Burke, Jack and Pipich, Rob. *Consumer-Driven Impact Study*. Milliman, April 2008.

⁶ An intercompany study with blinded results would be ideal; this would be true for more than just CDH plans.

Given this framework, the work group considers this compilation of the studied reports to provide indications of directional change, rather than consistent absolute results.

To be able to better understand the differences in the various studies available today, and to apply the results in practice, the following is a list of additional background details that might better inform a pricing actuary:

- Initial and normalized demographics, as well as geographic and industry distributions of each group, and a description of the normalization process;
- Initial and normalized health status distribution of each group, and a description of how this was derived and the normalization process;
- For the CDH group and the control group separately, a list of the five or 10 largest contributor groups (perhaps by geography or industry), estimated percent of the respective population, and impact on study results;
- Study time frames, including information on claim runout;
- A measure of relative richness of CDH plans for the CDH group—for example, a distribution of plan membership by deductible and/or employer CDH fund contribution;
- A measure of relative richness of health plans for the control group—for example, plan membership might be categorized based on the presence of various deductible levels and copays;
- A comparison of the relative richness of the plans of the CDH group and the plans of the control group.

In addition to more complete background information on the current studies, the following is a list of additional areas of investigation that might further enhance actuarial knowledge of CDH plans and their impact on cost, utilization, and quality:

- In a “choice” environment, what factors contribute to enrollment elections (such as movement to, between, or from a CDH plan(s))?
 - For example, employee contribution, communication strategies, a member’s perceived health status or plans for medical services, and migration from one plan to another plan; Choices by income and/or debt load, health status, and CDH plan membership may also be interesting, as information about two of the three is generally available, but not necessarily all three together.
- What is the impact of different methods of family aggregation on family enrollments?
- For HRA plans, how would splitting study results by annual employer account fund level (e.g. <\$1,000, \$1,000+) or deductible level (e.g. <\$3,000, \$3,000+) affect results? Splitting the group has the problem of lowering the study population size and potentially the credibility of the study.
- How is the use of wellness services affected by the presence of a first dollar wellness benefit versus not having one, or by having those subject to the deductibles?
- Once fund balances in HSAs build up (they remain relatively low today), will individuals dig into their retirement medical savings to pay today’s health expenses?
- Are individuals who purchase CDH plans more or less likely to supplement with other sources of insurance protection? Where does putting money into an HSA fall relative to other methods of insurance protection?
- What is the impact of various flexible spending accounts, in the presence of HRAs and HSAs, on health spending?
- While we concentrate on the employer environment, is it possible to compare and contrast trends and cost levels to the underwritten individual CDH market, again, adjusting for plan design differences?
- What is the rate of adoption of CDH plan features by non CDH plans?
- Can results be normalized for income, or other demographic variables?
- Is it possible to gain additional validation of ongoing trend differences, including more studies, years of experience, and members?
- What are the differences in the impact of an economic recession on medical spending patterns for CDH versus traditional participants?

The current studies that are available indicate that the presence of CDH plans has a positive effect on first-year and ongoing costs. However, what is not entirely clear is whether there is any correlation between the cost impact and the benefits level. To better understand the difference in the ongoing cost impact of CDH offerings compared to the traditional control groups, future studies should track a measure of the relative value of the traditional plans and the CDH plans in addition to the normalized covered charges per member. At a minimum, the percent of members in traditional offerings that do not have copays for medical, hospital, and prescription drug benefits should be tracked for both the control group and the CDH-plan study group. This is because traditional offerings that move from a copay environment to a coinsurance environment will increase consumer awareness of health care costs.