Consumer-Driven Health Plans:

Early Cost & Use Evidence with a Focus on Pharmaceuticals & Hospital Admissions

Stephen T Parente
Roger Feldman
Jon B Christianson

August, 2004

CARLSON
SCHOOL OF MANAGEMENT
UNIVERSITY OF MINNESOTA

Questions to be Addressed

- Are CDHP pharmacy and hospital expenditures different from other health plan types?
- Is there a CDHP pharmacy utilization effect?
  - Brand vs. generic
  - Chronic patients
- Is there a CDHP hospital use effect?
  - Elective admissions
  - Emergency admissions

Why Focus on Pharmacy?

- Fastest rising cost sector of health economy
- Recent innovations in both CDHP and non-CDHP marketplace
  - Non-CDHP: 3-tier consumer payment
  - CDHP: Consumer prices vary by employee/patient total expenditure level
- CDHP 'shopping' tools are most advanced for pharmacy market

3-Tier Overview

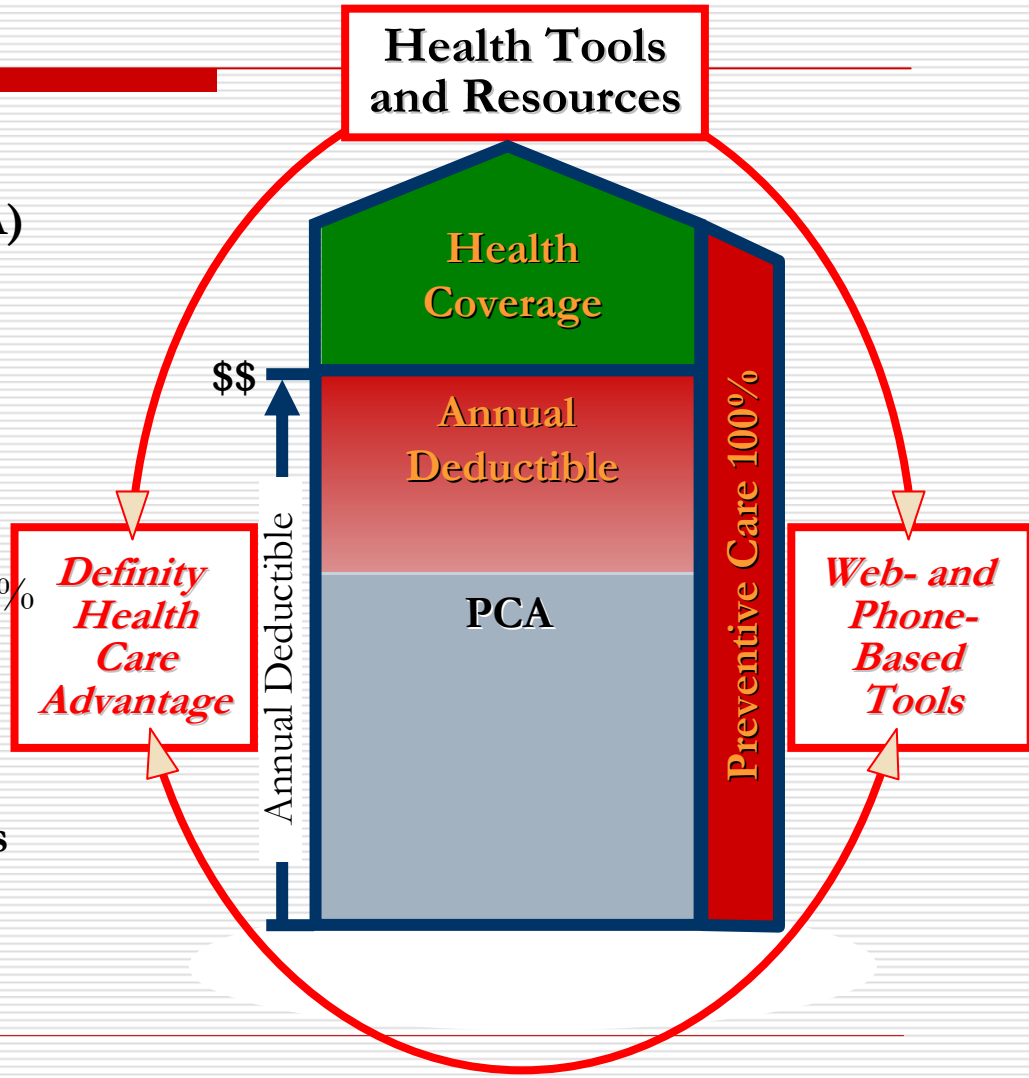
- Three tiers jointly determined and priced by employer/insurer/pharmaceutical benefits management firms (PBMs)
- Common in most health plans
- Example of price structure (500mg of X):
  - Tier 1 ($20): Generic
  - Tier 2 ($40): Brand-preferred pricing
  - Tier 3 ($60): Brand-no preferred pricing

Definity Health as CDHP Model

Personal Care Account (PCA)
- Employer allocates PCA[1]
- Member directs PCA
- Roll over at year-end
- Apply toward deductible[2]

Health Coverage
- Preventive care covered 100%
- Annual deductible
- Expenses beyond the PCA

Health Tools and Resources
- Care management program
- Internet enables



[1] Employer selects which expense apply toward the Health Coverage annual deductible.
[2] Paid out of employer's general assets.

Study Setting

- Large employer that offered HMO and PPO in 2000-2002 and introduced CDHP in 2001
- Variation in cost sharing by health plan
- CDHP take-up rate of approximately 15%
- General caveat: Employer's experience can be quite different due to:
  - Alternatives offered
  - Plan design
  - Communications with employees
  - Sponsor's objectives for the plan

Presentation of Results

- Results are limited to employees who worked for the firm continuously for three years (2000-2002) and:
  1. Employee chose the CDHP in 2001 and 2002, or
  2. Employee chose another health plan in 2001 and 2002.
- This limitation removed 40% to 50% of all employees from the analysis
- We want to see both adoption and maturing impact of CDHP while controlling for prior spending
  - 2000: Pre-CDHP experience controls for prior spending
  - 2001: CDHP adoption year
  - 2002: CDHP 'maturation' year

Impact of CDHP on pharmacy cost

Health Plan Cohorts	Year 2000 *Mean*	Year 2001 *Mean*	Year 2002 *Mean*
CDHP Cohort N=531			
Hospital Expenditure	$ 1,369.97	$ 1,999.25	$ 3,468.53
Physician Expenditure	$ 2,093.70	$ 2,935.84	$ 3,510.83
Pharmacy Expenditure	$ 935.29	$ 1,103.72	$ 1,341.78
HMO Cohort N=1,551			
Hospital Expenditure	$ 1,842.80	$ 1,796.37	$ 1,956.83
Physician Expenditure	$ 2,381.08	$ 2,959.90	$ 3,088.22
Pharmacy Expenditure	$ 1,107.64	$ 1,498.54	$ 1,640.25
PPO Cohort N=1,554			
Hospital Expenditure	$ 1,779.06	$ 2,049.76	$ 2,367.17
Physician Expenditure	$ 2,245.22	$ 2,834.32	$ 3,294.47
Pharmacy Expenditure	$ 1,007.95	$ 1,484.91	$ 1,789.26

NOTE: THESE RESULTS ARE NOT CASE-MIX ADJUSTED, are from a restricted continuously enrolled sample of ~60% of the employee population, and do not reflect the plans' full prescription drug experience.

Impact of CDHP on general pharmacy use

Health Plan Cohorts	2000 *Mean*	2001 *Mean*	2002 *Mean*
CDHP Cohort N=531			
Physician Visits	**5.74**	**7.49**	**7.15**
Hospital Admission Rate	**0.05**	**0.10**	**0.16**
Prescriptions Filled	**16.01**	**19.46**	**20.21**
HMO Cohort N=1,551			
Physician Visits	**6.75**	**7.56**	**7.29**
Hospital Admission Rate	**0.07**	**0.06**	**0.09**
Prescriptions Filled	**17.27**	**18.77**	**20.03**
PPO Cohort N=1,554			
Physician Visits	**5.78**	**6.54**	**6.95**
Hospital Admission Rate	**0.07**	**0.07**	**0.11**
Prescriptions Filled	**20.92**	**23.15**	**21.28**

NOTE: THE PHARMACY RESULTS ARE NOT CASE-MIX ADJUSTED, are from a restricted continuously enrolled sample of ~60% of the employee population, and do not reflect the plans' full prescription drug experience.

Are CDHP cost and general pharmacy use different?

- CDHP cohort has lowest pharmaceutical expenditure over time.
- CDHP cohort has lower pharmacy use over time than PPO, but higher than HMO.
- Consumer-driven component could work for pharmacy.

Is brand name pharmacy use different for CDHP enrollees?

Health Plan Cohorts	2000 *Mean*	2001 *Mean*	2001 *% change*	2002 *Mean*	2002 *% change*
CDHP Cohort N=531					
Brand Prescriptions Filled	**7.90**	**10.23**	***29%***	**10.74**	***5%***
Generic Prescriptions Filled	**8.11**	**9.24**	***14%***	**9.46**	***2%***
All Prescriptions Filled	**16.01**	**19.46**	***22%***	**20.21**	***4%***
HMO Cohort N=1,551					
Brand Prescriptions Filled	**7.63**	**9.09**	***19%***	**9.84**	***8%***
Generic Prescriptions Filled	**9.64**	**9.68**	***0%***	**10.19**	***5%***
All Prescriptions Filled	**17.27**	**18.77**	***9%***	**20.03**	***7%***
PPO Cohort N=1,554					
Brand Prescriptions Filled	**11.11**	**13.06**	***18%***	**12.29**	***-6%***
Generic Prescriptions Filled	**9.81**	**10.09**	***3%***	**8.98**	***-11%***
All Prescriptions Filled	**20.92**	**23.15**	***11%***	**21.28**	***-8%***

NOTE: THESE RESULTS ARE NOT CASE-MIX ADJUSTED, are from a restricted continuously enrolled sample of ~60% of the employee population, and do not reflect the plans' full prescription drug experience.

Is there a difference in pharmacy use for CDHP patients with chronic conditions?

Health Plan Cohorts	Percent Sample	2000 Mean	2001 Mean	2001 % change	2002 Mean	2002 % change
CDHP Cohort N=531						
Chronic Patient Scripts	41%	31.28	33.69	8%	30.45	-10%
Non-Chronic Patient Scripts	59%	9.60	12.41	29%	13.02	5%
All Patient Scripts		16.01	19.46	22%	20.21	4%
HMO Cohort N=1,551						
Chronic Patient Scripts	36%	33.81	32.92	-3%	32.89	0%
Non-Chronic Patient Scripts	64%	10.08	11.05	10%	12.65	14%
All Patient Scripts		17.27	18.77	9%	20.03	7%
PPO Cohort N=1,554						
Chronic Patient Scripts	46%	37.34	36.87	-1%	31.39	-15%
Non-Chronic Patient Scripts	53%	11.58	13.22	14%	12.60	-5%
All Patient Scripts		20.92	23.15	11%	21.28	-8%

NOTE: THESE RESULTS ARE NOT CASE-MIX ADJUSTED, are from a restricted continuously enrolled sample of ~60% of the employee population, and do not reflect the plans' full prescription drug experience.

Are there more specific differences in CDHP pharmacy use?

- The CDHP & HMO had consistent increases in use of both generic and brand name drugs, whereas the PPO had across-the-board decrease in 2002.
- The CDHP chronic condition cohort had higher drug use in 2001, but a decrease in 2002.
- The biggest decrease in chronically ill patient drug use occurred in the PPO.

CDHP Specific Drug Case Studies: Lipitor & Viagra

Health Plan Cohorts	*Mean*	*Mean*	*% change*	*Mean*	*% change*
CDHP Cohort N=531					
Lipitor Prescriptions	0.24	0.46	93%	0.70	53%
Lipitor Out of Pocket $$	$ 3.77	$ 3.73	-1%	$ 6.51	74%
Viagra Prescriptions	0.02	0.04	75%	0.05	19%
Viagra Out of Pocket $$	$ 0.56	$ -	-100%	$ -	0%
HMO Cohort N=1,551					
Lipitor Prescriptions	0.30	0.38	28%	0.57	50%
Lipitor Out of Pocket $$	$ 3.77	$ 6.82	81%	$ 13.75	101%
Viagra Prescriptions	0.05	0.07	44%	0.11	65%
Viagra Out of Pocket $$	$ 1.17	$ 1.69	43%	$ 3.19	89%
PPO Cohort N=1,554					
Lipitor Prescriptions	0.52	0.81	56%	89%	10%
Lipitor Out of Pocket $$	$ 7.83	$ 13.24	69%	$ 18.40	39%
Viagra Prescriptions	0.06	0.08	41%	0.10	24%
Viagra Out of Pocket $$	$ 1.49	$ 1.85	24%	$ 2.35	27%

NOTE: THESE RESULTS ARE NOT CASE-MIX ADJUSTED, are from a restricted continuously enrolled sample of ~60% of the employee population, and do not reflect the plans' full prescription drug experience.

Does the CDHP affect use and patient expenditure for popular Rx?

- Lipitor
  - HMO and PPO: Use goes up as price goes up
  - CDHP: Decrease in patient price accompanied by a small increase in Lipitor use
- Viagra
  - HMO and PPO: Use also increases with price
  - CDHP: Viagra use increases, but the out of pocket expense is nil, suggesting that it may be purchased explicitly from the PCA or after the deductible is met.

Why Focus on Hospitals?

The CDHP Hospital Expenditure Impact

Health Plan Cohorts	Year 2000 *Mean*	Year 2001 *Mean*	Year 2002 *Mean*
CDHP Cohort N=531			
Hospital Expenditure	**$ 1,369.97**	**$ 1,999.25**	**$ 3,468.53**
Physician Expenditure	**$ 2,093.70**	**$ 2,935.84**	**$ 3,510.83**
Pharmacy Expenditure	**$ 935.29**	**$ 1,103.72**	**$ 1,341.78**
HMO Cohort N=1,551			
Hospital Expenditure	**$ 1,842.80**	**$ 1,796.37**	**$ 1,956.83**
Physician Expenditure	**$ 2,381.08**	**$ 2,959.90**	**$ 3,088.22**
Pharmacy Expenditure	**$ 1,107.64**	**$ 1,498.54**	**$ 1,640.25**
PPO Cohort N=1,554			
Hospital Expenditure	**$ 1,779.06**	**$ 2,049.76**	**$ 2,367.17**
Physician Expenditure	**$ 2,245.22**	**$ 2,834.32**	**$ 3,294.47**
Pharmacy Expenditure	**$ 1,007.95**	**$ 1,484.91**	**$ 1,789.26**

NOTE: THESE RESULTS **ARE** CASE-MIX ADJUSTED, are from a restricted continuously enrolled sample of ~60% of the total employee population, and do not reflect the plans' full hospital expenditures.

Elective vs. Emergency Admission Rates

Case-mix adjusted

Health Plan Cohorts	2000 *Mean*	2001 *Mean*	2001 % change	2002 *Mean*	2002 % change
CDHP Cohort N=531					
High probability elective	**0.01**	**0.03**	***130%***	**0.03**	***-18%***
High probability emergency	**0.02**	**0.03**	***43%***	**0.05**	***58%***
Elective/emergency ratio	**0.64**	**1.04**	***61%***	**0.54**	***-48%***
HMO Cohort N=1,551					
High probability elective	**0.01**	**0.01**	***-16%***	**0.02**	***136%***
High probability emergency	**0.02**	**0.02**	***-20%***	**0.03**	***49%***
Elective/emergency ratio	**0.39**	**0.41**	***5%***	**0.65**	***59%***
PPO Cohort N=1,554					
High probability elective	**0.01**	**0.01**	***-20%***	**0.02**	***103%***
High probability emergency	**0.02**	**0.02**	***-17%***	**0.04**	***133%***
Elective/emergency ratio	**0.41**	**0.39**	***-3%***	**0.34**	***-13%***

NOTE: THESE RESULTS ARE CASE-MIX ADJUSTED and are from a restricted continuously enrolled sample of ~60% of the employee population, and do not reflect the plans' full prescription drug experience.

Is there a CDHP hospital use effect?

- Elective admissions
  - At baseline, CDHP elective admissions are the same as HMO and PPO.
  - In all periods of operation (2001 & 2002), CDHP had the highest use of elective admissions.
  - CDHP was only cohort to ever have more elective than emergency admissions (in 2001).
  - HMO had largest percentage increase in elective admissions (136%) by end of period.
- Emergency admissions
  - CDHP had the highest emergency admission rate by the end of the study period.
  - PPO and HMO had same admission rate at first, but emergency admission rate jumped 133% in 2002 for the PPO.

Summary

- CDHP pharmacy expenditures are less than HMO and PPO.
- CDHP chronic condition cohort drug use is a mixed story – initial increase followed by decrease in 2nd year.
- Brand name drug use higher in CDHP, but overall cost is lower. Suggests 3-tier model may not be very effective in comparison if pharmaceutical expenditures are less and brand consumption is higher.
- Pent-up demand may be present in the CDHP population with largest percent changes in uses of elective admissions.
- CDHP population emergency admission rate highest by end of study period. Suggests high CDHP hospital expenditure may be for more serious illnesses. Could also suggest a care coordination/quality concern too.

Implications for HSAs

- Priors & Assumptions:
  - Definity Health is a Health Reimbursement Account (HRA), not a Health Savings Account (HSA).
  - HSAs should make the consumers conserve their expenditures more than HRAs because the year-end account balances are a real personal asset in HSA.
- Implications:
  - Assuming HRAs are a less restrictive form of health insurance than HSAs, our results show that the plans have the potential to restrict expenditure growth more than a PPO.
  - New HSA-hybrid providing just a drug benefit may provide the same access to needed medications and less cost than the standard 3-tiered pharmaceutical benefit.
- Extensions:
  - Need to explicitly account for differences income to see policy impact of Bush Administration's proposals to (as stated on 9/2/2004):
    - "offer a tax credit to encourage small businesses and their employees to set up health savings accounts"
    - "provide direct help for low-income Americans to purchase them (HSAs)"
  - We were have started a contract from DHHS to provide a micro-simulation to provide cost estimates for tax credits and possibly vouchers for low-income Americans to purchase HSAs.

Next Steps

- Examine other employers' data for comparison.
- Examine three years of CDHP data.
- Compare with other CDHPs (e.g., Blue Cross, Destiny Health, United Healthcare's iPlan).
- Examine relationship between admissions and pharmacy use for specific chronic illnesses where drug consumption is critical to treatment (e.g., depression, heart disease, epilepsy) and emergency hospital admissions are quality signals.