

High-Deductible Health Plans & Their Effects on Medical Utilization

*A Partial Review of Research Compiled by Mark Hage, VT-NEA Director of Benefit Programs
Submitted to the Vermont Educational Health Benefits Commission*

October 30, 2017

Preface

Before undertaking any serious consideration of research findings on high-deductible health plans (HDHPs), medical utilization, and affordable access to care, it's important to have a basic understanding of health care expenditures – the amount of spending nationally and in Vermont, future spending projections, the distribution and concentration of spending (nationally and in VEHI), and the medical conditions that drive most spending.

This information is critical to any deliberations on how to provide access to health care that is equitable and affordable for public schools and school employees and to Vermont's working families generally, and to questions of benefit design, cost sharing and state regulation of the health care system.

1. Health care expenditures are staggering and projected to increase well above the rate of inflation for roughly the next decade.

- In 2003, when Congress gave the green light to HSAs (Health Savings Accounts), the Centers for Medicare and Medicaid Services (CMS) tallied U.S. expenditures on health care at **\$1.76 trillion**. That represented **15.4 percent** of the country's Gross Domestic Product (GDP).¹
- Twelve years later, 2015, with tens of billions of dollars tax sheltered in HSAs and 20-22 million Americans in high-deductible health plans,² the United States spent **\$3.2 trillion** in on health care expenditures, **\$9,990** per person/per capita and **17.8 percent** of GDP.³
- In **2003**, Vermont spent **\$3.15 billion** on health care, **12.4 percent** of the gross state product. By **2015**, Vermont's health care expenditures had risen to **\$5.7 billion**, or **18.8 percent** of gross state product and **\$9,112** per person/per capita.⁴
- CMS projects health spending nationally will grow at an average rate of **5.6 percent** per year between **2016 and 2025**.⁵

¹ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>

² <http://www.devenir.com/research/2016-year-end-devenir-hsa-research-report/>.

³ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>.

⁴ http://gmcbboard.vermont.gov/sites/gmcb/files/files/resources/reports/2015%20Expenditure%20Analysis_short_version_final.pdf

⁵ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/proj2016.pdf>.

- U.S. health care expenditures **in 2025** are expected to reach nearly **\$5.5 trillion, \$15,800** per person/per capita, and to eat up **19.9 percent** of GDP.⁶
- Over the same period (2016-2025), “...**out-of-pocket spending growth** is projected to average **4.8 percent** per year, steadily increasing to a projected high of **5.8 percent** in 2020 (when the excise tax on high-cost health plans is scheduled to become effective), then **averaging 5.0-percent growth** in the final years of this period.”⁷

2. Chronic diseases and conditions drive most health care spending in the United States.

The Centers for Disease Control (CDC) says chronic diseases and conditions – including heart disease, stroke, cancer, diabetes, mental illness, obesity, arthritis, etc., and the health risk behaviors responsible for them – account for **86 percent** of the nation’s health care expenses.

- *“As of 2012, about half of all adults—117 million people—had one or more chronic health conditions. One in four adults had two or more chronic health conditions.*
- *“Seven of the top 10 causes of death in 2014 were chronic diseases. Two of these chronic diseases—heart disease and cancer—together accounted for nearly 46% of all deaths.*
- *“Arthritis is the most common cause of disability. Of the 54 million adults with doctor-diagnosed arthritis, more than 23 million say they have trouble with their usual activities because of arthritis.*
- *“Diabetes is the leading cause of kidney failure, lower-limb amputations other than those caused by injury, and new cases of blindness among adults.”⁸*
- *“About 25% of children aged 2 to 8 have a chronic health condition.”⁹*

3. Who is getting medical care, how much, and for what? What national and VEHI numbers tell us.

Medical costs are highly and persistently concentrated in a relatively small percentage of the population. This April, **Health Affairs** published a study titled “*Most Americans Have Good Health, Little Unmet Need, And Few Health Care Expenses.*” Researchers examined the distribution of national health care expenditures over nearly forty years (1977 to 2014), finding that:

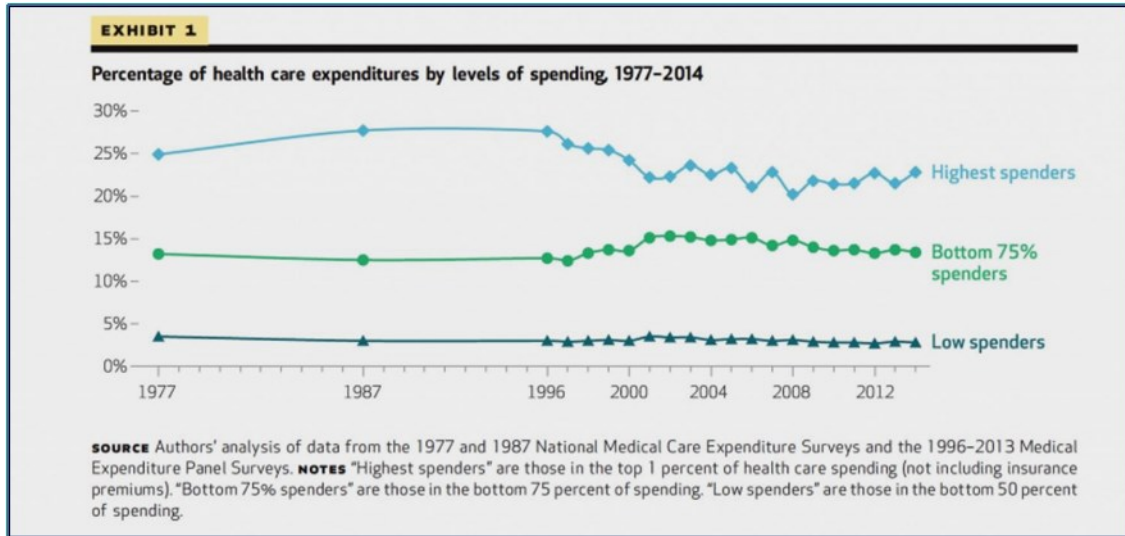
⁶ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-reports/NationalHealthExpendData/NationalHealthAccountsProjected.html>.

⁷ <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/Downloads/proj2016.pdf>.

⁸ <https://www.cdc.gov/chronicdisease/overview/index.htm>.

⁹ <https://www.cdc.gov/chronicdisease/index.htm>.

“...the ongoing level of expenditures incurred by the bottom half of the population continues to be remarkably stable: Between 1977 and 2014 it was never less than 2.7 percent or more than 3.5%. The **bottom three-fourths** of the population by spending incurred **13.4 percent** of all expenditures in 2014. Over the entire thirty-seven-year study period, the **top 1 percent** of the population has consistently **incurred much greater expense than the bottom three-fourths.**”¹⁰



Let's break down this analysis for one year: 2014. That year, according to the Medical Expenditure Panel Survey (MEPS):

- the **top 1%** of the U.S. population accounted for **22.8%** of total health care expenditures (annual mean expenditure: \$107,208);
- the **top 5%** of the population accounted for **50%** of total expenditures (annual mean expenditure: \$47,498);
- the **bottom (lower) 50%** of the population accounted for just **2.7%** of total expenditures (annual mean expenditure: \$264)
- **15%** of the America's noninstitutionalized population did not incur a medical claim in 2014.¹¹

4. VEHI & Concentrated Utilization

In FY16, according to BCBSVT, **1.8%** of **VEHI's** covered lives, just **767** people, accounted for **34.4% (\$85 million)** of the pool's total costs.¹² That year was not an anomaly in this regard.

¹⁰ <http://content.healthaffairs.org/content/36/4/742.abstract>.

¹¹ https://meps.ahrq.gov/data_files/publications/st493/stat493.shtml.

¹² BCBSVT 2016 Analytic Presentation to VEHI.

Drilling deeper into the VEHI expenditures for 2016, we find that among active school employees and their dependents:

- the **top 1 percent** accounted for **31%** of total health care expenditures (annual mean expenditure: \$146,809);
- the **top 5 percent** accounted for **53%** of total expenditures (annual mean expenditure: \$69,022);
- the **bottom (lower) 50 percent** accounted for **4%** of total expenditures (annual mean expenditure: \$654);
- On average, **8 percent** did **not** incur a medical claim.¹³

VEHI's active subscribers and dependents are not running haphazardly or irresponsibly to doctors' offices. In 2016, just **4.7%** and **11.7%** of VEHI's total costs for its active employees and their dependents were generated by primary and specialty care, respectively.¹⁴

The heaviest shares of VEHI's costs in 2016 were for hospital care (56.1 percent) and pharmaceutical prescriptions (17.9 percent). We should keep this in mind when considering changes to insurance design, cost sharing, member education, and provider outreach in the future.¹⁵

A Review of Four Studies on HDHPs, Health Care Spending & Health Care Utilization

At the first meeting of the Commission, Jeff Fannon, Vermont-NEA's Executive Director, asserted that there is evidence showing that high-deductible health plans (HDHPs) can cause medical and financial harm. He was correct, and there was a request to see data supporting this.

There is an extensive body of research on HDHPs, which makes it impossible to summarize the totality of it within the scope of this report. But it is fair to say there is a vigorous debate in the medical and academic communities on HDHPs because of their growing market share and the deepening crisis of affordability, equity, and access in America's health care system. It is not difficult to find reputable and detailed analyses of HDHPs for designated populations, with or without health spending accounts, and that examine and draw conclusions on the relationship between high out-of-pocket spending, medical utilization, income and illness, and health care costs.

From this body of research, we have chosen to share the analyses and findings of four distinct studies; we have also included on pages 20-23 links to other studies with brief narratives of their findings.

¹³ Data provided by BCBSVT to VEHI, "Active & Dependent Population," 6/28/2017.

¹⁴ Data provided by BCBSVT to VEHI, "Active & Dependent Population," 6/28/2017.

¹⁵ Data provided by BCBSVT to VEHI, "Active & Dependent Population," 6/28/2017.

The studies below expose and question the limitations and risks, medical and financial, of HDHPs, especially for low-income workers and those with chronic conditions. Those who believe HDHPs and the model of cost sharing they represent constitute a model of enlightened “consumerism” that empowers patients, lowers the overall costs of health care, improves quality and cost transparency, and expands affordable access to care will not be comforted by them.

All research has strengths and limitations in respect to methodology, the scope and nature of what it studies, the data it has access to, and what it can reveal publicly. That is true here. It is often the case, for example, that the exact amount of contributions by employers to HSAs or HRAs is not shared in detail. The name of the employer is also kept confidential. Further, sometimes a study does not extend over a long enough period for the authors to be able to draw definitive conclusions; thus, more research is necessary.

The **first three studies** involve large employers who contribute to health spending accounts. But we aren’t told who the employers are and how much they allocate to out-of-pocket costs.

The **first study** features four (unnamed) employers who offer between them a mix benefit plans – HDHPs (with HRAs or HSAs) and PPOs. Its unique focus is on health care utilization trends or patterns relative to workers’ earnings.

The **second and third** studies involve one employer each. The two companies in question both moved their work forces to an HDHP with a HSA.

The **fourth study**, like the third, addresses the impact of HDHPs on people **with chronic conditions**. It, however, analyses data from a large, national insurance database for several thousand diabetic patients. It looked at the group as a whole, but also focused attention on two subgroups: low-income diabetics and low-income diabetics in an HSA-eligible HDHP. The researchers do not know how many of the diabetic patients who were mandated to switch to an HDHP received employer contributions to OOP costs.

It is important to note that HDHPs do precisely what they are designed to do: reduce medical utilization and spending through the rationing of medical care. (No one in official insurance or policy circles uses the word “rationing,” of course, but that is what it is.) Vermont-NEA believes HDHPs are fundamentally a form of medical rationing by income class, and the consequences of this are felt most sharply and consistently by low- and middle-income workers and their families.

Additionally, cost reductions resulting from a switch to HDHPs can be the result of a sheer reduction in the **volume** of care – **not** from a reduction in prices, consumer “shopping” or negotiations with providers, improved treatment protocols, or the substitution of lower-cost care options.

When workers and their families cut back on health services **across the board** after switching to an HDHP, as is the case in the second study, it suggests they are unable to distinguish between low- and high-value care. They simply get **less** care, including primary care, preventive services, and high-priority specialist interventions, and they cut back on drug adherence. This can be true for both low-income and high-income workers. It can also be a harbinger of increased costs down the road, a consequence of a “penny-wise, pound-foolish” approach to medical care.

For those reluctant to see a connection between wages, costs, and rationing of care, the first and fourth study offer inconvenient truths. Their findings relative to low-income workers should alarm us and spark in VEHI (and elsewhere in the state) an urgent conversation about future benefit design and cost sharing.

We offer on [pages 17-19](#) a summary of a 2016 study that calls attention to the widening chasm between the wealthy and the poor in the U.S. when it comes to health care spending. The affluent, clearly, do not feel constrained or intimidated by the rules of “skin in the game.” Why should they? Their ample financial assets allow them to get the care they need or want without suffering hardships.

These studies (and others) have confirmed for Vermont-NEA that HDHPs and increased cost sharing:

- (1) Will not make health care more affordable for those who can’t afford it now.
- (2) Will put the heaviest cost burden on those who need the most health care.
- (3) May compel patients to forego medically necessary care or get less effective treatments.
- (4) Will not address the most expensive cost drivers in the health care system – prices, administrative costs, waste, missed disease prevention, and fraud.

We also conclude that without fair and sufficient out-of-pocket cost-sharing by employers or the government, or both, low- and middle-income workers and their families are at a marked disadvantage compared to their wealthier counterparts when it comes to meeting the burden of high deductibles and co-insurance charges. This burden will intensify as health care costs, premiums and OOP costs increase in years to come.

Study I: “Health Care Use and Spending Patterns Vary by Wage Level in Employer-Sponsored Plans”
<http://content.healthaffairs.org/content/36/2/250.abstract>

Published 2017

The researchers defined their purpose as follows: “...to describe how health care use and spending patterns **vary across wage levels** in a population of employees enrolled in a commercial, self-insured private exchange offering. We performed comparisons between wage levels, adjusting for differences in benefits and employees’ demographic and health-status attributes.” They are acutely sensitive, judging from the opening sections of the report and later commentary, to the cost-shifting dynamics of HDHPs.

1. Researchers **“examined patterns of health care use and spending by wage category during 2014 among 42,936 employees of four self-insured employers enrolled in a private health insurance exchange.”** Consistent with current market imperatives, the exchange offers wellness programs, consumer tools to assist workers with treatment and cost decisions, and “health care navigation support services.”
2. The companies were not named, but they have a work force that is distributed nationally.
3. Eligible employees could choose **“among up to five different HDHPs and PPO plans, with a range of different actuarial values. Employee resources for informed plan selection were based primarily on prior-year claims costs and enrollees’ financial priorities. The HDHP options had higher deductible amounts and lower premium payments, some of which included employer provided funding of health reimbursement arrangements or health savings accounts.”** Employer contributions to HRAs and HSAs were not revealed.
4. Employee wage data was structured by quartiles:
 - a. \$30,000 or less
 - b. \$30,001-\$44,000
 - c. \$44,001-\$70,000
 - d. \$70,001 or more

The lowest quartile was further divided into two groups: \$24,000 or less and \$24,001-\$30,000.

The annualized mean wages of the five categories were \$19,030, \$26,974, \$36,388, \$54,739, and \$111,555, respectively.

5. Utilization and spending in each wage quartile were **“compared to the highest (\$70,001 or more) category, adjusting for multiple comparisons.”**
6. Net of employer contributions, deductibles amounted to 10 percent of total wages for low-income workers and less than 1 percent for their colleagues in the highest-wage category.

7. Most of the low-wage employees were **female** and **younger**, and less likely to reside in the northeast of the country or to be salaried.
8. The **low-wage workers** had comparatively **greater health and financial burdens** than their high-wage counterparts, and, after adjusting for age, sex, and other covariates, they had a **greater prevalence** of chronic physical illness and psychiatric illness.

Researchers, after controlling for demographics and other characteristics, found that employees in the lowest-wage group had

“half the usage of preventive care (19 percent versus 38 percent),

“nearly twice the hospital admission rate (31 individuals per 1,000 versus 17 per 1,000),

“more than four times the rate of avoidable admissions (4.3 individuals per 1,000 versus 0.9 per 1,000), and

“more than three times the rate of emergency department visits (370 individuals per 1,000 versus 120 per 1,000) relative to top-wage-group earners.

“Annual total health care spending per patient was highest in both the lowest-wage (\$4,835) and highest-wage (\$5,074) categories relative to the middle two wage groups (\$3,952 and \$3,987, respectively).”

High-wage workers overall expenditures were driven by greater utilization of outpatient medical and drug spending, whereas hospitalization and emergency services accounted for the higher spending of **low-wage workers**. The report concluded, among other things, that the higher use of preventive and outpatient services by high-wage workers suggested that they “appeared to be addressing health concerns before they became serious, therefore avoiding either emergency department or inpatient care.”

Health Care Use (excerpted)

*“The proportion of employees who received any medical or prescription service went progressively higher as the wage level increased. **Workers in the highest wage group were significantly more likely to have filed a medical or prescription claim during 2014 relative to all lower-wage categories....** Additionally, the proportion of individuals filing claims for medical or prescription drug services or both increases in direct association with wage category.”*

Patterns of Medical Services Use (excerpted)

*“Use of emergency department services was highest among the low-wage group and was significantly lower in the higher-wage categories.... **Following adjustment for confounding variables, low-wage earners had an emergency department utilization rate more than three times greater than their higher-earning counterparts.** No significant difference was observed across*

wage categories in the frequency of avoidable emergency department visits, representing the subset of such visits for which care could also have been provided in an ambulatory care setting.

“Adjusted hospitalization rates **were lowest** (17 per 1,000 employees) in the **highest wage category**, reaching a peak at 31 per 1,000 (72 percent higher) and 33 per 1,000 (94 percent higher) among those earning between \$24,001 and \$30,000, and \$24,000 or less, respectively....

“**Avoidable or ambulatory care–sensitive hospitalization rates...followed a similar pattern across wage categories**, at 0.9 per 1,000 employees in the highest wage categories, with highest values of 3.8 per 1,000 in the \$24,001– \$30,000 wage category, and 4.3 per 1,000 in the \$24,000 or less wage category....

“**Prescription days’ supply also followed the same pattern**, with more consistent prescription medication refills for high-wage earners resulting in cumulatively greater medication dose availability during the analysis period....”

Preventive Care Services Utilization Rates (excerpted)

“Following adjustment for covariates, use of preventive care visits and recommended cancer screenings was highest in the top-wage group and directly associated with increasing wage category. **Comparing lowest to highest wage categories, preventive care visits were 50 percent lower; breast cancer, cervical cancer, and colon cancer screening rates were 42 percent, and 35 percent lower, respectively.**”

Health Care Spending Patterns (excerpted)

“Employees in the highest wage category had the greatest spending amount, followed by employees in the lowest wage category. Mid-level wage groups had the lowest spending of all groups.... **Specifically, outpatient medical and drug spending drove high overall expenditures in the highest wage category, and hospitalization and emergency department costs were responsible for greater expenditures within the lower wage categories.**”

Discussion (excerpted)

“Many studies have compared health use or spending across income, wealth, or wage distribution. To our knowledge, however, a detailed examination of the association between wage status and health care utilization patterns in an employed, commercially self-insured population has not been previously reported. **This study of private exchange enrollees provides direct evidence that the health care delivery system is used differently by subpopulations along the continuum of wage categories, particularly at the extremes.**

“**Despite the comparatively higher health care spending as a percentage of wages borne by low-wage workers, they did not appear to be savvy consumers of appropriate care.** Rather, their utilization patterns reflected a more reactive approach to health care, perhaps as a result of either necessity or choice, which led to substantially greater emergency department use and fewer

preventive visits, along with a significantly greater number of ambulatory care-sensitive hospitalizations, relative to their higher-paid counterparts.

*"In contrast, **higher-wage earners** had higher health care utilization rates for nearly all outpatient categories, coupled with comparatively lower hospitalization rates. With their greater use of preventive and outpatient services, these individuals appeared to be addressing health concerns before they became serious, therefore avoiding either emergency department or inpatient care.*

*"The higher spending amounts associated with the high-wage-earning employees appear to result from greater use of outpatient services and prescription medications. These findings might well be a consequence of greater availability of **discretionary funds** for health-care expenditures that Samuel Dickman and colleagues described as "income-based receipt of medical care." **These data reflect patterns of greater resource consumption where resource limitations do not exist.** These observations are consistent with behavior by higher-wage earners who treat health services as an investment by placing greater emphasis on consuming health services that are likely to produce health benefits in the future."*

Study II: "What Does A Deductible Do? The Impact of Cost-Sharing on Health Care Prices, Quantities, and Spending Dynamics"

<https://academic.oup.com/qje/article/132/3/1261/3769421/What-does-a-Deductible-Do-The-Impact-of-Cost>

Published 2015

This is the work of researchers at Harvard University and the University of California, Berkley. They looked at the impact on medical utilization for tens of thousands of employees in a private-sector company after they were switched from a high actuarial health plan with "completely free medical care" to a high-deductible health plan with an HSA. Their self-insured employer, which is not named in the study, contributed an "upfront lump-sum subsidy post-switch into their health savings accounts (HSA), similar in value to the population average of out-of-pocket payments in that plan."

This research, unlike the former, did not compare medical use and spending among workers among high-, middle- and low-income wage sectors. In this case, the employees were all high-wage earners, with median incomes of between \$125,000 - \$150,000.

The findings underscore the reduction in volume of care across all categories of medical services after the switch to the HDHP-HSA, with the sickest workers cutting back the most. The study also decisively contradicts the commonly held belief that HDHPs drive more aggressive or savvy "shopping" behaviors.

Company:

American-based, multi-national, self-insured corporation (unnamed).

Insurance Coverage, Plan Switch to HDHP with HSA, & Consumer Tools:

“Originally, almost all of the employees at the firm were enrolled in a generous insurance option with no cost-sharing (i.e., completely free medical care) and a broad set of providers and covered services. During and after the treatment year,...the firm discontinued this option, moving all of its employees enrolled in that plan into a nonlinear high-deductible health plan (HDHP) that, for the population on average, paid 76% of total employee expenditures. Importantly, this high-deductible plan gave access to the same providers and medical services as the prior free option, leaving only variation in financial features. In addition, employees received an upfront lump-sum subsidy post-switch into their health savings accounts (HSA), similar in value to the population average of out-of-pocket payments in that plan.”

“The required firm-wide change from free health care to high-deductible insurance constituted both a substantial increase in average employee cost-sharing and a meaningful change in the structure and complexity of that cost-sharing.

“...[T]he firm partnered with a leading health data technology firm to offer a tool to help employees search for lower medical prices in advance of getting care. This kind of tool is at the cutting edge of initiatives to increase consumer engagement and information in shopping for health care... Consequently, our setting is likely closer to the best-case scenario to expect price shopping to occur, rather than the typical environment consumers face.”

Number of employees:

To preserve the company’s anonymity, researchers put the number of employees at between 35,000 and 60,000, and the total number of employees and dependents at 105,000 and 200,000.

Employee/Dependent Characteristics:

“Employees at the firm are relatively high income (median income \$125,000–\$150,000), well educated, and technologically savvy.”

The employees studied were relatively young: 12.0 percent were 29 or younger; 83.2 percent were between the ages of 30 and 54.

However, if dependents are taken into account, there were a substantial number with coverage in the age range 0-65. Most employees (51 percent) were male.

Time window of data analysis:

The study examined data in the years 2006 through 2015. “These six years include the year the [new insurance] policy took effect,...; the next year after,...; and the four years prior,…”

Cost Reductions:

The switch to high-deductible coverage resulted in reduced spending for the employer of between 11.8 and 13.8 percent. (Note: 25% of spending reductions came from the sickest quartile of workers, and 49% from the sickest two quartiles of workers – see below.)

Key Findings (excerpted):

*“We found **causal reductions in spending across all categories of health spending**, including inpatient care (7-11%), outpatient spending (6-12%), ER spending (25%), pharmaceutical spending (15-17%), and preventive health spending (5-8%). Though quite different in terms of context, these results mirror those found in the RAND Health Insurance Experiment [see e.g. Lohr et al. (1986) and the Oregon Medicaid Experiment (Finkelstein et al. (2012)], in the sense that consumers reduce quantities across the range of medical services in response to high cost-sharing.*

*“...the **sickest quartile of consumers** causally reduce medical spending by between 18-22% ...post-switch.*

*“...no evidence of **price shopping** in the first year post switch.*

*“...no evidence of an increase in **price shopping in the second year** post-switch; consumers are not learning to shop based on price.*

*“...essentially **all spending reductions**...are achieved through **outright quantity reductions whereby consumer receive less medical care**.*

*“...there is **limited evidence that consumers substitute across types of procedures** (substitution leads to a 2.2% spending reduction....).*

*“...**quantity reductions persist in the second-year post switch**, as the increase in quantities...is only 0.7%, much lower than the pre-period trend in quantity growth.*

*“These results occur in the context of **consistent (and low) provider price changes** over the whole sample period.”*

Elaboration on Findings:

*“It is clear that **consumer quantity reductions** are the key to total spending reductions in our setting.*

*“We next investigate **service-specialist reductions** to shed more light on the types of care consumers are foregoing. To this end, we perform our decomposition for each of **the top 30 procedures by revenue** across each two-year pair. The results are striking. We find, e.g., that consumers reduce quantities of*

valuable preventive care,.... Specifically, for example, consumers reduce colonoscopies by 31.6% and care that is considered preventive with a prior diagnosis (e.g. diabetes) by 12.2%.

*“We also investigate services that many consider potentially wasteful. When we perform this decomposition for imaging services (e.g. MRI, CT Scan) we find that consumers reduce quantities by 17.7%...relative to increases between 3.5% and 13.5% from.... We also find **no evidence for price shopping for imaging services, despite the relative homogeneity of the service.**”*

[Between the last year of insurance with no OOP cost sharing and the year of the switch to the HDHP/HSA] **“Consumers reduce quantities of mental health care services by 5.4%...and, notably, reduce quantities of physical therapy services by 29.7%. Consumers reduce quantities of diabetes drugs by 48%, statins for cholesterol management by 19.6%, antidepressants by 18.0%, and hypertension drugs by 24.2%.** These quantity reductions are all strong departures from pre-period trends, and are not due to intertemporal substitution...

“Strikingly, we find that essentially all incremental spending reductions in high-deductible care are achieved in months where consumers began those months under the deductible (90% or larger....). When we condition on consumers' true shadow prices, we continue to find that consumers substantially reduce spending when under the deductible. For example, **25% of all spending reductions come from the sickest quartile of consumers conditional on being under the deductible, and 49% from the sickest two quartiles of consumers.** This is true even though throughout the year, the sickest quartile of consumers can expect to pass the deductible with near certainty, and, for some cases, pass the out-of-pocket maximum.”

Study III: **“Medication Utilization and Adherence in a Health Savings Account-Eligible Plan”**

http://www.ajmc.com/journals/issue/2013/2013-1-vol19-n12/Medication-Utilization-and-Adherence-in-a-Health-Savings-AccountEligible-Plan?utm_source=Informz&utm_medium=AJMC&utm_campaign=AJMC+Dec+Web+12-26-13

Published 2013

Timeline and Focus:

It was the product of a three-year study (2006-2008). Three researchers examined *“the impact of plan design on medication utilization and adherence among individuals with chronic disease employed by a company that adopted a consumer-directed health plan (CDHP) with a health savings account (HSA) for all workers.”*

Data and its Source

Data came from a large, mid-western corporation and was derived from the medical experiences of workers and their dependents with 1 or more of 5 chronic conditions: **hypertension, dyslipidemia, diabetes, asthma/chronic obstructive pulmonary disease (COPD), and depression.** These conditions were selected by the researchers because they are common and costly, and because they are routinely managed with drug therapies.

CDHPs and HSA Contributions

The (unnamed) employer had replaced all previous PPO health benefit plans with two CDHPs paired with an HSA. Employees and their dependents were given “a choice between 2 annual deductible levels: \$1250 individual/\$2150 family or \$2150 individual/\$4300 family. **The employer contributed the same amount to the HSA regardless of deductible level, though contributions were higher for those with family coverage.**”

Employee/Dependent Characteristics

For those with hypertension, dyslipidemia, and diabetes, the average age was 52, and 43 to 44 for people diagnosed with asthma/COPD and depression. Those with hypertension, dyslipidemia, and diabetes “were more likely to be male and the policy holder compared with members with asthma/COPD and depression, who were more likely to be female and a dependent.” The least healthy among those studied were diabetics, followed by those with asthma/COPD.

Drug Nonadherence Nationally

The study’s introduction, appropriately, pointed out the serious medical and financial implications of nonadherence to prescribed medication for chronic diseases. It is worth quoting at length:

“The management of noncommunicable chronic diseases, which affect nearly one-half of adults and cause approximately 70% of deaths in the United States. Prescription drugs accounted for 12% of healthcare spending in 2012, more than double the level of 30 years ago (5%). In general, this shift toward greater use of pharmacotherapy has provided net societal benefits. For example, medical cost offsets in Medicare A and B have been documented as a result of adding drug coverage under Medicare Part D. Prior work has found that medication adherence produced substantial savings as a result of reductions in hospitalization and emergency department use, and it is thus a matter of great importance to policy makers, insurance plan sponsors, physicians, and patients.

*“Despite clinical and economic benefits, only about half of patients take medications for their chronic conditions as recommended by their physicians. Moreover, as much as one-third of initial prescriptions go unfilled. For example, studies have found that more than 25% of patients with coronary artery disease discontinued drug therapy within 6 months of initiation, and adherence among patients receiving statins fell from nearly 80% within the first 3 months of treatment to only 25% after 5 years. Overall, adherence rates across a number of therapeutic classes have been reported at between 28% and 66% after 6 months, and 18% to 54% after 1 year. **Nonadherence has been estimated to cost the US healthcare system between \$100 billion and \$289 billion, and has spawned new plan designs such as value-based insurance design to address this challenge.**”*

Key Findings:

- **“During the first year after CDHP-HSA implementation, enrollees with hypertension, dyslipidemia, and diabetes had significantly less medication utilization and lower adherence**

rates. *These reductions abated, yet remained, after 2 years among hypertension and dyslipidemia patients.*

- *“Adherence was significantly lower in patients with depression after 2 years.*
- *“There were no statistically significant impacts on enrollees with asthma/chronic obstructive pulmonary disease.”*

Conclusions (excerpted)

“This study evaluated the impact of a full-replacement CDHP-HSA on utilization of and adherence to medications for 5 chronic conditions. In the first year under the new plan, the number of prescriptions filled, the PDC [“proportion of days covered”], and the proportion of patients who were adherent **declined for all conditions except asthma/COPD**, although for depression, only the drop in PDC was statistically significant. **These results are consistent with existing literature indicating that increased patient cost-sharing is associated with decreased health services utilization, specifically prescription drug consumption.** Except for asthma/COPD, these effects emerged across our fairly heterogeneous set of conditions, a finding also consistent with prior work. During the second year of the new plan, CDHP-HSA effects persisted in individuals with hypertension, dyslipidemia, and depression, but levels were not as low due to some significant increases in utilization and adherence from year 1 to year 2, particularly among patients with diabetes. It is possible that second-year improvements were due to members learning about the importance of medication adherence and the parameters of their new CDHP. Alternatively, beneficiaries may have had residual funds in their HSAs—rolled over from the first year—that they used to purchase more prescription drugs.

“These findings have important policy implications. **Notwithstanding the presence of HSAs and employer contributions, medication utilization and adherence declined when high deductibles were imposed. If these reduced levels of medication adherence for chronic conditions are sustained, it is likely that they will increase medical costs and adversely impact worker productivity.”**

Study IV: Diabetes Outpatient Care and Acute Complications Before and After High-Deductible Insurance Enrollment: A Natural Experiment for Translation in Diabetes (NEXT-D) Study

<http://jamanetwork.com/journals/jamainternalmedicine/article-abstract/2596008>

Published 2017 by the Journal of the American Medical Association Internal Medicine

The study set out to answer this question:

“How does high-deductible insurance enrollment affect diabetes outpatient care and acute complications?”

Design, Setting, and Participants:

It reviewed data from a large, national health insurer database for the period January 1, 2003, to December 31, 2012.

It studied the medical experiences of *“A total of **12,084 HDHP members** [44.8 percent were women] with diabetes, **aged 12 to 64 years**, who were enrolled for 1 year in a low-deductible (\leq \$500) plan*

*followed by 2 years in an HDHP (\geq \$1000) after an **employer-mandated switch** were included. Patients transitioning to HDHPs were propensity-score matched with contemporaneous patients whose employers offered **only low-deductible coverage.**"*

The study considered **low-income and health savings account (HSA)–eligible patients** as “subgroups of interest.” It did not have access to information on employer or employee contributions to HSAs or other health spending accounts.

Results:

*“The overall, low-income, and HSA-eligible diabetes HDHP groups **experienced increases in out-of-pocket medical expenditures of 49.4%...51.7%..., and 67.8%..., respectively, compared with controls in the year after transitioning to HDHPs.***

*“High-priority primary care visits and disease monitoring tests did **not** change significantly in the overall HDHP cohort; however, **high-priority specialist visits declined by 5.5%...in follow-up year 1 and 7.1%...in follow-up year 2 vs baseline.***

*“Outpatient acute diabetes complication visits **were delayed** in the overall and low-income HDHP cohorts at follow-up....*

*“**Annual emergency department acute complication visits among HDHP members increased by 8.0% in the overall group, 21.7% in the low-income group, and 15.5% in the HSA-eligible group.***

Conclusions and Relevance:

Patients with diabetes experienced minimal changes in outpatient visits and disease monitoring after an HDHP switch, **but low-income and HSA-eligible HDHP members experienced major increases in emergency department visits for preventable acute diabetes complications.**

Income Inequality & Inequality in Health Care Spending

Health Spending for Low-, Middle-, And High-Income Americans, 1963–2012

<http://content.healthaffairs.org/content/35/7/1189.abstract>

<http://www.pnhp.org/news/2016/july/redistribution-of-health-care-from-the-poor-to-the-wealthy>

Published 2016

Abstract (excerpted):

US medical spending growth slowed between 2004 and 2013. At the same time, many Americans faced rising copayments and deductibles, which may have particularly affected lower-income people. To explore whether the health spending slowdown affected all income groups equally, we divided the population into income quintiles. We then assessed trends in health expenditures by and on behalf of people in each quintile using twenty-two national surveys carried out between 1963 and 2012. Before the 1965 passage of legislation creating Medicare and Medicaid, the lowest income quintile had the lowest expenditures, despite their worse health compared to other income groups. By 1977 the unadjusted expenditures for the lowest quintile exceeded those for all other income groups. This pattern persisted until 2004.

*Thereafter, expenditures **fell for the lowest quintile**, while rising more than 10 percent for the middle three quintiles and close to 20 percent for the highest income quintile, which had the highest expenditures in 2012. **The post-2004 divergence of expenditure trends for the wealthy, middle class, and poor occurred only among the nonelderly.***

Commentary:

Prior to the implementation of Medicaid and Medicare in 1966, the poor had the lowest health expenditures despite their greater medical need, while expenditures for the wealthy were nearly twice as high as those for the poor. Subsequent to these public investments, health spending tracked closer to medical need, with the poorest income quintile having the highest expenditures and the top quintile the lowest. (However, after adjustment for age and health status, the health expenditure gap between income groups was never fully reversed.)

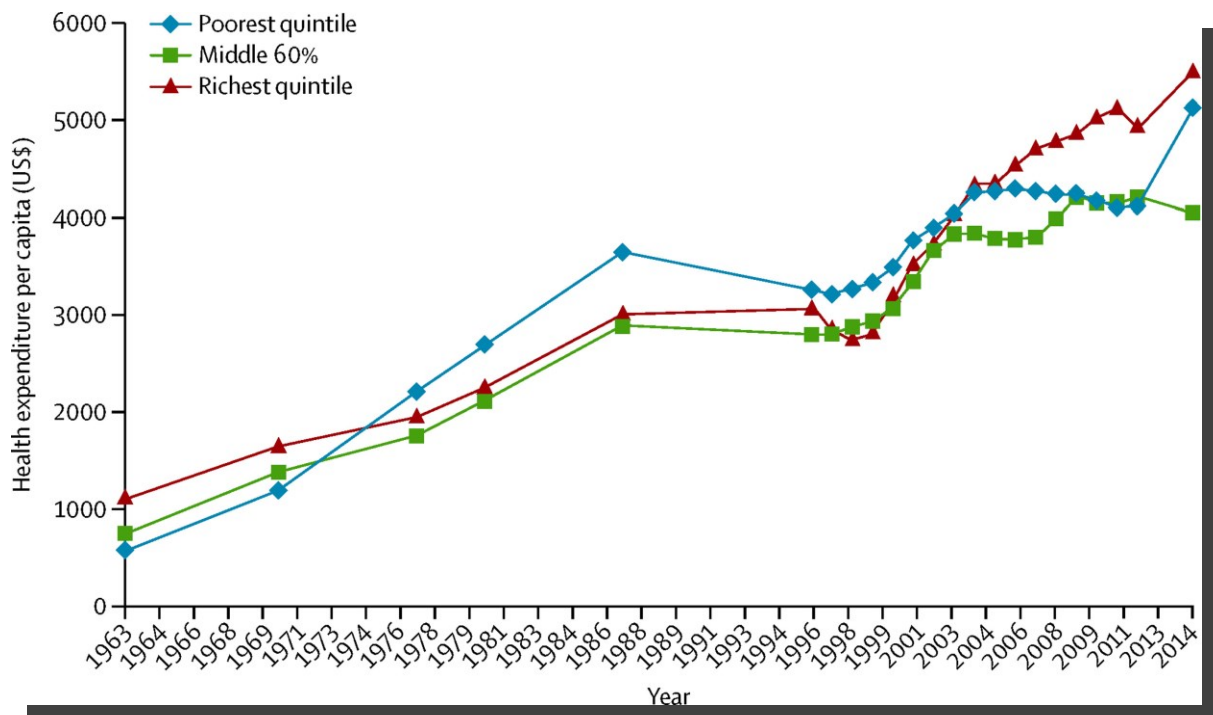
The rising income-based disparity in spending suggests a shift from allocation of health care according to need to allocation by willingness (and ability) to pay. It is unclear whether this shift arises from the underuse of needed care among the poor or overuse of unnecessary care by the wealthy. The sharp spending increase among the nonelderly top income group merits further study and could be caused by

the widening gap in cost-sharing requirements in private insurance plans for employees of small versus large firms (the latter of which tend to pay higher wages), the rise of concierge medical practices, or supply-induced demand. Irrespective of the cause, the pattern suggests that the efficiency of medical spending is declining, with an increasing share of medical resources devoted to people with the least medical need.

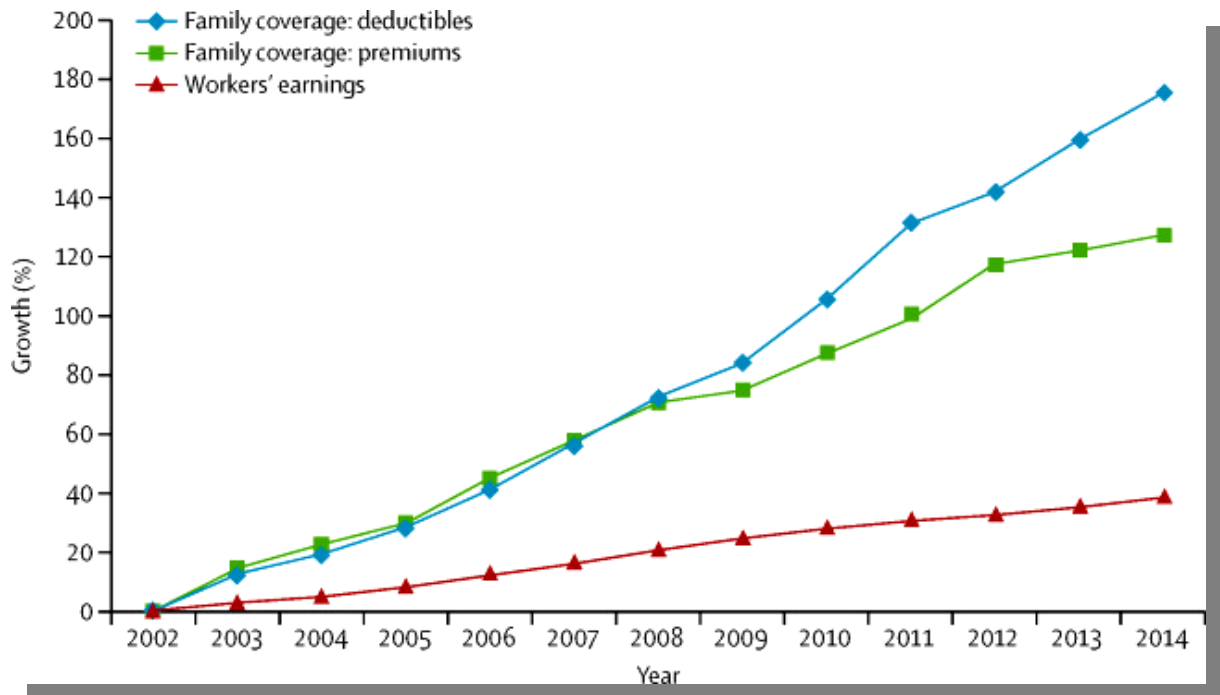
Conclusion

Increasing income inequality has drawn much attention in recent years. Our findings suggest that inequality in health care spending is also on the rise: Expenditures for the poorest (and sickest) segment of the population are actually falling, while those for the wealthy are growing rapidly and now exceed those for other Americans. This pattern, which has not been seen since before Medicare and Medicaid were introduced, could portend a widening of disparities in health outcomes.”

As the graph below demonstrates, with the implementation of the ACA in 2014, the level of medical expenditures for the bottom 20 percent of American households increased substantially, but health care consumption by the wealthiest 20 percent still exceeded it. Health care spending by the middle class has flattened.



US health expenditures per capita, adjusted for inflation, by income group, 1963 to 2014. “Inequality and the Health-care System in the USA,” by Samuel L. Dickman, David U. Himmelstein, and Steffie Woolhandler, *The Lancet*, April 8, 2017. **Sources:** Dickman and colleagues (2016); and the Medical Expenditures Panel Survey (for years 2013–14). Figures for 1996 to 2013 are 2-year moving averages; single-year figures are provided for 2014 to show the effect of the Affordable Care Act’s coverage expansions in this year.



"Inequality and the Health-care System in the USA," by Samuel L. Dickman, David U. Himmelstein, and Steffie Woolhandler, The Lancet, April 8, 2017. Sources: Medical Expenditure Panel Survey (MEPS) and United States Bureau of Labor

Additional Research Studies

2011-2017

- **Among Low-Income Respondents With Diabetes, High-Deductible Versus No-Deductible Insurance Sharply Reduces Medical Service Use (2017)**

<http://care.diabetesjournals.org/content/40/2/239>

...[O]ur final sample contained 1,461 privately insured adults with diabetes. We categorized the survey sample into two income groups: 1) lower income (<200% of the FPL) and 2) higher income (≥200% of the FPL). Within groups, we further divided the individuals into three categories based on annual deductible status: 1) **no annual deductible (ND)**, 2) **low deductible (LD)**; <\$1,200 per person/<\$2,400 per family), and 3) **high deductible (HD)**; ≥\$1,200 per person/≥\$2,400 per family). Those with a health savings account are included in the HD category.”

Diabetes care costs are substantial, even for those who are insured. **Per capita spending for privately insured patients with diabetes who have employer-sponsored insurance is \$16,021, with average per capita out-of-pocket costs amounting to \$1,944.”**

RESULTS Compared with privately insured respondents with diabetes with ND, privately insured lower-income respondents with diabetes **with an LD report significant decreases in service use for primary care, checkups, and specialty visits (27%, 39%, and 77% lower, respectively), and respondents with an HD decrease use by 42%, 65%, and 86%, respectively. Higher-income respondents with an LD report significant decreases in specialty (28%) and emergency department (37%) visits. Diabetes care measures are similar by income and insurance; there were no changes in physical health status.**

Medical debt is similar by income, but deferred service use is two times greater for those indebted and with lower income.

- **Eliminating Medication Copayments Reduces Disparities in Cardiovascular Care (2014)**

<http://content.healthaffairs.org/content/33/5/863.abstract>

Using self-reported race and ethnicity for participants in the Post-Myocardial Infarction Free Rx Event and Economic Evaluation (MI FREEE) trial, **we found that rates of medication adherence were significantly lower and rates of adverse clinical outcomes were significantly higher for nonwhite patients than for white patients. Providing full drug coverage increased medication adherence in both groups. Among nonwhite patients, it also reduced the rates of major vascular events or revascularization by 35 percent and reduced total health care spending by 70 percent. Providing full coverage had no effect on clinical outcomes and costs for white patients. We conclude that lowering copayments for medications after myocardial infarctions may reduce racial and ethnic disparities for cardiovascular disease.**

- **Financial barriers to care among low-income children with asthma: health care reform implications (2014)**

<https://www.ncbi.nlm.nih.gov/pubmed/24840805>

Overall, 15.6% of parents borrowed money or cut back on necessities to pay for their children's asthma care.

Cost-related barriers to care among children with asthma were concentrated among low-income families with higher cost-sharing levels. The ACA's low-income subsidies could reduce these barriers for many families, but millions of dependents for whom employer-sponsored family coverage is unaffordable could remain at risk for cost-related problems because of ACA subsidy eligibility rules.

- **Out-of-pocket medication costs, medication utilization, and use of healthcare services among children with asthma (2013)**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3754900/>

*We found that greater OOP asthma medication cost was associated with **small but statistically significant reductions** in medication utilization and total (patient plus health plan) asthma medication expenditures among children with asthma above age 5. No association was found for children younger than 5 years. **Higher OOP asthma medication cost was also associated with more frequent asthma-related hospitalizations.***

- **Consumer-Directed Health Plans Reduce The Long-Term Use Of Outpatient Physician Visits And Prescription Drugs (2013)**

<http://content.healthaffairs.org/content/32/6/1126.abstract?etoc>

*We explored effects of consumer-directed health plans on health care and preventive care use, using data from **two large employers**—one that adopted a CDHP in 2007 and another with no CDHP. Our study had mixed results relative to expectations. **After four years under the CDHP, there were 0.26 fewer physician office visits per enrollee per year and 0.85 fewer prescriptions filled, but there were 0.018 more emergency department visits. Also, the likelihood of receiving recommended cancer screenings was lower under the CDHP after one year and, even after recovering somewhat, still lower than baseline at the study's conclusion.** If CDHPs succeed in getting people to make more cost-sensitive decisions, plan sponsors will have to design plans to incentivize primary care and prevention and educate members about what the plan covers.*

- **Low-Socioeconomic-Status Enrollees In High-Deductible Plans Reduced High-Severity Emergency Care (2013)**

<https://www.ncbi.nlm.nih.gov/pubmed/23918484>

We analyzed emergency department (ED) visits and hospitalizations over two years among enrollees insured in high-deductible plans through small employers in Massachusetts. We found that plan members of low socioeconomic status experienced 25–30 percent reductions in high-severity ED visits over both years, while hospitalizations declined by 23 percent in year 1 but rose

again in year 2. Similar trends were not found among high-deductible plan members of high socioeconomic status. **Our findings suggest that plan members of low socioeconomic status at small firms responded inappropriately to high-deductible plans and that initial reductions in high-severity ED visits might have increased the need for subsequent hospitalizations.** Policy makers and employers should consider proactive strategies to educate high-deductible plan members about their benefit structures or identify members at higher risk of avoiding needed care. They should also consider implementing **means-based deductibles.**

➤ **The impact of high-deductible health plans on men and women: an analysis of emergency department care (2013)**

<https://www.ncbi.nlm.nih.gov/pubmed/23685403>

Prior studies show that men are more likely than women to defer essential care. Enrollment in high-deductible health plans (HDHPs) could exacerbate this tendency, but sex-specific responses to HDHPs have not been assessed. We measured the impact of an HDHP separately for men and women.

RESULTS:

*In the year following transition to an HDHP, **men substantially reduced ED visits at all severity levels** relative to controls (changes in low, intermediate, and high severity visits of -21.5% [-37.9 to -5.2], -21.6% [-37.4 to -5.7], and -34.4% [-62.1 to -6.7], respectively). **Female HDHP members selectively reduced low severity emergency visits** (-26.9% [-40.8 to -13.0]) while preserving intermediate and high severity visits.*

*Male HDHP members also experienced a 24.2% [-45.3 to -3.1] relative decline in hospitalizations in year 1, **followed by a 30.1% [2.1 to 58.1] relative increase in hospitalizations between years 1 and 2.***

CONCLUSIONS:

Initial cross-the-board reductions in ED and hospital care followed by increased hospitalizations imply that men may have foregone needed care following an HDHP transition. Clinicians caring for patients with HDHPs should be aware of sex differences in response to benefit design.

➤ **Delayed and forgone care for families with chronic conditions in high-deductible health plans (2012)**

<https://www.ncbi.nlm.nih.gov/pubmed/22249829>

OBJECTIVE: *To evaluate whether families with chronic conditions in HDHPs have higher rates of delayed or forgone care due to cost, compared with those in traditional health insurance plans.*

CONCLUSIONS: *Among families with chronic conditions, reporting of delayed/forgone care due to cost is higher **for both adults and children in HDHPs** than in traditional plans. Families with lower incomes are also at higher risk for delayed/forgone care.*

➤ **Nearly Half Of Families In High-Deductible Health Plans Whose Members Have Chronic Conditions Face Substantial Financial Burden (2011)**

<https://www.ncbi.nlm.nih.gov/pubmed/21289354>

*We surveyed families with chronic conditions in high-deductible plans and families in traditional plans to compare health care–related financial burden—such as experiencing difficulty paying medical or basic bills or having to set up payment plans. **Almost half (48 percent) of the families with chronic conditions in high-deductible plans reported health care–related financial burden, compared to 21 percent of families in traditional plans.** Almost twice as many lower-income families in high-deductible plans spent more than 3 percent of income on health care expenses as lower-income families in traditional plans (53 percent versus 29 percent). As health reform efforts advance, policy makers must consider **how to modify high-deductible plans to reduce the financial burden for families with chronic conditions.***