

表之| 続き

世帯種	その他の拠出金			
	企業年金の拠出金	生命保険の拠出金	損害保険の拠出金	個人年金の拠出金
被保護世帯	0.29	7.27	2.90	0.92
国保加入世帯	0.36	13.81	4.26	2.90
被用者加入世帯	0.49	23.44	3.80	2.22
国保・被用者加入世帯	0.17	20.36	6.17	4.69
その他の世帯	0.94	9.13	0.88	3.38
高齢者世帯	0.17	9.46	2.69	1.80
母子世帯	0.17	14.68	2.08	1.68
父子世帯	5.00	3.00	1.00	14.00
その他の世帯	0.45	19.57	5.07	3.35
単独世帯(男)	0.15	10.24	4.23	1.48
単独世帯(女)	0.05	12.54	2.32	1.94
夫婦のみの世帯	0.28	13.17	3.70	2.07
夫婦と未婚の子のみの世帯	0.60	20.94	4.92	4.50
片親と未婚の子のみの世帯	0.17	12.40	2.60	1.70
三世代世帯	0.27	27.70	8.07	3.83
その他の世帯	1.42	15.51	5.82	2.98
会社・団体等役員の世帯	0	32.38	2.81	2.31
一般常雇者世帯(企業規模1~4人)	0	12.47	3.32	3.28
一般常雇者世帯(企業規模5~29人)	0.27	14.68	2.99	1.86
一般常雇者世帯(企業規模30~99人)	0.19	16.61	2.91	1.70
一般常雇者世帯(企業規模100~499人)	0.24	17.59	3.48	1.49
一般常雇者世帯(企業規模500~999人)	0	9.40	0.87	1.07
一般常雇者世帯(企業規模1000人以上)	0	52.85	11.50	8.77
一般常雇者世帯(官公庁)	0	21.08	5.50	2.50
1年以上1年未満の契約の雇用者世帯	0.40	8.30	3.13	1.73
日々又は1月未満の雇用者世帯	0	11.72	3.39	0
自営業者世帯(雇人あり)	0.48	16.71	6.96	4.18
自営業者世帯(雇人なし)	0.99	20.87	5.81	6.38
その他の世帯(内職)	0	17.00	0.88	3.63
その他の世帯(所得を伴う仕事をしている者のいる世帯〔内職除く〕)	0.36	17.34	3.36	2.04
その他の世帯(所得を伴う仕事をしていない世帯)	0.14	10.30	2.41	1.38
農耕専業世帯(所得を伴う仕事をしている者のいる世帯)	0.02	18.73	10.63	5.19
農耕専業世帯(所得を伴う仕事をしていない世帯)	0	24.33	3.00	0
農耕兼業世帯(常雇者等のいる世帯)	0.12	29.77	8.44	1.63
農耕兼業世帯(その他の世帯)	4.67	23.22	8.83	2.94

表2-1 続志

	その他の拠出金			
	企業年金の拠出金	生命保険の拠出金	損害保険の拠出金	個人年金の拠出金
高齢者数	0人	18.11	3.99	3.16
	1人	0.42	14.91	4.92
	2人	0.25	14.24	4.24
	3人	0	18.20	2.60
子供数	0人	0.25	16.41	4.18
	1人	2.16	21.22	6.34
	2人	0	6.69	0.62
	3人	0	57.00	0
有業人員数	0人	0.14	10.41	2.42
	1人	0.34	15.76	3.52
	2人	0.74	19.08	6.32
	3人	0.18	33.48	6.92
	4人	0.74	21.21	9.87
	5人	0	63.50	7.00
	6人	0	40.00	15.00
	7人以上	0	70.00	35.00
世帯主の勤め(16種)	0.30	20.87	8.36	3.80
自営業主(雇人あり)	0.98	21.37	6.96	6.14
自営業主(雇人なし)	2.37	14.68	3.42	2.53
家族従業員	0	33.75	2.83	2.50
会社・団体等役員の世帯	0	13.54	3.26	3.23
一般常雇者(企業規模5人未満)	0.31	15.31	3.52	1.46
一般常雇者(企業規模5~29人)	0.20	17.45	2.86	1.92
一般常雇者(企業規模30~99人)	0.29	19.48	3.18	1.39
一般常雇者(企業規模100~499人)	0	9.50	1.08	1.33
一般常雇者(企業規模500~999人)	0	52.09	12.87	9.91
一般常雇者(企業規模1,000人以上)	0	21.00	3.67	0.11
一般常雇者(官公庁)	0.35	6.97	3.32	1.62
1月以上1年未満の契約の雇用者	0	13.41	4.00	0
日々又は1月未満の雇用者	0	19.89	2.78	3.22
家庭内職者	0.04	23.14	2.36	1.75
その他	0.14	10.83	2.45	1.42
仕事なし				

表2-2 低所得者層*の世帯数・世帯収入・世帯支出金 属性別 (所得が中央値の半分以下の世帯)

世帯種	税金			社会保険料				国民年金・農業者年金	その他(雇用保険等)
	世帯数	所得税	住民税	固定資産税	自動車税 など	短期被用者 保険(健康保 険等)	国民健康 保険		
被保護世帯	50	0	0	0	0.72	2.22	4.04	2.48	0.20
国保加入世帯	1,435	26.05	14.01	56.14	1.20	0.64	9.16	1.82	0.08
被用者加入世帯	283	22.42	13.81	31.93	1.54	3.83	2.89	5.65	0.30
国保・被用者加入世帯	185	34.14	26.83	79.65	1.95	3.92	11.51	7.31	0.27
その他の世帯	17	3.24	2.53	6.29	1.06	1.47	5.24	7.53	0.12
高齢者世帯	1,005	9.95	10.39	56.98	0.77	0.49	7.69	0.87	0.02
母子世帯	68	7.82	3.13	8.90	0.93	2.91	4.85	6.44	0.38
父子世帯	3	0	0	0	2.67	6.67	3.33	20.67	0
その他の世帯	894	44.25	20.54	52.10	1.93	2.42	9.30	4.97	0.23
単独世帯(男)	138	10.50	5.97	17.56	0.95	0.54	4.99	1.93	0.07
単独世帯(女)	476	6.09	3.24	29.40	0.33	0.57	4.20	1.64	0.06
夫婦のみの世帯	667	18.60	18.02	70.05	1.27	0.75	10.67	1.24	0.05
夫婦と未婚の子のみの世帯	271	36.23	22.65	55.16	2.48	3.67	10.35	6.87	0.32
片親と未婚の子のみの世帯	159	10.58	6.11	20.53	1.21	2.14	4.95	5.15	0.25
三世帯世帯	126	28.56	19.37	76.37	3.04	3.18	12.63	6.25	0.38
その他の世帯	133	137.12	38.29	101.29	1.40	2.19	10.55	3.51	0.11
会社・団体等役員の世帯	20	38.10	19.60	56.25	0.85	3.10	5.50	4.70	0.20
一般常雇者世帯(企業規模1~4人)	46	27.13	15.20	20.52	1.35	1.67	9.35	4.98	0.33
一般常雇者世帯(企業規模5~29人)	112	32.66	15.46	21.29	1.40	3.58	5.92	6.71	0.37
一般常雇者世帯(企業規模30~99人)	88	24.63	19.99	36.00	1.60	3.42	3.74	6.01	0.53
一般常雇者世帯(企業規模100~499人)	61	30.51	19.15	25.57	1.90	5.56	3.52	10.46	0.31
一般常雇者世帯(企業規模500~999人)	11	39.82	22.45	4.36	0.91	5.82	3.09	10.91	1.27
一般常雇者世帯(企業規模1000人以上)	22	38.32	20.32	44.95	3.23	5.14	6.14	5.32	0.32
一般常雇者世帯(官公庁)	11	27.18	33.18	50.82	2.45	3.64	8.18	6.00	1.27
1月以上1年未満の契約の雇用者世帯	42	29.31	17.48	17.52	2.69	2.45	6.50	2.26	0.10
日々又は1月未満の雇用者世帯	20	6.55	3.65	14.80	0.45	1.20	7.50	10.30	0.90
自営業者世帯(雇人あり)	77	32.23	28.35	119.88	2.81	1.83	12.51	3.27	0.10
自営業者世帯(雇人なし)	199	12.71	10.64	40.46	1.96	1.69	10.86	4.11	0.11
その他の世帯(内職)	13	11.23	4.69	21.62	0.62	1.00	5.38	3.85	0.46
その他の世帯(所得を伴う仕事をしている者のいる世帯[内職専業主業世帯(所得を伴う仕事をしていない世帯)])	130	70.73	20.32	48.57	1.33	1.70	10.14	3.34	0.18
その他の世帯(所得を伴う仕事をしていない世帯)	983	9.75	8.36	53.12	0.78	0.46	7.88	1.05	0.02
農耕専業主業世帯(所得を伴う仕事をしている者のいる世帯)	73	153.16	59.33	113.44	1.55	0.10	12.01	0.47	0.01
農耕専業主業世帯(所得を伴う仕事をしていない世帯)	7	132.29	133.14	91.86	1.86	0	15.43	0	0
農耕兼業主業世帯(常雇者等のいる世帯)	39	26.05	18.51	163.97	3.33	4.59	13.59	8.92	0.38
農耕兼業主業世帯(その他の世帯)	16	24.69	12.75	76.44	2.50	0.06	11.88	0	0

表2-2(続き)

	税金		社会保険料					国民年金・農業者年金	その他(雇用保険等)	
	世帯数	所得税	住民税	固定資産税	自動車税 など	短期被用者 保険(健康保 険等)	国民健康 保険			長期被用者 保険(厚生保 険等)
高齢者数	681	33.03	15.28	29.61	1.69	2.36	7.44	5.65	4.17	0.22
1人	659	25.43	13.71	45.17	0.94	1.05	7.55	1.88	1.43	0.10
2人	518	15.50	15.51	94.62	1.34	0.86	10.52	0.99	0.91	0.07
3人	12	22.08	14.58	82.08	0.83	2.33	12.33	1.67	0.00	0.17
0人	1,602	25.96	15.06	55.19	1.08	0.98	8.20	1.88	1.55	0.10
1人	164	20.25	13.43	41.82	2.25	3.59	6.35	8.01	4.10	0.24
2人	131	19.92	11.18	45.29	2.15	3.11	10.80	7.22	5.78	0.27
3人	58	20.20	14.95	44.09	2.59	4.72	9.93	7.78	6.48	0.45
4人	14	99.79	25.93	48.71	2.86	1.57	12.64	6.36	7.35	0.29
有業人員数	990	10.61	9.24	53.39	0.79	0.45	7.93	1.04	0.79	0.02
1人	639	21.98	14.48	39.51	1.65	2.44	7.14	4.64	2.79	0.26
2人	258	26.03	20.60	70.08	2.08	2.20	11.55	4.85	4.88	0.22
3人	63	291.65	79.49	103.37	2.40	3.57	12.16	7.60	5.60	0.24
4人	19	23.63	15.95	91.16	2.47	3.47	12.16	3.79	11.89	0.21
世帯主の 勤め (16種)	85	103.91	27.76	125.54	2.93	1.61	13.47	2.69	7.56	0.08
自営業主(雇人あり)	290	50.44	23.83	70.39	1.97	1.64	11.51	3.95	5.48	0.13
自営業主(雇人なし)	18	4.39	2.17	47.50	1.28	1.61	9.50	0.33	6.11	0.39
家族従業員	18	28.28	19.17	52.50	0.94	3.44	5.00	5.22	0.78	0.22
会社・団体等役員の世帯	46	21.02	9.59	21.20	1.37	1.93	8.48	5.43	3.11	0.30
一般常雇者(企業規模5人未満)	99	33.11	16.75	20.13	1.39	3.63	5.72	6.20	2.81	0.47
一般常雇者(企業規模5~29人)	71	20.28	20.35	31.55	1.69	3.41	3.30	5.56	2.42	0.45
一般常雇者(企業規模30~99人)	46	32.48	18.33	22.93	2.57	7.09	2.83	12.63	1.07	0.39
一般常雇者(企業規模100~499人)	7	15.29	7.71	0.00	0.86	4.14	4.29	10.29	0.00	0.43
一般常雇者(企業規模500~999人)	16	38.38	20.00	19.50	3.94	3.06	1.13	4.00	1.00	0.25
一般常雇者(企業規模1,000人以上)	9	30.78	32.56	55.44	3.00	4.44	8.78	7.33	1.56	0.00
1月以上1年未満の契約の雇用者	42	29.88	19.17	23.21	2.81	2.40	6.02	2.14	0.79	0.07
日々又は1月未満の雇用者	19	31.47	17.00	16.84	0.53	1.53	7.79	11.37	0.79	0.26
家庭内職者	13	11.15	4.31	20.00	0.62	1.00	5.37	3.85	3.23	0.46
その他	39	15.10	17.97	42.82	0.67	0.59	7.82	2.72	2.97	0.03
仕事なし	1,152	13.26	10.79	53.18	0.88	0.75	8.18	1.59	1.01	0.06

表2-2 低所得者層*の世帯数・世帯収入 属性別 (所得が中央値の半分以下の世帯)

続き

世帯種	世帯類型	世帯構造	世帯業態 (19業態)	その他の拠出金				
				企業年金 の租金	生命保険 の租金	損害保険 の租金	個人年金 の租金	0.90
	被保護世帯			0.28	7.12	2.84	0.90	
	国保加入世帯			0.15	13.03	3.94	2.02	
	被用者加入世帯			0.50	13.69	2.73	1.19	
	国保・被用者加入世帯			0.66	17.82	5.13	2.83	
	その他の世帯			0.88	9.88	1.47	3.18	
	高齢者世帯			0.30	11.50	3.53	1.50	
	母子世帯			0.13	13.24	1.82	1.78	
	父子世帯			5.00	3.00	1.00	14.00	
	その他の世帯			0.20	15.59	4.33	2.44	
	単独世帯(男)			0.10	10.48	5.04	0.69	
	単独世帯(女)			0.03	7.67	2.20	1.77	
	夫婦のみの世帯			0.24	15.32	4.32	1.45	
	夫婦と未婚の子のみの世帯			0.21	17.96	4.30	4.21	
	片親と未婚の子のみの世帯			0.15	10.74	2.12	1.59	
	三世代世帯			0.22	19.56	6.32	2.43	
	その他の世帯			1.60	15.39	4.69	1.88	
	会社・団体等役員の世帯			0	10.20	1.85	0.40	
	一般常雇者世帯(企業規模1~4人)			0	12.59	3.30	2.70	
	一般常雇者世帯(企業規模5~29人)			0.05	13.49	2.49	1.79	
	一般常雇者世帯(企業規模30~99人)			0.10	12.82	2.43	2.14	
	一般常雇者世帯(企業規模100~499人)			0	16.93	2.80	1.48	
	一般常雇者世帯(企業規模500~999人)			2.18	8.73	0.82	1.45	
	一般常雇者世帯(企業規模1000人以上)			0	21.14	4.50	0.41	
	一般常雇者世帯(官公庁)			0	15.64	4.82	0.09	
	1年以上1年未満の契約の雇用者世帯			0.29	11.95	5.98	1.24	
	日々又は1月未満の雇用者世帯			0	31.30	3.70	0	
	自営業者世帯(雇人あり)			0	11.68	3.82	0.86	
	自営業者世帯(雇人なし)			0.35	17.28	5.45	5.91	
	その他の世帯(内職)			0	16.31	2.08	2.23	
	その他の世帯(所得を伴う仕事をしている者のいる世帯[内			0.18	18.07	3.88	1.75	
	その他の世帯(所得を伴う仕事をしていない世帯)			0.28	10.71	3.44	1.32	
	農耕専業世帯(所得を伴う仕事をしている者のいる世帯)			0.01	19.33	8.14	3.45	
	農耕専業世帯(所得を伴う仕事をしていない世帯)			0	16.86	4.43	0	
	農耕兼業世帯(常雇者等のいる世帯)			0	21.79	6.05	1.18	
	農耕兼業世帯(その他の世帯)			5.25	17.50	3.19	4.56	

表2-2 低所得者層*の世帯数・世帯収入 属性別 (所得が中央値の半分以下の世帯)

続き

	その他の拠出金			
	企業年金 の拠出金	生命保険 の拠出金	損害保険 の拠出金	個人年金 の拠出金
高齢者数	0人	13.63	3.43	2.88
	1人	0.21	12.53	3.95
	2人	0.51	14.06	4.13
	3人	0.00	27.00	5.92
子供数	0人	0.26	12.87	3.79
	1人	0.31	11.87	4.09
	2人	0.24	18.02	3.37
	3人	0.00	22.00	5.05
	4人	0.43	13.64	4.50
有業人員数	0人	0.28	10.75	3.45
	1人	0.26	15.26	3.44
	2人	0.14	17.91	5.78
	3人	0.00	17.05	4.49
	4人	1.47	15.11	7.89
世帯主の 勤め (16種)	自営業主(雇人あり)	0.00	15.48	4.78
	自営業主(雇人なし)	0.46	17.98	6.21
	家族従業員	2.50	16.44	3.61
	会社・団体等役員の世界	0.00	11.33	2.06
	一般常雇者(企業規模5人未満)	0.00	11.28	2.78
	一般常雇者(企業規模5~29人)	0.06	13.81	2.92
	一般常雇者(企業規模30~99人)	0.13	12.62	2.23
	一般常雇者(企業規模100~499人)	0.00	18.83	2.00
	一般常雇者(企業規模500~999人)	0.00	9.86	1.29
	一般常雇者(企業規模1,000人以上)	0.00	13.13	2.50
	一般常雇者(官公庁)	0.00	15.44	5.22
	1年以上1年未満の契約の雇用者	0.29	11.26	6.26
	日々又は1年未満の雇用者	0.00	33.84	4.26
	家庭内職者	0.00	16.31	2.08
	その他	0.00	20.62	2.59
	仕事なし	0.26	11.43	3.47

共同研究 4

「公的年金の **foundation** に関する比較研究」

(平成 11～13 年度)

20000005

以降 P151－168ページは雑誌/図書等に掲載された論文となりますので、「研究成果の刊行に関する一覧表」をご参照ください。

「研究成果の刊行に関する一覧表」

定額年金の位置付け.

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THE QUALITY OF HEALTH CARE IN THE UNITED STATES:

A REVIEW OF ARTICLES SINCE 1987

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Quality of health care is on the national United States policy agenda. In September, 1996, President Clinton established the Advisory Commission on Consumer Protection and Quality in the Health Care Industry, and in 1998, the Commission released its final report on how to define, measure, and promote quality of health care (President's Advisory Commission on Consumer Protection and Quality in the Health Care Industry 1998).

Much of the interest in quality of care has developed in response to the dramatic transformation of the health care system in recent years. New organizational structures and reimbursement strategies have created incentives that may affect quality of care. Although some of the systems are likely to improve quality, concerns about potentially negative consequences have prompted a movement to assure that quality will not be sacrificed to control costs.

The concern about quality arises more from fear and anecdote than from facts; there is little systematic evidence about quality of care in the United States. We have no mandatory national system and few local systems to track the quality of care delivered to the American people. More information is available on the quality of airlines, restaurants, cars, and VCRs than on the quality of health care.

In 1997, the National Coalition on Health Care commissioned us to review the academic literature for articles that provide evidence of the quality of care in the United States (Schuster et al. 1998). We subsequently conducted an update to include studies published between January 1997 and July 1998. In this report, we summarize our findings from both the original study and the update. In the absence of a national quality tracking system, we believe such a summary is the best way to provide an overview of the quality of care delivered in the United States. We provide examples to illustrate quality in diverse settings, for diverse conditions, and for diverse demographic groups, and to offer insight into the quality that exists nationwide.

Definitions

The Institute of Medicine has defined *quality* as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (Lohr 1990). Good quality means providing patients with appropriate services in a technically competent manner, with good communication, shared decision making, and cultural sensitivity.

Quality can be evaluated based on structure, process, and outcomes (Donabedian 1980). *Structural quality* evaluates health system capacities, *process quality* assesses interactions between clinicians and patients, and *outcomes* offer evidence about changes in patients' health status. The best process measures are those for which there is evidence from research that better process leads to better outcomes. For example, controlling blood pressure reduces mortality from stroke and heart disease; performing routine mammography identifies breast cancer at an earlier stage so that a cure is more likely; prescribing inhaled corticosteroids reduces the likelihood and severity of asthma flare-ups. Similarly, the best outcome measures are those which are tied to processes of care, in other words, those over which the health care system has

influence. For example, the survival rate for pancreatic cancer would not be a good outcome measure because we do not yet have treatments that meaningfully affect survival. By contrast, pain level in patients with pancreatic cancer is a reasonable outcome measure.

All three dimensions can provide valuable information for measuring quality, but the published quality-of-care literature reveals that there is more experience with measuring processes of care. Two particular types of process quality methodologies—assessment of appropriateness and of adherence to professional standards—dominate the published literature on quality of care, and so we will describe them here. (a) An intervention or service (e.g., a lab test, procedure, medication) is considered *appropriate* if, for individuals with particular clinical and personal characteristics, its expected health benefits (e.g., increased life expectancy, pain relief, decreased anxiety, improved functional capacity) exceed its expected health risks (e.g., mortality, morbidity, anxiety anticipating the intervention, pain caused by the intervention, inaccurate diagnoses) by a wide enough margin to make the intervention or service worth doing (Brook et al. 1986). A subset of appropriate care is *necessary* or crucial care. Care is considered necessary if there is a reasonable chance of a nontrivial benefit to the patient and if it would be improper not to provide the care. In other words, it might be considered ethically unacceptable not to provide this care (Kahan et al. 1994; Laouri et al. 1997).

(b) Another way to measure process quality is to determine whether care meets professional standards. This assessment can be done by creating a list of *quality indicators* that describe a process of care that should occur for a particular type of patient or clinical circumstance and then evaluating whether patients' care is consistent with the indicators. Quality indicators are based on standards of care, which are either found in the research literature and in statements of professional medical organizations or determined by an expert panel. Current performance can be compared against a physician's or plan's own prior performance, against the performance of other physicians and plans, or with reference to a benchmark that establishes a goal. Indicators can cover a specific condition (e.g., children with sickle cell disease should be prescribed daily penicillin prophylaxis from at least six months of age until at least five years of age), or they can cover general aspects of care regardless of condition (e.g., patients prescribed a medication should be asked about medication allergies).

Literature Search

The report draws on two searches. The original NCHC report was based on a search for “quality of care” articles from the MEDLINE PLUS database (1993 to present) conducted in June 1997 and on relevant studies identified from the bibliographies of these articles. This database incorporates both the National Library of Medicine (NLM)'s MEDLINE database and the Health Planning & Administration's HEALTH database. This report excluded articles published before 1987. We did not aim to be exhaustive but, rather, to find examples which cover a broad range of conditions and settings. (The inclusion criteria are described in the next section.)

For the update, we conducted a systematic search of articles published between January 1, 1997, and July 31, 1998. We used the NLM's Medical Subject Headings (MeSH) to search for

appropriate articles. The system is designed so that each MeSH term corresponds to a single concept appearing in the biomedical literature. Trained NLM indexers assign relevant MeSH terms to each database entry (usually about 10-12 per entry) (NLM 1997a). The over 17,000 MeSH terms are organized in a tree format, with multiple hierarchical layers of subheadings (NLM 1997b). Our search terms appear in the Appendix.

We conducted our search on August 24, 1998, and obtained 2,402 entries. Two researchers (the first author and one additional author) reviewed each entry (and its abstract) to determine which appeared to have potential for inclusion in the tables. Over 200 articles were retrieved, and each was reviewed by two researchers (same combination as above) to determine whether it was eligible for inclusion in this report.

In addition, we did not find any studies of misuse in our update search, so we conducted a supplemental search using key words "adverse," "event#," and "preventable" that produced some additional relevant articles. Also, several studies were recommended by experts in the field.

Inclusion Criteria

The report includes only data from large or diverse populations within the United States, such as the nation, an entire state, an entire city, or several hospitals. Studies from multiple offices of a single managed care organization are considered eligible. We do not include data from studies that covered only a single hospital or clinic. While studies from single institutions are informative and the cumulative weight of their findings compelling, we believe they are especially subject to questions about whether they are merely providing evidence of isolated problems rather than insight into the quality of care delivered throughout the country.

We include baseline data from quality improvement interventions as well as data for comparison/control/non-intervention groups from such interventions. We report the baseline rather than the follow-up data because the former are more likely to be representative of the quality of care provided around the country. Quality measurement conducted after a specific intervention shows the potential for interventions to improve quality, but until such interventions are commonplace, these post-intervention results are unlikely to represent what is taking place in most parts of the country. Of note, even the post-intervention results from such studies virtually always show room for further improvement.

We report results from studies for which we can identify a standard of good quality. Studies for which there is no such standard do not appear in our tables. For example, some studies show variations in practices that suggest that some of the variations are probably due to variations in quality. However, they are not able to determine which hospital or clinic or group of physicians is providing the better quality and which is providing worse quality care.

Types of Studies That Are Not Included

There are several methodologies for measuring quality of care that do not appear in the table. Although these approaches are valuable components of the quality of care toolbox, they have not been used in a way that lends itself to an overview of quality in the U.S.

We found that many studies that report outcomes do not do so in a way that is directly applicable to an assessment of quality across the country. Studies often compare outcomes across multiple institutions to show which have better and which have worse outcomes, but the studies do not always present a standard to which to compare the outcomes—we do not know if the institution with the best outcomes is not nearly as good as it should be or if the institution with the worst outcomes is nonetheless doing quite well. We only know how they compare to each other. If the outcomes are not risk-adjusted, it can be even more difficult to interpret them. That's not to say that studies cannot use outcomes to shed light on variations in quality. For example, prescription of beta blockers after a heart attack is a frequently used measure of quality (and appears several times in Table 1). One study found not only that only about one in five eligible patients with a heart attack received beta blockers within 90 days of hospital discharge but also that those who received the treatment were much less likely to die than those who did not (Soumerai et al., 1997). Another study showed that poorer quality of care for children with asthma was associated with more hospitalizations (Homer et al., 1996).

We found a similar limitation with use of satisfaction ratings, which some consider a type of outcome. We do not report on levels of satisfaction because it is difficult to determine what is an acceptable level of satisfaction. Again, there is generally no standard to which to compare the results. We do not know whether the institution with the best satisfaction ratings could and should be doing much better.

Studies of access to care are not typically classified as quality of care studies, but a person who is unable to obtain health care could hardly be said to be getting good quality care. Although access studies are beyond the scope of this report, people who have limited access to health care represent another group that is not getting the health care that our system has the ability to provide. We need to keep in mind that quality of care studies often measure quality only for people who have interacted with the health care system and so tend to overstate the overall quality of care achieved by the population as a whole (Franks et al. 1993a, 1993b; Sorlie et al. 1994; Lurie et al. 1984, 1986).

In general, structural measures have not been consistently shown to relate to process quality or outcomes. However, volume of care provided (in other words, the number of procedures performed or the number of patients cared for) by an institution or clinician has often been found to relate to quality (Hannan et al. 1989, 1995; Kelly and Hellinger 1989; Kitahata et al. 1996; Luft et al. 1979; Phibbs 1996; Riley and Lubitz 1985; Stone et al. 1992).

Another type of study does not give direct evidence of quality of health care but is useful in determining reasons for poor quality: studies in which physicians report what they generally do or what they would do for a particular scenario are informative, especially when they report practices that indicate poor quality. However, these studies are not tied to individual patients and

are not direct measures of quality. They do, however, indicate a need for further education or other efforts to improve clinical practices.

We also note that our search mechanism almost certainly missed articles with relevant data. Many studies not intended as quality of care studies provide data that shed light on quality of care. Some of these were identified through our search, but it is likely that many others did not.

Categorization

Our review of quality in the United States is divided into three categories: underuse (table 1), overuse (table 2), and misuse (table 3). Underuse indicates that a health care service for which the potential benefits outweigh the potential risks (i.e., necessary care) is not provided. Overuse indicates the reverse, that a health care service is provided when the potential risks outweigh the potential benefits. In other words, inappropriate care is provided. Misuse occurs when otherwise appropriate care is provided but in a manner that leads to or could lead to avoidable complications. For example, when an antibiotic appropriate to the patient's infection is prescribed despite the fact that the patient has a documented allergy to the antibiotic; or when two drugs, each of which is appropriate for a patient's condition, are prescribed despite contraindications to prescribing them together. An incorrect dose or dosing schedule are also considered misuse.

The tables describe the health care service for which quality is reported, the sample on which the report is based, the data source for the sample, the findings, and the reference for the findings. We report on data from 58 articles covering about one-half million people.

Quality of Care in the United States

Perhaps the most striking revelation to emerge from this review is the surprisingly small amount of systematic knowledge available on the quality of health care delivered in the United States. Even though health care is a huge industry that affects the lives of most Americans, we have only snapshots of information about particular conditions, types of surgery, and locations of care.

The dominant finding of our review is that there are large gaps between the care people should receive and the care they do receive. This is true for preventive, acute, and chronic care—whether one goes for a check-up, a sore throat, or diabetic care. It is true whether one looks at overuse, underuse, or misuse. It is true in different types of health care facilities and for different types of health insurance. It is true for all age groups, from children to the elderly. And it is true whether one is looking at the whole country or a single city.

A few examples emphasize this point. An annual influenza vaccine is recommended as a preventive measure for all adults 65 years or older, a group at especially high risk for complications and death from influenza (U.S. Preventive Services Task Force 1989, 1996). However, in 1993, 52 percent of people in this age group in the United States received the

vaccine; among people who had been to the doctor at least once that year, the percentage was slightly higher at 56 percent (Centers for Disease Control and Prevention [CDC] 1995b).

A major issue in acute care is the overuse of antibiotics, which has led to the development of strains of bacteria that are resistant to available antibiotics (Centers for Disease Control and Prevention 1994a). Antibiotics are almost never an appropriate treatment for people with a common cold because almost all colds are caused by a virus, for which antibiotics are not effective. However, in a study of Medicaid beneficiaries diagnosed with a cold in Kentucky during a one-year period from 1993 to 1994, 60 percent filled a prescription for an antibiotic (Mainous et al. 1996). In a national study of patient visits in 1992, 51 percent of adult patients and 44 percent of patients younger than 18 years old diagnosed with a common cold were treated with antibiotics (Gonzales et al. 1997; Nyquist et al., 1998).

Other types of medications are also not always used in the most appropriate manner. Among hospitalized elderly patients with depression who were discharged on antidepressant medication, 33 percent were on a dose below the recommended level (Wells et al. 1994b). In a study of 634 patients with depression or depressive symptoms in Boston, Chicago, and Los Angeles, 19 percent were treated with minor tranquilizers and no antidepressants (Wells et al. 1994a), despite the lack of evidence that tranquilizers work for depression and the risk that they will cause side effects or addiction (Depression Guideline Panel 1993).

Patients with chronic conditions, for which certain routine examinations and tests are crucial in order to prevent complications, do not all get the care they need. Diabetes mellitus causes several complications that are less likely to occur with good care. One complication is an eye condition called diabetic retinopathy, which is the leading cause of new blindness among persons aged 20 to 74 in the United States. It is recommended that patients with insulin-dependent diabetes mellitus have an annual dilated eye examination (the clinician uses drops to enlarge the pupil to see behind it more easily) starting five years after diagnosis and that patients with non-insulin-dependent diabetes mellitus have the exam annually starting at the time of diagnosis. In a national study in 1989, 49 percent of adults with either type of diabetes had undergone a dilated eye examination in the past year (66 percent in the past two years), and 61 percent had undergone any type of eye exam in the past year (79 percent in the past two years). Twenty percent of diabetics had no eye exam in the past two years. Among diabetics who were at particularly high risk for vision loss because they already had retinopathy or because they had had diabetes for a long time, 61 percent and 57 percent, respectively, had a dilated examination in the past year (Brechtner et al. 1993).

Sometimes surgery is performed on people who do not need it. A study of seven managed care organizations revealed that about 16 percent of hysterectomies performed during a one-year period from 1989 to 1990 were carried out for inappropriate reasons. An additional 25 percent were done for reasons of uncertain clinical benefit (Bernstein et al. 1993b). There are also examples of patients who need surgery but do not receive it. In a study of four hospitals, 43 percent of patients with a positive exercise stress test demonstrating the need for coronary angiography had received it within 3 months; 56 percent had received it within 12 months (Laouri et al. 1997).

Adverse events are injuries caused by medical management of a disease rather than by the disease itself. A review in New York State in 1984 found that 1.0 percent of hospitalizations had an adverse event due to negligence (Brennan et al. 1991). A study of two Boston hospitals found an adjusted rate of preventable adverse drug events of 1.8 per 100 non-obstetric hospital admissions; 20 percent of these events were life-threatening (Bates et al. 1995).

Not all studies have found such poor quality. In a study of patients from 10 academic medical centers who had cataract surgery, 2 percent had the surgery for inappropriate reasons (Tobacman et al. 1996). In a study of patients in New York State who underwent coronary artery bypass graft surgery (CABG) surgery, 1.6 percent had surgery for inappropriate reasons (Leape et al. 1996). Nonetheless, the majority of studies described in the tables show much room for improvement of quality.

Many have been quick to conclude that managed care is responsible for much of the poor quality that is found in the American health care system. Studies published in the research literature have neither clearly confirmed nor refuted this conclusion. Some studies find that managed care organizations provide better care than fee-for-service (FFS), some find that FFS provides better care, and others find that the care is about the same (Miller and Luft 1993, 1994). Results vary depending on the setting, the type of care assessed, and the methodology. This topic is complicated by the research approach, which has generally lumped together managed care organizations without distinguishing them either by type (e.g., group- and staff-model health maintenance organizations, independent practice associations, preferred provider organizations, point-of-service plans) or by features (e.g., comprehensiveness of the benefits package, nonprofit versus for-profit status). It would be more useful to look at the impact of specific characteristics of managed care organizations. For example, inclusion of immunizations in the benefits package may have a larger impact on immunization rates than whether the care is offered by a managed care organization or a fee-for-service provider. Finally, managed care is changing so rapidly (Landon et al. 1998) that most currently available studies are already out of date. Our ongoing quality measurement system is not large enough to enable timely assessment of the rapid changes occurring in the health care marketplace. Even the most widely used systems (e.g., the Health Plan Employer Data and Information Set, described below) are far from universal and do not cover both managed care and fee-for-service.

A Note on More Recent Articles

Because this report is primarily an update of the original report published in the Milbank Quarterly, we looked at the more recent studies (1997-1998) as a group. There are several notable findings. First, few of these studies reported on overuse. By contrast, the original review presented many examples of overuse of care. These studies were principally based on the UCLA/RAND appropriateness method (Brook, 1994), which was one of the principal methodologies used in the late 1980s and early 1990s. We do not know why there has been a decline in the number of appropriateness studies in recent years. Perhaps the many studies published throughout the prior decade convinced researchers that a lot of inappropriate care is

being provided and that there is no need to make the same point over and over again. Or perhaps researchers now prefer other types of research questions and methodologies.

Most of the recent studies provided examples of underuse. The findings are similar to those in the original review. For most types of care that researchers choose to study, we find that although many people do receive high quality care, many others do not. For example, a national study found that smoking status of adult patients was known by about two-thirds of primary care physicians after seeing their adult patients (Thorndike et al. 1998). Most preventive screening tests in the various studies were performed on more than half of the studied population but far from all. Blood pressure screening was particularly high (88 percent at last visit in one study [Kottke et al. 1997]), and in at least one study, cholesterol screening was high as well (84 percent) (Davis et al. 1998). Papanicolaou tests also appear to be provided to a large percentage of eligible women (Kottke et al. 1997). Quality continues to vary for acute care as well. The vast majority of hospitalized patients with pneumonia having timely oxygenation measurements (89 percent) but a lower percentage receiving blood cultures before antibiotics (57 percent) (Meehan et al. 1997).

Most of the underuse studies were in chronic care. Mental health care is falling below standards, with 70 percent of schizophrenics in one study receiving poor symptom management, and 79 percent with medication side effects receiving poor management of the side effects (Young et al. 1998). Cardiac care has been the major area in which quality of care studies have been conducted over the past decade, and the same pattern continues among the recent studies. Excellent clinical research has shown repeatedly that certain medications should and should not be used for people with myocardial infarctions or unstable angina, yet several quality of care studies show that many patients are still not getting proper treatments (e.g., Berger et al. 1998; Krumholz et al. 1998; Simpson et al. 1997; Soumerai et al. 1998). As described above, one study with particularly striking results found that only 21% of eligible patients with a heart attack received beta blockers within 90 days of hospital discharge (Soumerai et al., 1997). Although patients with cardiovascular disease—a subset of the population that unambiguously needs cholesterol testing—had very high rates of cholesterol testing (96 percent), a much lower percentage of these patients received comprehensive treatment when their tests were abnormal (McBride et al. 1998).

Data from Non-Peer Reviewed Sources

In this paper, we have described reports of quality that have appeared in the research literature. There are also some systems that measure quality in select sectors of the United States, most notably the National Committee for Quality Assurance's (NCQA) Health Plan Employer Data and Information Set (HEDIS). HEDIS is a performance measurement tool designed to assist purchasers and consumers in evaluating managed care plans and to hold plans accountable for the quality of their services. In 1996, more than 330 plans—over half the U.S. plans representing more than three-quarters of all commercial managed care enrollees—were reporting HEDIS measures on their commercial enrollees. Average adherence rates for select indicators made publicly available by NCQA fell primarily in the 60 to 70 percent range, with the extremes at 38 percent for diabetic eye exams (past year) and 84 percent for initiation of prenatal care in

the first trimester (Thompson et al. 1998). Thus, HEDIS's findings are consistent with those of the studies we have reported. Whether assessing quality as part of a research study or as part of a marketplace tool, the evidence repeatedly shows that quality falls short of standards.

Although quality assessment organizations, accreditation organizations, and government agencies are doing work to measure quality of care, most of this activity has begun during the past decade. The rapid development of the field is encouraging, but it is confined to organizations that cover specific sections of the country or restrict themselves to certain segments of the health care marketplace. Their work, as well as the findings of individual studies, such as those listed in the tables, provide some evidence of the situation throughout the country. However, there is no system in the United States to provide a comprehensive assessment of quality of care for the nation—including how quality varies by population subgroups (e.g., gender, age, race/ethnicity, income, region of country, size of community) and how quality is changing over time. Efforts like HEDIS could eventually lead to development of a more comprehensive, national quality assessment system, but such a system may not develop rapidly unless there is an organized effort to ensure that it does.

Conclusions

The quality of health care provided in the United States varies among hospitals, cities, and states. Whether the care is preventive, acute, or chronic, it frequently does not meet professional standards. We can do much better. The solution is not simply a matter of spending more money on health care. A large part of our quality problem is the amount of inappropriate care provided in this country. Elimination of such nonbeneficial and potentially harmful care would lead to a large savings in human and financial costs. However, there are also many examples of people who receive either too little or technically poor care; fixing these problems may increase expenditures.

Some have assumed that all care delivered in the United States is outstanding. There is good reason to be proud of our health care system, and the evidence from international studies does not show consistent superiority elsewhere in the world (Gray et al. 1990; Pilpel et al. 1992; McGlynn et al. 1994; Froehlich et al. 1997; Meijler et al. 1997; Tamblyn et al. 1997; Wong et al. 1997). The United States is responsible for many important advances in health care technology, and state-of-the-art care is available in both large and small communities throughout the country. Just because outstanding care is available, however, does not mean that it is always provided or that everyone has access to such care. Most people in the studies reported here did receive excellent care—what is notable is that many also did not.

Some people might conclude that quality is good enough based on the evidence we have presented in this article—in other words, that the standards used in the various studies are too high. We would disagree with such a conclusion.

For those who want to improve our health care system, techniques exist to measure and change the delivery of care. Clinicians and health plans can use information on quality to determine where to focus their efforts to provide better care. For example, a group of all

cardiothoracic surgeons practicing in Maine, New Hampshire, and Vermont worked used continuous quality improvement and other techniques to improve their practices and found a 24% reduction in their combined mortality rates (O'Connor et al., 1996). Government action also has the potential to spur improvement. In New York State (NYS), risk-adjusted mortality for coronary artery bypass graft (CABG) surgery decreased 41% from 4.17% in 1989 (when the NYS Department of Health began disseminating information regarding the outcomes of CABG surgery) to 2.45% in 1992 (Hannan et al., 1994). Between 1987 (before the NYS reporting program began) and 1992, unadjusted 30-day mortality rates following CABG declined by 33% in NYS Medicare patients, compared with a 19% decline nationwide, giving NYS the lowest statewide risk-adjusted CABG mortality rate in the country (Peterson et al., 1998).

If quality of care information is made available regularly and in an interpretable form, consumers and large purchasers can also use it to make informed decisions when choosing among clinicians and plans, which will, in turn, give providers an added incentive to improve quality.

Policy makers can also use information about quality of care to determine the impact of public and private changes in the health care marketplace. We are currently experiencing a dramatic shift in the organization and financing of health services delivery in the United States. The private sector has been the driving force behind this transformation, but the public sector is beginning to use its market power as well. Incentives to move Medicaid and Medicare beneficiaries into managed care represent one of many examples of public sector reform. Changes are occurring faster than evaluations of these changes can be performed. Much of the information concerning the relation between the organization of the health care system and the quality of care is already outdated. At present, we have only a patchwork of systems that measure quality, with little uniformity, breadth, or ability to produce rapid results. Furthermore, these systems do not yet assess most providers of health care in the United States.

The United States cannot afford to let this situation continue. A systematic strategy for routine monitoring and reporting on quality, as well as the information systems needed to support such activities, will be essential if we are to preserve the best of the American health care system while striving to improve the efficiency with which high-quality services are provided.

This strategy could be organized by the federal government, the private sector, or a public-private partnership. It could involve coordination among all three. Regardless, the strategy will need to cover the aspects of quality that patients, purchasers, and providers care about; it will need to collect data in a way that is manageable, reasonable, and affordable; and it will need to produce information in a format that is useful for making a variety of decisions.

The United States is capable of setting up a quality measurement system that can provide the multiple participants in the health care system with the information they need to ensure delivery of high-quality care. In light of the changes that the health care system has been experiencing, a strategy to measure and consequently to improve quality is needed now.