

Primary Care Treatment of Pediatric Psychosocial Problems: A Study From Pediatric Research in Office Settings and Ambulatory Sentinel Practice Network

William Gardner, PhD*; Kelly J. Kelleher, MD, MPH‡; Richard Wasserman, MD, MPH§; George Childs, MS*; Paul Nutting, MD, MSPH||; Harris Lillienfeld, MD§; and Kathleen Pajer, MD, MPH‡

ABSTRACT. *Objective.* Psychosocial problems cause much of the morbidity among children, and their frequency of presentation in primary care is growing. How is primary care treatment of children's psychosocial problems affected by child symptoms, physician training, practice structure, insurance, physician/patient relationship, and family demographics?

Design. Questionnaire study of treatment of psychosocial problems during office visits by children.

Settings. At total of 401 primary care offices from 44 US states, Puerto Rico, and Canada.

Patients. From 21 150 children seen in office visits, we selected children with an identified psychosocial problem but who were not already receiving specialty mental health services ($n = 2618$ children).

Outcome Measures. Clinicians' decisions to counsel families, to refer children to mental health specialists, or to prescribe medication.

Results. The treatment choices of primary care clinicians (PCCs) were generally independent of patients' demographics or insurance status. Clinicians' training, beliefs about mental health, and practice structure had no effect on treatment choices. However, clinicians seeing their own patients were more likely to prescribe medications for attention problems. The clinician's perception about whether the parent agreed with the treatment choice was important for every treatment modality. Counseling and referral were more common and medication was less common when a problem was newly recognized at the visit.

Conclusions. Structural factors such as practice type, insurance coverage, and physician training were less important for treatment than were process factors, such as whether the visit was a psychosocial problem visit, whether the problem was newly or previously recognized, and whether the family and clinician were familiar with each other and in accord about treatment. *Pediatrics* 2000;106(4). URL: <http://www.pediatrics.org/cgi/content/full/106/4/e44>; *children's psychosocial problems, primary care of children.*

ABBREVIATIONS. PCC, primary care clinician; ASPN, Ambulatory Sentinel Practice Network; PROS, Pediatric Research in Office Settings; CBS, Child Behavior Study; PSC, Pediatric Symptom Checklist; PBS, Physician Belief Scale.

Psychosocial problems cause much of the morbidity among children,¹ and the frequency with which they present in primary care is growing.² Most children with psychosocial problems do not receive specialty mental health services but are seen in general medical settings.^{3,4} Although several studies have reported on the detection of childhood psychosocial disorders by primary care clinicians (PCCs),⁵⁻⁷ few have examined the process of PCCs' treatment of psychosocial problems. These studies have related primary care treatments only to a few patient and family characteristics. Regional, provider, and system factors have rarely been studied, and family practitioners have been excluded.

To ascertain factors affecting PCC treatment of pediatric psychosocial problems, we designed a large field study with an international sample of office visits by children. Our measures included 3 treatment choices: medication, referral, and counseling. Based on previous literature and clinical experience, these choices were expected to be associated with 4 primary domains of variables: patient attributes, clinician attributes, the clinician-patient relationship, and context and method factors (Fig 1). These primary domains were in turn divided into 9 secondary domains.

Patient Attributes

The patient attributes domain included 3 constructs: child and family demographics, the child's insurance coverage, and the psychosocial problem. Child and family demographics may affect treatment in an appropriate or inappropriate way. For example, different treatment strategies are appropriate for children of different ages. We hypothesized that PCCs would be less likely to medicate young children, as in previous studies.^{8,9} However, given similar medical or psychosocial problems, the child's race or sex, or the family's educational attainment or marital status should not affect treatment. It is, nevertheless, clear that these factors have affected some clinical decisions about adult and pediatric patients.^{2,5}

The second construct was the patient's insurance

From the *Center for Research on Health Care Data Center, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania; ‡Child Services Research and Development, University of Pittsburgh School of Medicine, Pittsburgh, Pennsylvania; §Pediatric Research in Office Settings, American Academy of Pediatrics, Elk Grove Village, Illinois; and ||Ambulatory Sentinel Practice Network, Denver, Colorado.

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Reprint requests to (W.G.) University of Pittsburgh School of Medicine, Center for Research on Health Care Data Center, E-528, Montefiore University Hospital, Pittsburgh, PA 15213-2593. E-mail: gardnerwp@msx.upmc.edu PEDIATRICS (ISSN 0031 4005). Copyright © 2000 by the American Academy of Pediatrics.

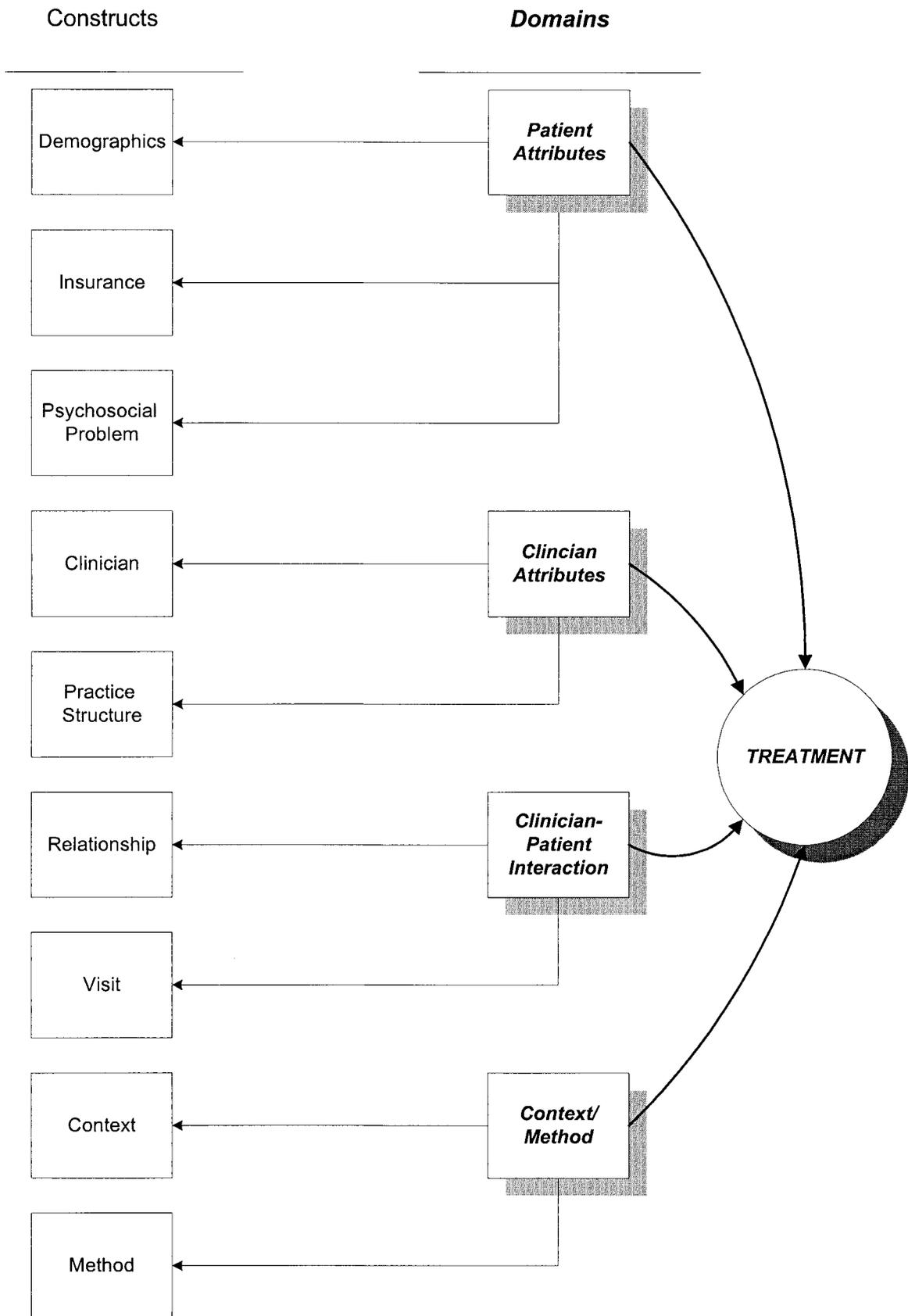


Fig 1. Measurement design.

coverage. We were particularly interested in the possible effects of managed care plans on PCCs' treatment of psychosocial problems. Cost control is a

principal objective of many plans, and we hypothesized that fewer referrals and less counseling would be provided to children in managed care plans. We

also hypothesized that clinicians might be less likely to refer or to medicate patients who were uninsured, because the families must pay costs out-of-pocket.

The third domain was the nature of the child's psychosocial problem. We hypothesized that the level of mental health treatment would be more intense when the problem was more severe and that medications would be more common for attention problems. We also expected to find that counseling would be more commonly provided for emotional problems and family dysfunction.

Clinician Attributes

We were interested in 2 constructs relating to the clinician. The first was the training, discipline, and attitudes of the clinician per se. We hypothesized that PCCs with specialist mental health training and a positive orientation toward mental health care would be more likely to actively treat psychosocial problems. The second construct was the structure of the practice to which the PCC belonged. For example, care may be associated with whether the practice is group or solo or whether it is composed of pediatricians or family practitioners.

Clinician–Patient Interaction

We hypothesized that 2 constructs would be important within the clinician–patient interaction. The first covers the relationship between the patient and the clinician. Clinicians often perceive themselves as having special connections to certain patients, in the sense that the clinician views the patient as “my patient.” In a previous analysis of these data,² we found, similar to Horwitz et al,⁵ that clinicians recognized psychosocial problems more often when they were examining children whom they considered “their” patients. Now we wanted to know how the “my patient” connection affected treatment choices. We hypothesized that clinicians would be more likely to counsel, prescribe medications to, or make referrals for their patients. In addition, we thought that a PCC would counsel, prescribe, or refer more often when the PCC believed that the family was in agreement about the nature of the child's psychosocial problem and about the appropriate treatment, as Goldberg et al¹⁰ had found.

We also expected that treatment would be associated with factors specific to the particular visit of the family to the doctor.⁵ We thought that clinicians would be more likely to counsel, make a referral, or prescribe medications in visits for psychosocial problems, as opposed to well-child or medical illness visits, because clinician's would be more willing to recommend treatment of a psychosocial problem when parents recognized a problem and believed that it was urgent enough to require a visit.

Finally, we recognized that primary care occurs within a relationship between clinician and patient that—ideally—develops over time, if continuity of care can be provided. PCCs often adopt the strategy of watchful waiting when problems first present. We, therefore, hypothesized that clinicians would be less likely to treat problems that were newly recognized

during the present visit, as opposed to problems that had been previously recognized.

Context/Method Factors

There were several contextual factors that we expected would be associated with treatment. Regional variation in the use of medical procedures has been frequently observed¹¹ and has been specifically observed in studies of the use of stimulant medication for childhood attention problems.^{8,9,12} We expected that there would be seasonal effects in the data and, specifically, that treatments for attention disorders would be most likely when school was in session. Finally, we were aware that our data collection might affect clinical practice. However, we predicted that these effects would diminish as clinicians habituated to the research protocol. We could, therefore, test for the presence of an observation effect by comparing results obtained for patients enrolled early in a practice's consecutive series as opposed to later.

METHODS

Sites and Settings

Two large primary care research networks participated in this study: Ambulatory Sentinel Practice Network (ASPEN; Denver, CO)¹³ and Pediatric Research in Office Settings (PROS; Elk Grove Village, IL; a complete list of the participating practices is published in the “Appendix” to this study).¹⁴ PROS is a primary care practice-based research network including over 1300 clinicians from >475 pediatric practices in all 50 states and the commonwealth of Puerto Rico. ASPEN includes 148 practices in 43 US states and in 6 Canadian provinces, composed of ~750 clinicians. Of the 206 practices participating in the Child Behavior Study (CBS), 30% were urban, 38% suburban, and 32% were rural. Additional family physician participants came from the Wisconsin Research Network (Madison, WI) and the Minnesota Academy of Family Physicians (St Paul, MN), 2 regional networks with characteristics similar to ASPEN.

All clinicians participating in the CBS² were included for this research (401 clinicians in 44 US states, the commonwealth of Puerto Rico, and 4 Canadian Provinces). Previous research from both ASPEN and PROS confirms the comparability of patients, clinicians, and practices in primary care network studies with those identified in national samples.^{15–18} In addition, we compared participating pediatric clinicians with a random sample of pediatricians from the American Academy of Pediatrics on demographic factors, practice characteristics, and attitudes on treatment of psychosocial problems.¹⁹ We found no important differences between participating clinicians and other clinicians.

Sample

Each participating clinician enrolled a consecutive sample of ~55 children 4 to 15 years of age presenting for nonemergency care with a parent or primary caretaker. We enrolled a child only once and excluded children seen for procedures only. Clinicians did not enroll a median of 3.0 eligible children, typically because of parental refusal (range: 0–48; \bar{X} = 4.9). We compared the ages and genders of participating children with eligible but not participating children and found no differences. In addition, we examined whether clinician or practice characteristics might affect participation, including clinician discipline, geographic region, practice population size, percentage of managed care patients, and clinician attitudes toward mental health treatment. Clinicians in the West included more of their eligible participants than those in other regions did (85%–81%). None of the other measured sources of selection bias were statistically significant.

This procedure produced a sample of over 22 059 distinct children seen in office visits. Among those visits, 909 (4.1%) had inadequate or missing data sufficient to preclude further analyses, resulting in a study sample of 21 150 visits. The most frequent source of missing data was the Pediatric Symptom Checklist (PSC).

Procedure

Before the study began, clinicians filled out the clinician questionnaire covering background information and their beliefs and attitudes about mental health care. Parents filled out a parent visit questionnaire while waiting to see the clinician. The questionnaire included demographic data, the Family Apgar (a family stress instrument),^{20,21} and the PSC (a psychosocial screening instrument).^{22,23} The clinician did not see the completed PSC or other parent visit questionnaire data.

After seeing a patient, the clinician completed a survey about the encounter. The survey asked the clinician whether a new, ongoing, or recurrent psychosocial problem was present. Finally, the survey included a checklist of child psychosocial problems that the clinician might have recognized (clinicians could check more than 1 problem).

For this analysis, we selected children whom clinicians had identified as having a psychosocial problem and who had not, to the clinician's knowledge, previously received specialty mental health services for the problem. We excluded children who had previously received specialty care because we believed that a PCC would view medication and referral decisions differently for children who may already be in the care of a mental health specialist (Fig 2).

Measures

The measures in the 9 domains are summarized in Table 1.

Psychosocial Problem

Clinicians recognized a median of 9 children as having a psychosocial problem (range: 0–51; \bar{X} = 10.6). PCCs who said that they had noted a psychosocial problem during the visit were asked to check 1 or more of a list of terms (eg, Adjustment Reaction, Behavioral Problems) identifying global problem categories. This list was modified from Horwitz et al⁵ based on feedback from focus groups of PCCs at the meetings of the PROS and ASPN research networks. In these focus groups, clinicians urged us not to use formal psychiatric diagnostic terms because such terms were not commonly used by PCCs. Hence, a PCC's endorsement of a term on the list should be understood as the informal identification of a problem, rather than the formal diagnosis of a disorder. In addition, clinicians were asked to indicate whether the problem was noticed for the first time during this visit or whether it had been noticed during a previous visit. We included both newly and previously noticed problems in our sample because, in our clinical experience, PCCs often watch and wait after the initial identification of a problem.

PSC

The PSC is a 35-item questionnaire that elicits a parent's impressions of a child's symptoms and behaviors. Parents rate symptoms as occurring often (2 points), sometimes (1 point), or never (0 points). The PSC has strong internal consistency, test-retest reliability,

and validity with more extensive psychiatric assessments.^{24,25}

Physician Belief Scale (PBS)

The PBS is a 32-item self-report instrument that measures the beliefs of PCCs about psychosocial aspects of patient care.²⁶ We constructed 2 scales (details provided elsewhere)²⁷ that measured clinicians' attitudes about mental health care. The first concerned PCCs' beliefs that they lacked the ability to treat psychosocial problems and that patients would not want these problems to be investigated (Belief in Mental Health in Table 1). The second measured clinicians' belief that investigating psychosocial problems required too much time and effort (Burden of Mental Health in Table 1).

Fellowship Training

The clinician questionnaire asked whether the PCC had completed a fellowship in child psychiatry, psychiatry, behavioral/developmental pediatrics, family therapy, behavioral sciences, or other related discipline. PCCs were counted as having such training if they endorsed any of the above.

Clinician's Treatments

The clinicians also answered 3 yes/no questions about treatments administered during this visit: "Was counseling provided in your office today?" (hereafter, Counseling), "Were psychotropic medications prescribed for this patient for this problem today?" (Medication), and "Did you refer this patient for mental health treatment today?" (Referral). The clinicians' yes or no responses to these 3 variables are the outcomes of interest in this report. Because we had to use an extremely brief clinician questionnaire, we were not able to obtain additional information about the treatment (eg, details about the content of counseling).

Analysis Plan

We examined the factors associated with treatment choices by regressing the Counseling, Referral, and Medication variables on variables from the 9 domains. We used a subsample of our data when analyzing clinician's Medication decisions because when this study was conducted psychotropic medications were used nearly exclusively for children with attention problems. Psychotropic medications were used with 741 of 1219 children (59%) identified with attention problems, and only 45 of 1399 other children (3%). Therefore, we analyzed Medication choices within the group of children identified with attention problems.

We used logistic regressions to identify those factors that affected whether clinicians counseled families, referred them for specialty services, or prescribed medications. These logistic regressions corrected for clustering of children within clinicians, using the Generalized Estimating Equations technique.²⁸ We used a Bonferroni technique to handle the problem of multiple comparisons. Specifically, we identified that set of regression covariates as statistically significant where the sum of the *P* values for the *t* tests of the regression weights was .05, summing across the regressions for the Counseling, Referral, and Medication choices.

RESULTS

Factors Associated With Treatment Choices

Table 2 summarizes the distribution of treatment choices by the clinicians. We fitted a log-linear model to Table 2 and found that counseling was significantly associated with referral.

Table 3 presents the results of the regressions relating these choices to the variables in the focal domains of this study. Regression weights that were significant using our multiple comparison procedure are highlighted by shading.

Counseling

Clinicians tended to counsel families when the child exhibited the physical manifestations of a psychosocial problem (66% of children with physical

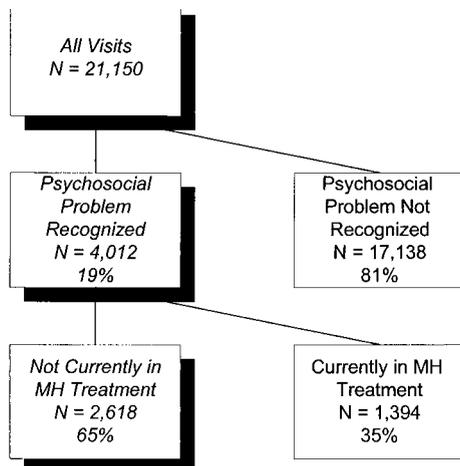


Fig 2. Selection of study group.

TABLE 1. List of Variables With Definitions and Sample Statistics

Domain	Variable	Definition	Distribution
Demographics	Age		$\bar{X} = 8.8$ y (SD = 3.2)
	Male gender	= 1 if male, 0 if female	64%
	African-American	= 1 if African-American ethnicity, 0 otherwise	7%
	Hispanic	= 1 if Hispanic ethnicity, 0 otherwise	8%
	High school	= 1 if at least 1 parent has high school education or higher, 0 otherwise	54%
	College	= 1 if at least 1 parent has college education or higher, 0 otherwise	17%
Insurance	Unmarried	= 1 if parents unmarried or not together, 0 otherwise	41%
	Commercial	= 1 if commercial insurance, -1 if Medicaid	66% commercial, 26% Medicaid
	Managed care	= 1 if managed care, -1 if fee-for-service	55% managed care, 37% fee-for-service
	Commercial \times managed care	= commercial \times managed care	
Problem	Canadian	= 1 if Canadian, 0 otherwise	7%
	Uninsured	= 1 if uninsured, 0 otherwise	5%
	Adjustment reaction	= 1 if clinician identified adjustment reaction, else 0	23%
	Behavioral problems	= 1 if clinician identified behavioral problems, else 0	38%
	Emotional problems	= 1 if clinician identified emotional problems, else 0	17%
	Attention problems	= 1 if clinician identified attentional or hyperactivity problems, else 0	47%
	Physical manifestations	= 1 if clinician identified physical manifestations of a psychosocial problem, else 0	23%
	Developmental delays	= 1 if clinician identified one or more developmental delays, else 0	12%
	Psychosis	= 1 if clinician identified psychosis, else 0	1%
	Family problems	= 1 if clinician identified family dysfunction, else 0	12%
Clinician	Problem count	Number of psychosocial problems identified by Pediatric Symptom Checklist	$\bar{X} = 1.84$, SD = 1.19
	PSC	0-10 scale of family functioning	$\bar{X} = 22.9$, SD = 11.3
	Family Apgar		19% with FAPGAR ≤ 5
	Gender	= 1 if male, else 0	57%
	PCC age		$\bar{X} = 43.6$ y, SD = 8.0
	Family practitioner	= 1 if family practitioner, 0 otherwise	17%
	MH fellowship	= 1 if completed fellowship that included MH training, 0 otherwise	8%
	Belief in MH	PBS: PCCs' perception that they lacked the ability to treat MH problems (range: 8-24)	$\bar{X} = 12.3$, SD = 3.4
	Burden of MH	PBS: clinicians' perception of burden associated with investigating psychosocial problems (range: 6-26)	$\bar{X} = 15.5$, SD = 4.8
	Practice	Family practice	= 1 if practice comprised of family practitioners, else 0
Pediatric practice		= 1 if practice comprised of pediatricians, else 0	38%
Solo practice		= 1 if solo practice, else 0	10%
High managed care penetration		= 1 if high managed care penetration among patients, else 0	16%
Relationship	MH on site	= 1 if there is a mental health specialist in the practice, else 0	37%
	Perceived agreement	= 1 if PCC perceives parent's agreement with either diagnosis or treatment	88%
Visit	My patient	= 1 if provider viewed child as his/her patient, else 0	83%
	Well visit	= 1 if well-child visit, else 0	29%
	Psychosocial problem visit	= 1 if visit was for a psychosocial problem, else 0	15%
Context	Previously recognized problem	= 1 if problem had been recognized at a previous visit, 0 if problem newly recognized	66%
	Northeast	= 1 if practice in Northeast, else 0	26%
	Midwest	= 1 if practice in Midwest, else 0	26%
	Far West	= 1 if practice in far West, else 0	20%
	Autumn	= 1 if visit took place in autumn, else 0	26%
	Winter	= 1 if visit took place in winter, else 0	29%
Method	Spring	= 1 if visit took place in spring, else 0	20%
	Early enrollment	= 1 if patient was in the first half of the series of patients from this practice, else 0	52%

SD indicates standard deviation; MH, mental health.

manifestations vs 43% of children with other problems), such as sleeplessness and enuresis. Counseled families had younger children (8.4 vs 9.1 years of age). PCCs counseled more when the problem was first noticed at the current visit (61% vs 42% for previously noted problems), suggesting that counseling was a first-line treatment. Clinicians were more likely to counsel during psychosocial problem visits

(63% vs 46% for other visits). They also counseled more often during well-child visits. Well-child visits tended to be longer than other visits (79% of well-child visits in this group were longer than 15 minutes, as opposed to only 43% of other visits). Counseling was more likely to occur during a long visit (76% of visits with counseling were longer than 15 minutes, as opposed to only 44% of visits with med-

TABLE 2. Treatments of Children With Psychosocial Problems

Counseling	Referral	Medication		
		No	Yes	Total
No	No	823	316	1139
	Yes	153	61	214
Yes	No	626	285	911
	Yes	230	124	254
Total		1832	786	2618

Referral was significantly associated with more frequent counseling: $\chi^2(1) = 79.64; P < .0001$. Patients who received prescriptions for medication were more likely to be counseled than patients who did not receive prescriptions: $\chi^2(1) = 13.89; P < .0002$.

ication or referral only). Clinicians counseled more when they perceived that the family agreed with the clinician's assessment of the problem or the clinician's preferred treatment (52% vs 20% when they perceived that the family did not agree). These children had slightly more severe PSC scores (23.9 vs 22.0 points). Finally, clinicians counseled more when the family had a lower score (poorer functioning) on the Family Apgar. Families with Apgar scores of 9 or 10 were counseled 46% of the time, whereas families with Apgar scores of 0 or 1 were counseled 70% of the time.

Referral

Clinicians referred patients to a specialist when children had high scores on the PSC (an average of 28.8 points vs 21.3 among those not referred). Clinicians referred out cases when the family had lower Family Apgar scores (51% when Apgar = 0 or 1 vs 15% when Apgar = 9 or 10). PCCs were more likely to refer children with emotional problems (39% of children vs 18% when emotional problems were not found). Referrals were more frequent on psychosocial problem visits (37% of visits vs 19% for other visits). Clinicians referred more when the problem was noticed during the current visit (26% vs 20% for previously noticed problems). Finally, PCCs were more likely to refer when they perceived that the family agreed about the problem or its treatment (24% referred vs 8% when they did not perceive agreement).

Medication

As noted, the Medication regression included only the children identified as having attention problems. Children who were prescribed medication had slightly higher PSC scores than did those who were not (27.9 vs 25.6 points). Children who were prescribed medications were older ($\bar{X} = 9.7$ years) than children who did not receive prescriptions ($\bar{X} = 8.6$ years). PCCs prescribed more on psychosocial problem visits (70% of children vs 58% when seen during other visits). Prescriptions were more likely for problems that had been previously recognized (67% vs 34% for problems recognized during the current visit). Medication was prescribed more frequently in winter (66% of visits vs 58% during other seasons).

Clinicians prescribed more when seeing their own patients (63% vs 49%). Medication was also more likely when the clinician perceived that the family

agreed with the diagnosis or treatment recommendation (63% of visits vs 21% of visits where the family disagreed).

Clinician–Patient Interaction

After noting the consistent importance of the clinician's perception of the family's agreement, we reasoned that those clinician–family dyads in which the PCC perceived agreement would also be those in which the clinician identified the child as "My Patient." Thus, clinician's perceived agreement would be an indicator of, and highly correlated with, My Patient. Clinician's perceived agreement was significantly associated with My Patient ($\chi^2[1] = 16.29; P < .001$), but the magnitude of the association was small ($\phi = .08$). Moreover, perceived agreement's presence in the regressions did not mask the effects of the clinician's connection to the patient. When the clinician's perception of agreement was removed from the regressions reported in Table 3, the coefficients for My Patient were essentially unchanged.

Fellowship Training

We were puzzled that fellowship training seemed not to affect treatment choices. We reasoned that our brief survey questions might inadequately measure PCCs' training. Hence, we examined whether fellowship training was associated with other aspects of PCCs' mental health care. PCCs reporting fellowship training recognized more psychosocial problems (22% of all office visits) than did other PCCs (15%; $\chi^2[1] = 43.4; P < .0001$), suggesting that our questions did capture meaningful training information.

DISCUSSION

This study yielded the good news that PCCs' treatment of psychosocial problems was insensitive to several sources of bias. Treatment choices were not associated with the insurance coverage of the patient, the child's ethnicity, or the educational or marital status of the parents. Similarly, treatment choices were not associated with the seasonal or regional context of the visit, except that medication was more common in winter, when schools are more likely to refer children with behavior problems to PCCs.

We were surprised that clinician or practice factors were not associated with differences in the treatment of psychosocial problems. The absence of practice structure effects was a welcome result, given the widespread concerns about the possible effects of changes in the delivery of health services. Nevertheless, we had expected that the presence of a mental health specialist on site would increase rates of referral for mental health services. Similarly, we had expected, but did not find, that fellowship training in mental health would affect treatment decisions. A possible explanation for this finding is that fellowship training is insufficiently intensive and that more training (for example, at least 1 year in a child psychiatry residency) is required to affect treatment decisions. It is also possible, however, that the high patient loads of most primary care offices do not permit PCCs to use advanced mental health training even if they have it. Finally, the lack of association

TABLE 3. Regressions of Treatment Choices on Patient, Clinician, Relationship, and Context Factors*

Domain	Effect Name	Counseling				Referral				Medication				
		<i>b</i>	<i>t</i>	<i>df</i>	<i>P</i> Value	<i>b</i>	<i>t</i>	<i>df</i>	<i>P</i> Value	<i>b</i>	<i>t</i>	<i>df</i>	<i>P</i> Value	
Intercept	Intercept	-.019	-.03	2283	.973	-3.586	-5.39	2283	.000	-4.618	-5.41	985	.000	
Demographics	Age	-.046	<u>-3.24</u>	2283	.001	.030	1.71	2283	.088	.085	3.38	985	.001	
	Male gender	-.080	<u>-.85</u>	2283	.397	-.103	-.87	2283	.385	.168	1.00	985	.318	
	African-American	.045	.25	2283	.806	.244	1.14	2283	.256	.022	.08	985	.937	
	Hispanic	-.130	-.71	2283	.478	.229	1.08	2283	.282	-.086	-.30	985	.768	
	High School	-.014	-.13	2283	.895	.071	.55	2283	.582	-.038	-.23	985	.821	
	College	.024	.17	2283	.867	.007	.04	2283	.971	-.192	-.85	985	.397	
	Unmarried	-.181	-1.84	2283	.066	.227	1.88	2283	.060	.174	1.11	985	.266	
Insurance	Commercial	.076	1.21	2283	.227	-.149	-2.00	2283	.045	.154	1.54	985	.124	
	Managed care	.005	.09	2283	.931	-.001	-.01	2283	.994	-.040	-.44	985	.658	
	Commercial × managed care	-.052	-.95	2283	.342	.030	.47	2283	.640	-.147	-1.70	985	.089	
	Canadian	-.472	-.95	2283	.342	-.595	-.94	2283	.346	.556	.99	985	.323	
Problem	Uninsured	-.070	-.33	2283	.738	-.469	-1.71	2283	.088	-.273	-.81	985	.421	
	Adjustment reaction	-.026	-.15	2283	.881	.202	.96	2283	.335	.124	.34	985	.735	
	Behavioral problems	.108	.66	2283	.509	.332	1.67	2283	.095	-.064	-.21	985	.838	
	Emotional problems	-.226	-1.21	2283	.227	<u>.563</u>	<u>2.57</u>	2283	<u>.010</u>	.135	.35	985	.723	
	Attention problems	-.167	-1.05	2283	.295	-.137	-.69	2283	.488	—	—	—	—	
	Physical manifestations	<u>.744</u>	<u>4.41</u>	2283	<u>.000</u>	-.250	-1.19	2283	.235	-.130	-.37	985	.712	
	Developmental delays	-.443	-2.20	2283	.028	.310	1.31	2283	.189	.157	.45	985	.653	
	Psychosis	.566	.84	2283	.401	-.559	-.84	2283	.401	.462	.59	985	.556	
	Family problems	-.278	-1.40	2283	.160	.089	.38	2283	.704	.109	.28	985	.784	
	Problem count	.259	1.86	2283	.063	.281	1.69	2283	.091	-.251	-.91	985	.361	
	PSC	<u>.013</u>	<u>2.84</u>	2283	<u>.004</u>	<u>.041</u>	<u>7.40</u>	2283	<u>.000</u>	<u>.026</u>	<u>3.54</u>	985	<u>.000</u>	
	Family Apgar	-.053	<u>-2.75</u>	2283	<u>.006</u>	-.065	<u>-2.92</u>	2283	<u>.004</u>	-.012	-.39	985	.696	
	Clinician	Clinician gender	-.104	-.91	2283	.364	-.328	-2.45	2283	.014	.302	1.87	985	.062
		Clinician age	-.009	-1.16	2283	.247	-.008	-.91	2283	.363	.005	.49	985	.628
Family practitioner		-.180	-.94	2283	.348	-.167	-.79	2283	.431	-.423	-1.63	985	.103	
MH fellowship		-.229	-1.07	2283	.286	-.094	-.37	2283	.715	.397	1.32	985	.187	
Practice	Belief in MH	-.003	-.16	2283	.871	-.007	-.32	2283	.752	-.068	-2.44	985	.015	
	Burden of MH	-.021	-1.59	2283	.111	.006	.37	2283	.712	.043	2.35	985	.019	
	Family practice	-.096	-.39	2283	.696	.464	1.74	2283	.082	-.296	-.85	985	.395	
	Pediatric practice	.080	.50	2283	.616	-.078	-.44	2283	.657	.165	.83	985	.406	
	Solo practice	-.264	-1.19	2283	.234	.103	.42	2283	.673	-.113	-.40	985	.693	
	High managed care penetration	-.057	-.33	2283	.741	.041	.21	2283	.838	.111	.46	985	.643	
Relationship	MH on site	.042	.30	2283	.761	.151	1.00	2283	.318	-.286	-1.58	985	.115	
	Perceived agreement	<u>1.406</u>	<u>8.73</u>	2283	<u>.000</u>	<u>1.291</u>	<u>5.46</u>	2283	<u>.000</u>	<u>1.811</u>	<u>5.55</u>	985	<u>.000</u>	
	My patient	.229	1.80	2283	.072	.020	.13	2283	.895	<u>.538</u>	<u>2.77</u>	985	<u>.006</u>	
Visit	Well visit	<u>.250</u>	<u>2.51</u>	2283	<u>.012</u>	.050	.39	2283	.699	.108	.63	985	.532	
	Psychiatric visit	<u>.645</u>	<u>4.88</u>	2283	<u>.000</u>	.651	4.31	2283	<u>.000</u>	.713	3.99	985	<u>.000</u>	
	Previously recognized problem	<u>-.869</u>	<u>-8.77</u>	2283	<u>.000</u>	<u>-.652</u>	<u>-5.27</u>	2283	<u>.000</u>	<u>1.458</u>	<u>7.86</u>	985	<u>.000</u>	
Context	Northeast	-.118	-.56	2283	.574	.421	1.91	2283	.056	-.050	-.21	985	.837	
	Midwest	.319	1.58	2283	.115	.417	1.95	2283	.051	.225	.97	985	.332	
	Far West	-.063	-.29	2283	.772	-.043	-.19	2283	.853	-.033	-.14	985	.892	
	Autumn	.110	.80	2283	.423	-.001	-.01	2283	.994	.370	1.68	985	.093	
	Winter	-.080	-.56	2283	.579	.205	1.20	2283	.231	<u>.759</u>	<u>3.64</u>	985	<u>.000</u>	
Method	Spring	-.109	-.76	2283	.450	.293	1.70	2283	.090	<u>.384</u>	<u>1.76</u>	985	<u>.078</u>	
	Early enrollment	-.154	-1.82	2283	.069	-.179	-1.66	2283	.097	-.250	-1.83	985	.068	

MH indicates mental health.

* Table cells underlined values are statistically significant based on a Bonferroni adjustment for multiple comparisons. Coefficients are not reported for the effect of clinician-identified attention problems on clinician's medication choices because only children with clinician-identified attention problems were included in that analysis.

between clinicians' referrals to mental health specialist and clinicians' attitudes toward mental health suggests that clinicians' lack of faith in such care is not the principal obstacle to referral.

The overall lack of association between clinician factors and the treatment variables has at least 2 possible explanations. First, clinician skills, attitudes, and other qualities may have less influence on clinician's treatment decisions than we expected because all clinicians are constrained to make similar decisions by the primary care setting. Alternatively, trainable skills and attitudes may have the potential to make a difference, but our current programs are

not effective in changing this component of clinician behavior. In any event, we do not believe that mental health training of PCCs is ineffective in general, because clinicians with fellowship training were more likely to recognize psychosocial problems.

The results spoke strongly, however, for the importance of the relationship between the family and the physician. The ownership caring relationship was important for provision of medication for attention problems. The PCC's perception about whether the family agreed with the clinician was important for every treatment modality. In addition, each treatment choice was associated with whether the prob-

lem was new or previously recognized; counseling and referral were more common and medication was less common when the problem was newly recognized.

Limitations

The limitations of our study resulted primarily from our decision to obtain a large sample of office visits from a national sample of primary care offices, a choice that required us to use brief surveys. Therefore, we did not obtain psychiatric diagnoses for these children. We also lacked important information about the visit, including the content of the PCC's counseling. Because parents filled out their questionnaire before the visit, we did not learn whether they agreed with the clinicians' recommendations. Hence, we cannot say whether the clinicians' perceptions about parental agreement were correct. In addition, it may be that the clinicians who volunteered to participate in our study were different from the national population of PCCs in ways that we were unable to measure.

Although insurance and other system variables were not associated with clinician treatment choices in our data, it is possible that we did not measure the system variables that truly matter. For example, the managed care versus fee-for-service classification of insurance may not have captured the insurers' controls on the clinicians' ability to refer the patients. Such controls may have been prevalent in both managed care and fee-for-service plans, making it impossible for us to find an effect.

Finally, although we have a large sample, we may have lacked the power to study phenomena of interest. In particular, we note that only 8% of clinicians had fellowship training in a mental health discipline, and this may explain why we failed to find an association between such training and treatment choices.

CONCLUSION

Our results suggest that studies of primary care treatment of psychosocial problems should adopt a new perspective. Our initial hypotheses focused on system factors, such as practice structure, insurance coverage, and physician training. These proved less important than process factors (such as whether the visit was a psychosocial problem visit) or relationship factors (such as whether the PCC perceived that the family agreed with his or her treatment decision). Moreover, psychosocial problems were treated differently when they were first recognized as opposed to when they had been previously recognized. We recommend that future studies of the treatment of psychosocial problems expand their conceptualizations of treatment. Treatment decisions should not be viewed as discrete choices by the clinician but as joint projects of the PCC and family and as processes that unfold over time.

APPENDIX

Participating CBS Practices: PROS

The pediatric practices or individual practitioners who completed this study are listed here by American Academy of Pediatrics Chapter: Alabama, Drs Heilpern and Reynolds, PC (Bir-

mingham); Alaska, Anchorage Neighborhood Health Center (Anchorage); Arizona, Mesa Pediatrics Professional Association (Mesa), Pediatric Ambulatory Care Clinic (Phoenix), Orange Grove Pediatrics (Tucson); California 1, Anita Tolentino-Macaraeg, MD (Hollister), Palo Alto Medical Foundation (Los Altos); Colorado, Arvada Pediatric Associates (Arvada), Family Health Center (Denver), Gino Figlio, MD (Lamar); Connecticut, Gerald Jensen, MD (Bristol), Barry Keller, MD (Danbury), Community Health Services (Hartford), St Francis Pediatric Primary Care Center (Hartford); Florida, Atlantic Coast Pediatrics (Merritt Island), Children's Clinic (Tallahassee); Georgia, The Pediatric Center (Stone Mountain); Hawaii, Melinda Ashton, MD (Honolulu), Straub Clinic, Pediatrics (Aiea); Iowa, Newborn and Pediatric Specialist, PC (Des Moines), David Kelly, MD (Marshalltown); Illinois, SIU Physicians and Surgeons (Auburn), Emalee Flaherty, MD (Chicago), Southwest Pediatrics (Palos Park); Indiana, Bloomington Pediatric Association (Bloomington), Community Health Access Program (Bloomington), Drs Mary Jo Stine and Richard Weiner (Indianapolis), Jeffersonville Pediatrics (Jeffersonville), Pediatric Advocates (Peru); Kansas, Bethel Pediatrics (Newton); Kentucky, Tri-State Pediatrics, PSC (Ashland); Louisiana, Children's Clinic of Southwest LA (Lake Charles); Maine, John Salvato, MD (Waterville), Intermed Pediatrics (Yarmouth); Maryland, O'Donovan and Ahluwalia, MD, PA (Baltimore), Children's Medical Group (Cumberland), Shore Pediatrics (Easton), Clinical Associates Pediatrics (Towson/Woodlawn); Massachusetts, Holyoke Pediatric Associates (Holyoke), Medical Associates (Leominster), The Fallon Clinic (Worcester); Michigan, University Pediatricians, PC (Detroit), Pediatric Associates of Farmington (Farmington), Mott Children's Health Center (Flint), H. M. Hildebrandt, MD (Ypsilanti); Montana, Stevensville Pediatrics (Stevensville); Nebraska, Southwest Pediatrics (Omaha); Nevada, Capital Medical Associates (Carson City), Physician's Center West (Fallon); New Hampshire, Exeter Pediatric Associates (Exeter); New Jersey, Delaware Valley Pediatric Association (Lawrenceville); New Mexico, Albuquerque Pediatric Associates (Albuquerque); New York 1, Pediatric Associates (Camillus), Elmwood Pediatric Group (Rochester), Park Medical Group (Rochester), Edward D. Lewis, MD (Rochester), Panorama Pediatric Group (Rochester), Amherst Pediatric Associates (Williamsville); New York 2, Centro Medico (Jackson Heights); New York 3, Pediatric Office at Roosevelt Island (New York); North Carolina, Triangle Pediatric Center (Cary), Goldsboro Pediatrics (Goldsboro), Medical Association of Surry (Mount Airy), Peace Haven Family Health Center (Winston-Salem); North Dakota, MeritCare MedicalGroup-Pediatrics (Fargo), Altru Clinic (Grand Forks), Dakota Clinic (Jamestown), Medical Arts Clinic (Minot); Ohio, Oxford Pediatrics and Adolescents (Oxford), Pediatrics (Portsmouth), St Elizabeth Health Center (Youngstown); Oklahoma, Eastern Oklahoma Medical Plaza (Poteau), Shawnee Medical Center Clinic (Shawnee), Pediatric and Adolescent Care (Tulsa); Pennsylvania, Pediatric Practice of Northeastern (Honesdale), Schuylkill Pediatrics (Pottsville), Cevallos and Moise Pediatric Associates, PC (Quakertown), Pennridge Pediatric Associates (Sellersville); Puerto Rico, Ethel Lamela, MD (Isabela), Primary Care Pediatric Clinic Catano (Rio Piedras); Rhode Island, Marvin Wasser, MD (Cranston); South Carolina, Carolina Primary Care (Columbia); Tennessee, Johnson City Pediatrics (Johnson City); Texas, The Pediatric Clinic (Greenville), Department of Pediatrics (Lackland Air Force Base), MD Pediatric Associates (Lewisville), Winnsboro Pediatrics (Winnsboro); Utah, Gordon Glade, MD (American Fork), Mountain View Pediatrics (Sandy), Salt Lake Clinic (Sandy), Granger Medical Center (West Valley City); Vermont, CHP Brattleboro Pediatrics (Brattleboro), University Pediatrics (Burlington), Rebecca Collman, MD (Colchester), Essex Pediatrics (Essex Junction), Mousetrap Pediatrics (Milton), CHP Timber Lane Pediatrics (South Burlington), Joseph Hagan, Jr, MD (South Burlington), Practitioners of Pediatric Medicine (South Burlington), University Pediatrics (Williston); Virginia, Drs Casey, Goldman, Lischwe, Garrett and Kim (Arlington), James River Pediatrics (Midlothian), Pediatric Faculty Practice Office (Richmond); Washington, Jemima Tso, MD (Auburn), Redmond Pediatrics (Redmond), Rockwood Clinic (Spokane); West Virginia, Tess Alejo (Martinsburg), Medical and Pediatric Associates (Parkersburg), Grant Memorial Pediatrics (Petersburg); Wisconsin, Beloit Clinic SC (Beloit), Middleton Pediatric Clinic (Middleton), Waukesha Pediatric Associates (Waukesha), Gundersen Clinic-Whitehall (Whitehall); and Wyoming, Cheyenne Children's Clinic (Cheyenne), Jackson Pediatrics (Jackson).

Participating CBS Practices: ASPN

Arkansas, Batesville Family Practice Center (Batesville); California, Foothills Family Medical Group (Auburn), Loma Linda Family Medical Group (Loma Linda); Colorado, Renate Justin, MD (Fort Collins), Harrington, Knaus, and Spence, PC (Carbonade), La Mariposa Clinic (Denver), Colorado Springs Health Partners (Monument), Penrose Family Health Center (Penrose); Florida, The Family Doctors of Belleview (Belleview); Georgia, Titus Taube, MD (Warner Robbins); Louisiana, Family Medicine Center of Baton Rouge (Baton Rouge); Minnesota, Eagle Medical (Excelsior), Ramsey Clinic—Maplewood (Maplewood); New Hampshire, Mascoma Valley Community Care (Enfield) Hillsboro Medical Services (Hillsboro); New Jersey, A. John Orzano, MD (Flemington), Community Care Center (Lebanon); New Mexico, Santa Fe Family Practice (Santa Fe); New York, Raj B. Kachoria, MD (Macedon), Canal Park Family Practice (Palmyra), Montefiore Comprehensive Family Care (Bronx), Mary Kay Ness, MD (Honeoye Falls); North Carolina, Bakersville Community Medical Clinic (Bakersville), Nalli Clinic (Matthews); North Dakota, University of North Dakota Family Practice Center—Minot (Minot), Minot Center for Family Medicine (Minot); Ohio, Center for Family Medicine (Cleveland); Oregon, Dunes Family Health Care, Inc (Reedsport); Pennsylvania, John Farmer, DO (Waynesboro), Good Samaritan Family Practice (Lebanon); Tennessee, Michael H. Hartzell, MD (Greeneville), Mountain City Extended Hours Clinic (Mountain City); Texas, Van Horn Rural Health Clinic (Van Horn); Virginia, June Tunstall, MD (Surry), Tappahannock Family Practice (Tappahannock); West Virginia, North Fayette Family Health Center (Hico); Wisconsin, Kronenwetter Clinic (Mosinee); Alberta, Foothills Family Medicine Center (Black Diamond); New Brunswick, David Ross, MD (Moncton); Newfoundland, Newhook Community Health Center (Whitbourne), Ross Thomas, MD (Sackville); and Ontario, Steve Nantes, MD (Kitchener), Metcalfe and Dowdell (Kitchener), Bryan Alton, MD (Hamilton).

Participating CBS Practices: Minnesota Academy of Family Physicians Research Network

Family Medical Practice, PA (Willman), Family Medicine of Winona (Winona), River Valley Clinic (Hastings), Family Medicine Clinic of Lake Crystal (Lake Crystal), Gateway Family Health Clinic (Moose Lake), Eagan Medical Associates (Eagan), Fairview Uptown Clinic (Minneapolis), Bay Area Health Center (Silver Bay), West Side Health Center (St Paul), Hopkins Family Physicians (Hopkins), Family Practice Center (St Cloud), Mt Royal Medical Center (Duluth), and North Memorial Family Practice (Minneapolis).

Participating CBS Practices: Wisconsin Research Network

Wisconsin, Poynette Family Practice Center (Poynette), Medical Associates (Baraboo), Plymouth Family Physicians (Plymouth), Monroe Clinic (Monroe), UCC/Mona Grove (Madison), Family Doctors-Black Creek (Black Creek), Southwestern Family Practice (South Milwaukee), Family Health Plan (Elm Grove), LaSalle Clinic (Appleton), Marshfield Clinic—Merrill Center (Merrill), Tigerton Clinic (Tigerton), Dean Medical, (Oregon), Physicians Plus/Fitchburg (Fitchburg), Family Health Plan (Glendale), Franciscan Skemp Clinic (Tomah), Galesville Medical Center (Galesville), Medical Associates (Beaver Dam), and LaSalle Clinic (Wau-paca).

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