Supplementary Online Content

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Appendix A. Survey Items from “Physicians, Health Care Costs, and Society”

Appendix B. Development of cost-consciousness scale

Appendix C. Table e4. Associations between key physician characteristics and enthusiasm ratings (“very enthusiastic” versus “somewhat” or “no enthusiasm”) for key ACA cost-containment strategies; odds ratios shown are from a single multivariate logistic regression model including all listed variables.

eReferences

This supplementary material has been provided by the authors to give readers additional information about their work.

Appendix A

YOU & YOUR PRACTICE

Please check the appropriate box or fill in the blank as indicated.

1. How would you classify your race? (Choose ONE)

   1 ☐ Asian or Asian-American
   2 ☐ Black or African-American
   3 ☐ White or Caucasian
   4 ☐ Other, please specify: _____

2. Do you consider yourself Hispanic/Latino?

   1 ☐ Yes
   2 ☐ No

4. Which ONE of the following best describes the primary compensation for your practice?

   1 ☐ Billing only
   2 ☐ Salary only
   3 ☐ Salary plus bonus
   4 ☐ Other, please specify: _____

5. Please indicate your degree of agreement or disagreement with the following statement:
   "My enjoyment of the practice of medicine is substantially lessened because of the threat of lawsuits."

   1 ☐ Strongly disagree
   2 ☐ Moderately disagree
   3 ☐ Moderately agree
   4 ☐ Strongly agree

PHYSICIAN RESPONSIBILITIES & SOCIETY

14. Please rate the degree of responsibility (if any) each of these entities should have in reducing the cost of health care:

	No responsibility	Some responsibility	Major responsibility
Government	0 ☐	1 ☐	2 ☐
Health insurance companies	0 ☐	1 ☐	2 ☐
Patients	0 ☐	1 ☐	2 ☐
Physician professional societies	0 ☐	1 ☐	2 ☐
Individual practicing physicians	0 ☐	1 ☐	2 ☐
Hospitals and health systems	0 ☐	1 ☐	2 ☐
Employers	0 ☐	1 ☐	2 ☐
Pharmaceutical and device manufacturers	0 ☐	1 ☐	2 ☐
Trial lawyers	0 ☐	1 ☐	2 ☐

MEDICAL DECISION-MAKING

Please answer the following questions about different dimensions of medical decision-making.

15. I find the uncertainty involved in patient care disconcerting.
    - 1 ☐ Strongly disagree
    - 2 ☐ Moderately disagree
    - 3 ☐ Moderately agree
    - 4 ☐ Strongly agree

16. I generally order more tests when I don't know the patient well.
    - 1 ☐ Strongly disagree
    - 2 ☐ Moderately disagree
    - 3 ☐ Moderately agree
    - 4 ☐ Strongly agree

COST OF HEALTH CARE

A variety of practices have been proposed to control health care costs to society.

21. Please indicate your degree of enthusiasm for the following potential means of lowering health care costs (assume each is effective in lowering costs).

	Not enthusiastic	Somewhat enthusiastic	Very enthusiastic
Expanding access to free preventive care	0 ☐	1 ☐	2 ☐
Promoting head-to-head trials of competing treatments	0 ☐	1 ☐	2 ☐
Paying a network of practices a fixed, "bundled" price for managing all care for a defined population	0 ☐	1 ☐	2 ☐
Expanding electronic health records	0 ☐	1 ☐	2 ☐
Allowing Medicare payment cuts to doctors to take effect	0 ☐	1 ☐	2 ☐
Rooting out fraud and abuse	0 ☐	1 ☐	2 ☐
Eliminating fee-for-service payment models	0 ☐	1 ☐	2 ☐
Penalizing providers for avoidable readmissions	0 ☐	1 ☐	2 ☐
Expanding access to quality and safety data	0 ☐	1 ☐	2 ☐
Promoting better conversations with patients	0 ☐	1 ☐	2 ☐
High deductible health plans	0 ☐	1 ☐	2 ☐
Higher patient co-pays	0 ☐	1 ☐	2 ☐
Promoting continuity of care	0 ☐	1 ☐	2 ☐
Limiting corporate influence on physician behavior	0 ☐	1 ☐	2 ☐
Reducing compensation for the highest-paid specialties	0 ☐	1 ☐	2 ☐
Limiting access to expensive treatments with little net benefit	0 ☐	1 ☐	2 ☐
Promoting chronic disease care coordination	0 ☐	1 ☐	2 ☐
Using cost-effectiveness data to determine available treatments	0 ☐	1 ☐	2 ☐

23. Please indicate your degree of agreement or disagreement with the following statements about health care costs:

	Strongly disagree	Moderately disagree	Moderately agree	Strongly agree
I am aware of the costs of the tests/treatments I recommend	1 ☐	2 ☐	3 ☐	4 ☐
I try not to think about the cost to the health care system when making treatment decisions	1 ☐	2 ☐	3 ☐	4 ☐
I should sometimes deny beneficial but costly services to certain patients because resources should go to other patients that need them more	1 ☐	2 ☐	3 ☐	4 ☐
I should be solely devoted to my individual patients' bests interests, even if that is expensive	1 ☐	2 ☐	3 ☐	4 ☐
The cost of a test or medication is only important if the patient has to pay for it out of pocket	1 ☐	2 ☐	3 ☐	4 ☐
Doctors are too busy to worry about costs of tests and procedures	1 ☐	2 ☐	3 ☐	4 ☐
Cost to society is important in my decisions to use or not to use an intervention	1 ☐	2 ☐	3 ☐	4 ☐
Physicians should adhere to clinical guidelines that discourage the use of interventions that have a small proven advantage over standard interventions but cost much more	1 ☐	2 ☐	3 ☐	4 ☐
It is my responsibility to promote cost consciousness in my daily care of patients	1 ☐	2 ☐	3 ☐	4 ☐
Trying to contain costs is the responsibility of every physician	1 ☐	2 ☐	3 ☐	4 ☐
There is currently too much emphasis on costs of tests and procedures	1 ☐	2 ☐	3 ☐	4 ☐
Doctors need to take a more prominent role in limiting use of unnecessary tests	1 ☐	2 ☐	3 ☐	4 ☐
It is unfair to ask physicians to be cost-conscious and still keep the welfare of their patients foremost in their minds	1 ☐	2 ☐	3 ☐	4 ☐

30. How would you characterize yourself politically most of the time?

1 ☐ Very Conservative
2 ☐ Somewhat Conservative
3 ☐ Independent/Moderate
4 ☐ Somewhat Liberal/Progressive
5 ☐ Very Liberal/Progressive
6 ☐ Other, please specify: _____

Appendix B

The distributions of physician responses to survey items of interest for scale development were obtained using basic descriptive statistics. Before using items or scales measuring cost-consciousness and professional role in cost containment, we reviewed histograms, calculated skew and kurtosis, and then proceeded with principle components factor analysis with varimax orthogonal rotation.[1]

We retained factors based on criteria $\lambda>1$(the Eigenvalue rule)[2] or using the scree test,[3] reviewing 1, 2, 3 and 4-factor solutions. Items that failed to load >0.3 on any factor were dropped from subsequent solutions; items loading >0.4 were considered in the analysis of what domains were represented by factor(s), and analyses were repeated in an iterative fashion in consultation and with feedback from scale development experts. In all analyses, Factor 1 had $\lambda>2$, often $\lambda>2.5$, with other factors $\lambda<1$. We also examined Cronbach alpha scores for items comprising each factor as each 1, 2, 3, and 4-factor solution was assessed.

We settled on a 1-factor solution with 11 items that included items conceptually coherent with our a priori objectives (to what extent physicians pay attention to and believe it is their job to address health care costs—including cost to society—in their work). Internal consistency of the resulting scale was moderate (Cronbach's raw alpha=0.77). The Eigenvalues of each item in our final scale are shown in the table below:

Eigenvalues of the Reduced Correlation Matrix: Total = 2.56118842 Average = 0.23283531				
	Eigenvalue	Difference	Proportion	Cumulative
1	2.69776629	2.33311910	1.0533	1.0533
2	0.36464720	0.11064968	0.1424	1.1957
3	0.25399752	0.15484321	0.0992	1.2949
4	0.09915431	0.12282608	0.0387	1.3336
5	-.02367177	0.03082427	-0.0092	1.3243
6	-.05449603	0.05843202	-0.0213	1.3031
7	-.11292806	0.02485244	-0.0441	1.2590
8	-.13778050	0.00331808	-0.0538	1.2052
9	-.14109858	0.03507521	-0.0551	1.1501
10	-.17617379	0.03205438	-0.0688	1.0813
11	-.20822817		-0.0813	1.0000

Appendix C

eTable 4. Associations between key physician characteristics and enthusiasm ratings ("very enthusiastic" versus "somewhat" or "no enthusiasm") for key ACA cost-containment strategies; odds ratios shown are from a single multivariate logistic regression model including all listed variables.

	Improving Quality & Efficiency of Care										Improving Conditions for Evidence-Based Decisions					
	Promoting continuity of care		Promoting chronic disease care coordination		Expanding access to free preventive		Expanding electronic health records		Rooting out fraud and abuse		Expanding access to quality and safety data		Promoting head-to-head trials of competing treatments		Limiting corporate influence on physician behavior	
CHARACTERISTIC	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**
Age (years)																
Less than 50	788 (76)	Ref	738 (71)	Ref	514 (49)	Ref	401 (39)	Ref	748 (72)	Ref	511 (49)	Ref	510 (49)	Ref	656 (64)	Ref
50 or greater	1084 (75)	1.1 (0.9-1.5)	985 (68)	1.1 (0.8-1.4)	660 (46)	1.0 (0.8-1.3)	456 (32)	0.8 (0.6-1.0)	988 (68)	0.9 (0.7-1.2)	747 (52)	1.2 (1.0-1.6)	733 (51)	1.1 (0.9-1.4)	897 (63)	1.1 (0.8-1.3)
Sex																
Female	635 (85)	Ref	587 (78)	Ref	413 (56)	Ref	269 (36)	Ref	546 (73)	Ref	408 (55)	Ref	350 (47)	Ref	490 (67)	Ref
Male	1237 (71)	0.4* (0.3-0.6)	1136 (65)	0.5* (0.4-0.7)	761 (44)	0.7* (0.5-0.9)	588 (34)	1.0 (0.8-1.3)	1190 (69)	0.8 (0.6-1.1)	850 (49)	0.8 (0.6-1.0)	893 (52)	1.2 (1.0-1.6)	1063 (62)	0.7 (0.6-1.0)
Region																
South	597 (74)	Ref	551 (68)	Ref	358 (44)	Ref	261 (32)	Ref	564 (70)	Ref	410 (51)	Ref	412 (51)	Ref	508 (63)	Ref
Midwest	419 (73)	1.0 (0.7-1.4)	396 (72)	1.0 (0.7-1.3)	294 (54)	1.1 (0.8-1.4)	235 (42)	0.9 (0.7-1.3)	376 (68)	0.9 (0.7-1.3)	274 (48)	0.9 (0.7-1.2)	280 (51)	1.0 (0.7-1.3)	350 (64)	0.9 (0.6-1.2)
Northeast	420 (79)	1.2 (0.9-1.8)	378 (70)	1.0 (0.8-1.4)	257 (48)	1.2 (0.8-1.6)	176 (33)	0.9 (0.7-1.3)	392 (73)	1.1 (0.8-1.6)	275 (51)	1.0 (0.7-1.3)	264 (50)	1.0 (0.8-1.4)	347 (65)	1.0 (0.7-1.4)
West	422 (76)	1.1 (0.8-1.5)	387 (68)	1.2 (0.8-1.6)	254 (45)	1.5* (1.1-2.1)	178 (31)	1.6* (1.2-2.2)	390 (68)	0.9 (0.7-1.3)	284 (51)	1.1 (0.8-1.5)	280 (49)	1.0 (0.8-1.4)	339 (60)	1.1 (0.8-1.5)
Practice Setting Type																
Small/solo	360 (74)	Ref	306 (63)	Ref	198 (41)	Ref	106 (22)	Ref	326 (66)	Ref	221 (46)	Ref	205 (42)	Ref	315 (65)	Ref
Group/HMO	1200 (76)	1.2 (0.9-1.7)	1116 (70)	1.4 (1.0-1.9)	752 (48)	1.2 (0.9-1.7)	574 (36)	1.7* (1.2-2.5)	1108 (70)	1.1 (0.8-1.5)	810 (51)	1.3 (1.0-1.7)	820 (52)	1.6* (1.2-2.2)	985 (63)	1.0 (0.7-1.3)

	Improving Quality & Efficiency of Care										Improving Conditions for Evidence-Based Decisions					
	Promoting continuity of care		Promoting chronic disease care coordination		Expanding access to free preventive		Expanding electronic health records		Rooting out fraud and abuse		Expanding access to quality and safety data		Promoting head-to-head trials of competing treatments		Limiting corporate influence on physician behavior	
CHARACTERISTIC	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**
City/state/fed government	246 (75)	1.0 (0.6-1.6)	241 (73)	1.3 (0.9-2.1)	174 (53)	1.3 (0.9-2.0)	147 (45)	2.3* (1.4-3.5)	258 (79)	1.6 (1.0-2.6)	178 (54)	1.3 (0.9-2.0)	165 (50)	1.6 (1.0-2.4)	202 (62)	0.9 (0.6-1.4)
Medical school	48 (83)	1.9 (0.7-5.1)	46 (78)	1.8 (0.8-4.4)	38 (64)	2.1 (1.0-4.6)	22 (37)	1.5 (0.7-3.7)	35 (59)	0.7 (0.3-1.5)	33 (57)	1.6 (0.7-3.9)	36 (61)	2.3 (1.1-4.9)	39 (67)	1.1 (0.5-2.5)
Compensation Type																
Billing only	743 (74)	Ref	656 (65)	Ref	410 (41)	Ref	264 (26)	Ref	678 (67)	Ref	475 (47)	Ref	515 (51)	Ref	645 (65)	Ref
Salary plus bonus	639 (75)	1.0 (0.8-1.4)	609 (72)	1.2 (0.9-1.6)	438 (52)	1.4* (1.1-1.9)	339 (40)	1.6* (1.2-2.1)	618 (72)	1.2 (0.9-1.6)	462 (54)	1.3 (1.0-1.7)	427 (50)	0.9 (0.7-1.1)	523 (62)	0.9 (0.7-1.2)
Salary only	345 (78)	1.2 (0.8-1.7)	320 (72)	1.2 (0.9-1.7)	227 (51)	1.4 (1.0-1.9)	188 (42)	1.8* (1.3-2.5)	318 (72)	1.2 (0.8-1.6)	228 (52)	1.1 (0.8-1.5)	206 (46)	0.7 (0.5-1.0)	281 (64)	1.0 (0.7-1.4)

*p-value < 0.001

eTable 4 (continued)

	Changing How Care Gets Paid For												Cutting Payment to Physicians Directly					
	Limiting access to expensive treatments with little net benefit		Using cost-effectiveness data to determine available treatments		Higher patient co-pays		High deductible health plans		Penalizing providers for avoidable readmissions		Paying a network of practices a fixed, 'bundled' price		Eliminating fee-for-service payment models		Allowing Medicare payment cuts to doctors to take effect		Reducing compensation for the highest-paid specialties	
	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)	N (%)	OR (99% CI)
Age (years)																		
Less than 50	484 (47)	Ref	483 (46)	Ref	168 (16)	Ref	160 (15)	Ref	53 (5)	Ref	60 (6)	Ref	70 (7)	Ref	13 (1)	Ref	235 (23)	Ref
50 or greater	781 (54)	1.4* (1.1-1.8)	687 (48)	1.1 (0.9-1.4)	251 (17)	1.0 (0.8-1.4)	250 (17)	1.0 (0.8-1.4)	85 (6)	1.1 (0.7-1.8)	100 (7)	1.4 (0.8-2.2)	105 (7)	1.1 (0.7-1.7)	22 (2)	1.2 (0.4-3.0)	354 (25)	1.3 (1.0-1.7)
Sex																		
Female	367 (49)	Ref	356 (48)	Ref	99 (13)	Ref	84 (11)	Ref	35 (5)	Ref	49 (7)	Ref	55 (8)	Ref	7 (1)	Ref	223 (30)	Ref
Male	898 (52)	1.1 (0.9-1.4)	814 (47)	1.0 (0.8-1.3)	320 (18)	1.4 (1.0-2.0)	326 (19)	1.7* (1.2-2.4)	103 (6)	1.3 (0.7-2.3)	111 (6)	1.0 (0.6-1.6)	120 (7)	1.0 (0.6-1.6)	28 (2)	1.9 (0.6-6.3)	366 (21)	0.7* (0.5-0.9)
Region																		
South	381 (47)	Ref	357 (44)	Ref	139 (17)	Ref	140 (17)	Ref	48 (6)	Ref	46 (6)	Ref	36 (5)	Ref	8 (1)	Ref	146 (18)	Ref
Midwest	309 (55)	1.3 (0.9-1.7)	281 (51)	1.2 (0.9-1.7)	92 (17)	1.2 (0.8-1.7)	89 (16)	0.9 (0.6-1.4)	27 (5)	1.0 (0.6-1.9)	48 (9)	0.9 (0.4-1.7)	60 (11)	1.2 (0.6-2.4)	7 (1)	1.6 (0.5-5.7)	147 (26)	1.5 (1.1-2.2)
Northeast	254 (48)	1.0 (0.7-1.3)	231 (43)	0.9 (0.7-1.3)	71 (13)	0.8 (0.5-1.2)	83 (16)	0.9 (0.6-1.3)	23 (4)	0.6 (0.3-1.2)	30 (6)	0.7 (0.4-1.5)	45 (9)	1.7 (0.9-3.3)	10 (2)	1.9 (0.6-6.6)	134 (25)	1.4 (1.0-2.0)
West	316 (57)	1.4 (1.1-1.9)	288 (51)	1.3 (1.0-1.8)	116 (20)	1.0 (0.6-1.4)	96 (17)	0.9 (0.6-1.3)	36 (6)	0.8 (0.4-1.5)	34 (6)	1.7 (1.0-3.1)	33 (6)	3.0* (1.6-5.4)	9 (2)	1.3 (0.3-5.1)	157 (29)	1.8* (1.2-2.5)
Practice Setting Type																		
Small/solo	213 (44)	Ref	203 (42)	Ref	84 (17)	Ref	84 (17)	Ref	28 (6)	Ref	24 (5)	Ref	15 (3)	Ref	10 (2)	Ref	105 (22)	Ref
Group/HMO	830 (53)	1.4 (1.0-1.9)	771 (49)	1.3 (1.0-1.8)	279 (18)	1.1 (0.8-1.6)	266 (17)	1.1 (0.8-1.7)	84 (5)	1.1 (0.5-2.1)	96 (6)	1.2 (0.6-2.6)	112 (7)	1.7 (0.8-4.0)	19 (1)	0.7 (0.2-2.1)	378 (24)	1.0 (0.7-1.5)

City/state/fed government	181 (55)	1.4 (0.9-2.1)	173 (48)	1.2 (0.8-1.8)	50 (15)	1.0 (0.6-1.7)	53 (16)	1.2 (0.7-2.1)	21 (6)	1.1 (0.5-2.8)	34 (10)	1.7 (0.7-4.2)	37 (12)	2.3 (0.9-6.0)	5 (2)	0.8 (0.2-4.0)	85 (26)	0.9 (0.6-1.5)
Medical school	33 (57)	1.6 (0.7-3.4)	29 (51)	1.4 (0.6-2.9)	4 (7)	0.4 (0.1-1.8)	5 (8)	0.5 (0.1-1.9)	4 (7)	1.3 (0.2-5.9)	2 (3)	0.6 (0.1-4.5)	8 (14)	2.6 (0.7-10.1)	1 (2)	0.9 (0.1-14.9)	17 (29)	1.1 (0.5-2.7)
	Changing How Care Gets Paid For												**Cutting Payment to Physicians Directly**					
	Limiting access to expensive treatments with little net benefit		**Using cost-effectiveness data to determine available treatments**		**Higher patient co-pays**		**High deductible health plans**		**Penalizing providers for avoidable readmissions**		**Paying a network of practices a fixed, 'bundled' price**		**Eliminating fee-for-service payment models**		**Allowing Medicare payment cuts to doctors to take effect**		**Reducing compensation for the highest-paid specialties**	
	N (%)	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**	**N (%)**	**OR (99% CI)**
Practice Compensation Type																		
Billing only	485 (48)	Ref	443 (44)	Ref	197 (20)	Ref	198 (20)	Ref	55 (5)	Ref	39 (4)	Ref	29 (3)	Ref	17 (2)	Ref	188 (19)	Ref
Salary plus bonus	437 (52)	1.1 (0.9-1.4)	419 (49)	1.2 (0.9-1.6)	128 (15)	0.8 (0.5-1.1)	124 (15)	0.7 (0.5-1.0)	43 (5)	1.0 (0.6-1.8)	56 (7)	1.8 (1.0-3.3)	78 (9)	3.3* (1.8-6.1)	11 (1)	0.9 (0.3-2.7)	204 (24)	1.4 (1.0-1.9)
Salary only	246 (56)	1.2 (0.9-1.7)	221 (50)	1.2 (0.9-1.6)	66 (15)	0.8 (0.5-1.2)	61 (14)	0.7 (0.4-1.0)	29 (7)	1.3 (0.7-2.6)	42 (9)	2.4* (1.3-4.6)	57 (13)	4.3* (2.2-8.5)	7 (2)	1.1 (0.3-3.9)	294 (34)	2.2* (1.6-3.2)

*p-value < 0.001

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