

Modeling Potential Savings from Prevention

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“Potential National and State Medical Care Savings From Primary Disease Prevention,” *American Journal of Public Health* 101(1):157-64.



Research questions

- How much can the prevalence of selected preventable conditions be reduced thru community-based primary prevention?
- Can such reductions be sustained over time and across different population groups?
- How much more do people with these conditions spend on medical care?
- If the prevalence of these conditions were reduced, how much of this expenditure could be saved?
- How would these savings be distributed across payers, over time, and across states?



Most expensive conditions

1. **Heart disease**
2. Cancer
3. Trauma
4. Mental disorders
5. Pulmonary conditions
6. **Diabetes**
7. **Hypertension**
8. **Cerebrovascular disease**
9. Arthritis
10. Pneumonia
11. **Kidney disease**
12. Endocrine disorders
13. Skin disorders
14. Back problems
15. Infectious diseases

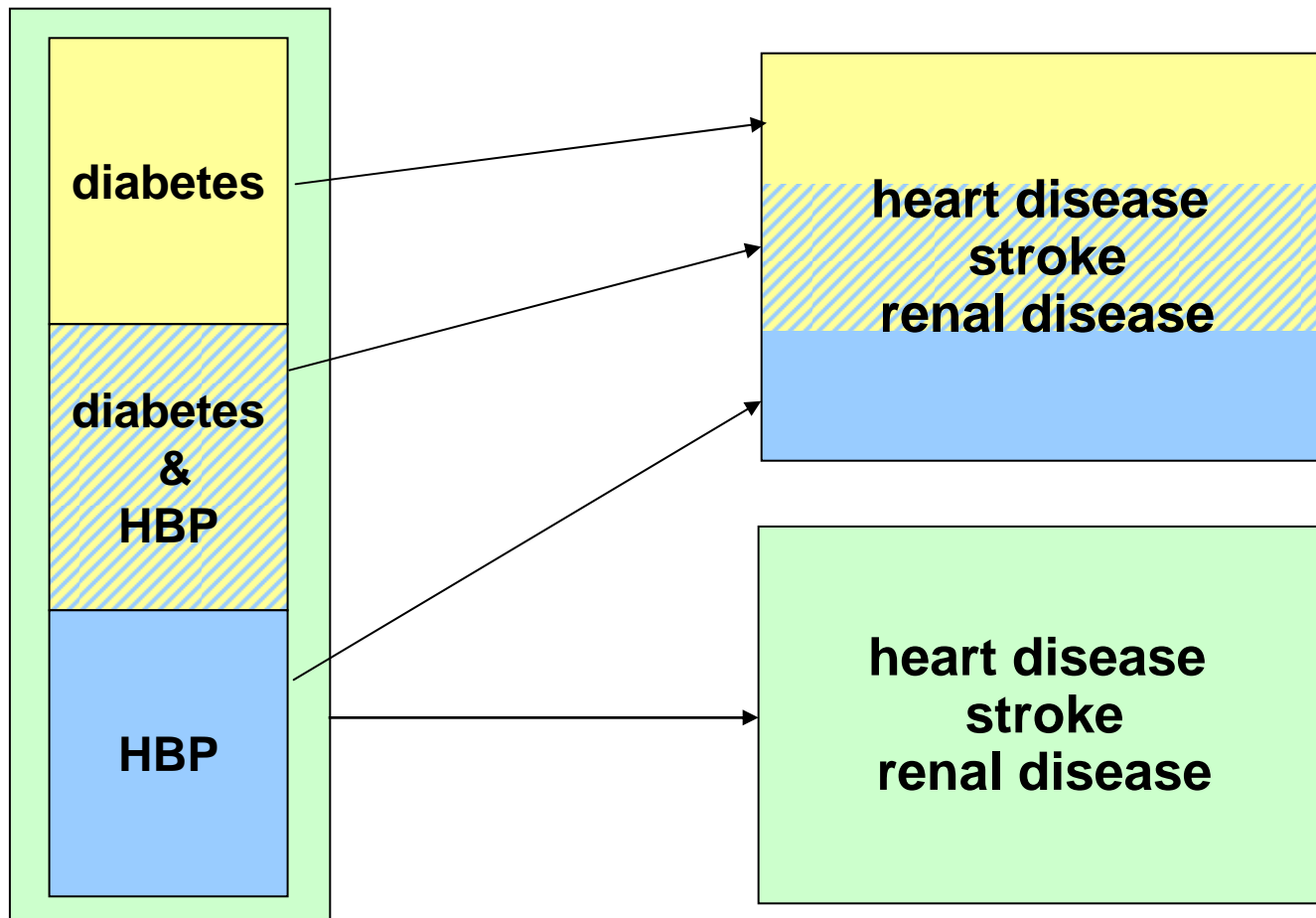
Source: Cohen, J. and N. Krauss, "Spending and service use among people with the 15 most costly medical conditions," *Health Affairs* 2003, 22(3):129-38



Disease clusters - intervention pathways

short run
(uncomplicated disease)

medium run
(complicated disease)



Estimation of the model

- Data
 - Medical Expenditures Panel Survey (MEPS), pooled 2003-2005 (adults only, excludes institutionalized population)
- Methods
 - Regression analysis to predict expenditures by disease cluster
 - Modeling of effects over time and across payors



Excess annual medical expenditures

all payers, 2008 dollars

	All Payers	
	Spending (\$Billions)	% of total
Short run modifiable conditions	180	12.3
Diabetes	31	2.1
High blood pressure (HBP)	97	6.6
Diabetes & HBP	52	3.6
Medium run modifiable conditions	314	21.6
Heart renal cerebrovascular disease (H R C)	76	5.2
Diabetes & (H R C)	34	2.3
HBP & (H R C)	120	8.2
Diabetes & HBP & (H R C)	85	5.8
Total Excess Spending	494	33.9
Total Spending	1,457	100.0



Excess annual medical spending by payer, 2008 dollars

	Medicaid		Medicare		All Other Payers	
	Spending (\$Billions)	% of total	Spending (\$Billions)	% of total	Spending (\$Billions)	% of total
Short run modifiable conditions	15	8.6	30	9.0	134	13.8
Diabetes	3	1.7	7	2.0	21	2.2
High blood pressure (HBP)	5	3.0	15	4.6	76	7.7
Diabetes & HBP	7	3.8	8	2.4	37	3.9
Medium run modifiable conditions	32	17.6	124	37.1	158	17.5
(H R C)	5	2.8	27	7.9	44	4.7
Diabetes & (H R C)	5	2.9	19	5.6	10	1.3
HBP & (H R C)	9	5.1	44	13.3	66	7.1
Diabetes & HBP & (H R C)	12	6.8	35	10.3	38	4.4
Total Excess Spending	47	26.2	155	46.2	292	31.3
Total Spending	181	100.0	335	100.0	941	100.0



Estimated Potential Savings

from illustrative 5% prevalence reduction

- National annual savings
 - \$9 billion from preventing uncomplicated disease in short run
 - \$24.7 billion reduction in the medium run from reduced prevalence of associated complications
- Largest states have greatest potential \$ savings
 - CA, NY, FL, TX, and PA
- Greatest potential % savings are in states with high disease burdens
 - WV, MS, AL, AR, and SC



Massachusetts

Savings from a 5% reduction in short- and medium-run conditions

Savings (\$millions)	Short Run	Medium Run
Total, all payers	134.9	450.4
Medicaid	38.8	110.1
Medicare	31.4	192.6
All Other Payers	64.7	147.7

* 2008 dollars



Discussion

- The estimated \$9 billion national savings in the model's first period would cover an investment of \$29 for every US resident.
- For Massachusetts, \$135 million is about \$20 per resident in 2010.
- Second period savings would increase three-fold, but the timing of such returns is uncertain.
- Targeting activities to areas or groups at higher risk could substantially increase cost-effectiveness.

