

# How willing are dentists to treat young children?

## A survey of dentists affiliated with Medicaid managed care in New York City, 2010

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The 2000 surgeon general's report, *Oral Health in America*, sounded a clear warning about the disproportionately heavy burden imposed on certain populations in the United States by inadequate oral health care.<sup>1</sup> Dental caries was reported to be the single most common chronic childhood disease ("five times more common than asthma"), and poor children were twice as likely as more affluent children to experience dental caries and to have untreated oral disease. Findings from studies published within the decade before the surgeon general's report was published showed that deficits in receipt of dental care among young children occurred regardless of their insurance status. In 1996, investigators reported that 79 percent of children younger than 6 years had not been seen by a dentist in the preceding year.<sup>2</sup> The results of a study conducted in 1994 of children enrolled in Medicaid in Iowa showed that receipt of dental care was least likely among the youngest children; 35 percent of 3-year-olds in the program, 13 percent of 2-year-olds and 4 percent of 1-year-olds received an examination from July 1, 1993, to June 30, 1994.<sup>3</sup> The results of a survey of third-grade children in New York State (NYS) conducted between 2002 and 2004 showed a prevalence of dental caries of 54 percent, with an estimated 33 percent of children having untreated caries.<sup>4</sup> A population of 3- to 4-year-olds in

### ABSTRACT



**Background.** Despite recommendations for children to have a dental visit by the age of 1 year, access to dental care for young children, including children enrolled in Medicaid, remains limited. The authors conducted a survey to assess the availability of dentists to see young children enrolled in Medicaid managed care (MMC) in New York City (NYC), to determine barriers to the provision of dental care to young children and, within the context of MMC, to identify strategies to facilitate the delivery of dental care to children.

**Methods.** The authors mailed a survey to assess the provision of dental services to young children and perceived barriers and facilitators to 2,311 general dentists (GDs) and 140 pediatric dentists (PDs) affiliated with NYC MMC. A total of 1,127 surveys (46 percent) were received. The authors analyzed the responses according to provider type, youngest aged child seen, provider's ability to see additional children and practice location. The authors compared responses by using the  $\chi^2$  test.

**Results.** Fewer than one-half (47 percent) of GDs saw children aged 0 through 2 years. Provider type, years in practice and percentage of Medicaid-insured patients were associated significantly ( $P < .005$ ) with youngest age of child seen. Among respondents seeing children aged 0 through 2 years, PDs were significantly more likely to provide preventive therapy ( $P = .004$ ) and restorative treatment ( $P < .001$ ). Additional training and access to consulting PDs were identified by GDs as potential facilitators to seeing young children.

**Conclusion.** A high proportion of NYC GDs affiliated with MMC do not see young children.

**Practice Implications.** Ninety-four percent of NYC MMC-affiliated dentists are GDs, but 53 percent of GD respondents did not see children aged 0 through 2 years in their practices. Improving access to dental care for young children requires changes in GDs' practices, possibly by means of additional training and access to consulting PDs.

**Key Words.** Dental care access; dental care for children; Medicaid managed care; New York City; survey of dentists.

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northern Manhattan, who were enrolled in Head Start or day care programs and received dental services by means of a mobile van between 1995 and 1997, had significantly more decayed teeth and fewer filled teeth than did the total U.S. child population.<sup>5</sup>

Nine years after publication of the surgeon general's report, receipt of preventive care among young children was still far from universal. Levels of dental care among very young children (aged 0-2 years) resembled those documented in the above-mentioned studies. In 2007 and 2008, respectively, nationally only 13 percent of 1- and 2-year-olds enrolled in Medicaid received preventive dental care and only 19 percent received any kind of dental care.<sup>6,7</sup> In 2009 in New York City (NYC), 52 percent of children aged 2 through 18 years who were enrolled in Medicaid managed care (MMC) had visited a dentist in the past year.<sup>8</sup>

Adverse outcomes associated with early childhood caries are described comprehensively in the "morbidity and mortality pyramid" proposed by Casamassimo and colleagues.<sup>9</sup> This pyramid depicts caries-associated adverse outcomes in increasing levels of severity, from days of school missed at the base to caries-associated hospitalizations and emergency department visits to deaths from infections and sedation for caries-associated procedures at the pinnacle. The results of a cohort study of children who were enrolled continuously in Medicaid for their first five years showed that age at first dental visit had a significant influence on cost, with costs increasing each year that preventive care was delayed.<sup>10</sup> Financial and health consequences of insufficient early oral health care are recognized clearly: guidelines from the American Academy of Pediatric Dentistry (AAPD) and the American Academy of Pediatrics both say that all children should be taken for their first dental visit within six months after the eruption of the first tooth and no later than 12 months of age.<sup>11,12</sup>

Despite clear recommendations from professional associations, grossly suboptimal levels of preventive dental care among children suggest that the "framework for action" recommended in the surgeon general's report still is incomplete.<sup>1</sup> Oral health is not yet integrated effectively into overall health, barriers exist between people and oral health services, and public-private partnerships have not been engaged adequately to improve the delivery of health care to children who have disproportionate levels of oral disease.<sup>1</sup> Surveys conducted at the national and state levels before and after the publication of the surgeon general's report<sup>1</sup> suggest that reluc-

tance among general dentists (GDs) to serve young children could contribute to deficits in preventive care for this population. The results of a nationwide survey of dental practitioners conducted in 2001 showed that although 91 percent reported that they treated children aged 0 to 14 years, 73 percent reported that they did not treat children aged 6 to 18 months.<sup>13</sup> In surveys of dentists conducted at the state level between 1998 and 2007, investigators documented that the proportion of GDs who treated young children ranged from 34 to 75 percent.<sup>14-18</sup> The persistence of barriers to access to oral health care for vulnerable and underserved populations was the focus of a 2011 Institute of Medicine and National Research Council of the National Academies report.<sup>19</sup> Achievement of national Healthy People 2020 oral health objectives for reducing proportions of children and adolescents with caries experience and untreated dental decay requires a reduction of these barriers.<sup>20</sup>

We conducted a survey to assess the availability of dentists to treat young children enrolled in MMC in NYC, to determine barriers to the provision of dental care to young children and, within the context of MMC, to identify strategies to facilitate the delivery of dental care to children. As 89 percent of people receiving Medicaid in NYC are enrolled in MMC, it is advisable to involve health insurance organizations in developing strategies to increase access to dental care.<sup>21</sup>

## METHODS

We conducted a survey as part of a larger quality improvement (QI) project that the NYC Department of Health and Mental Hygiene (DOHMH) implemented in July 2010 in collaboration with insurance plans serving the city's MMC enrollees. Other QI activities undertaken as part of this project included conducting focus groups with pediatricians and obstetricians regarding clinical oral health guidelines, reviewing and updating dental health education materials for medical care providers and MMC plan enrollees and initiating a pilot project with plan-affiliated pediatric practices to increase the

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**ABBREVIATION KEY.** **AAPD:** American Academy of Pediatric Dentistry. **DOHMH:** Department of Health and Mental Hygiene. **GDs:** General dentists. **IRB:** Institutional Review Board. **MMC:** Medicaid managed care. **NYC:** New York City. **NYS:** New York State. **NYSDOH:** New York State Department of Health. **PDs:** Pediatric dentists. **QI:** Quality improvement.

numbers of oral health assessments, fluoride-containing varnish application and referrals to dentists. The protocol for the QI project, including our survey, was submitted by three of the authors (S.G., J.W., K.K.) for review to the NYC DOHMH Institutional Review Board (IRB) in May 2010. The IRB review of the study protocol was based on four criteria: intent of activity, design, additional risk or burden to participants and generalizability. On the basis of their review, the NYC DOHMH IRB determined that this QI project did not constitute human-subjects research.

We developed the survey in consultation with faculty from an academic dental center and the New York State Department of Health (NYSDOH) Bureau of Dental Health. It consisted of 23 multiple-choice questions, with certain questions including an optional open-ended response component. A practice characteristics domain captured dental care provider type, years in dental practice, practice setting and location, amount of ancillary staff, provision of extended office hours, proportion of Medicaid enrollees in the practice and proportion of children in the practice referred by pediatricians. A pediatric patient population domain included questions regarding pediatric patient volume, youngest age seen in the practice, proportion of the dental practice composed of patients younger than 6 years, willingness to accept new referrals (that is, referrals for patients who are new to the practice) for children younger than 6 years, barriers to treating patients aged 0 through 5 years and resources that would help facilitate the treatment of patients aged 0 through 5 years.

We mailed the surveys to all NYC GDs (n = 2,311) and pediatric dentists (PDs) (n = 140) affiliated with MMC whom we identified by means of the NYSDOH Health Provider Network data system,<sup>22</sup> an online tool used by health plans to identify network providers. We did not include dental specialists other than PDs in the survey sample. Participation in the survey was voluntary and anonymous, and there was no financial incentive for participation. Survey participants had the option of responding to the survey by mail or online. We designed the paper survey as a refolding postage-paid mailer. Instructions for completing the paper survey were printed on the mailer along with a link to the online version. Instructions for completing the online version were included online. To maximize response, two mailings of the survey were done in September and November 2010. Dental benefits adminis-

trators who were contracted with the MMC plans faxed copies to the target population of dentists to further encourage participation.

We mailed surveys to 2,451 dentists at 3,873 practice sites. To maximize participation, dentists with multiple practice sites received the survey at each practice location. We could not determine and exclude duplicate responses from single practitioners because participants were anonymous. We instructed participants to answer all questions in reference to their practice site with the largest volume of patients. As such, the survey captured information pertaining to only one practice site per dentist and, thus, likely would not have captured practice patterns at all practice locations. The geographical distribution of solo practice respondents to this survey was similar to the distribution of solo practices in the NYSDOH Health Provider Network data system.<sup>22</sup> Response rates for solo practice dentists in each of the five NYC boroughs ranged from 47 to 58 percent, and across all dentists, the response rate was 46 percent (n = 1,127).

We excluded surveys if they were submitted by a practitioner who was not a GD or PD currently practicing in NYC or if the surveys were entirely blank. Two authors (S.G., T.R.) entered all surveys received before Jan. 1, 2011, that met the inclusion criteria into a statistical database. In some cases, respondents answered questions that did not apply to them, skipped relevant questions or provided contradictory answers. In these instances, we did not recode survey data. The limitations presented by these issues are inherent to self-reported survey research. After initial data entry, we recoded several variables for the purpose of analysis, including the stratification of providers into three groups based on youngest child seen in the practice (those who see patients of all ages, those who see only patients 3 years and older and those who see only patients 6 years and older). We analyzed survey responses according to provider type, youngest child seen, ability to see additional young children and practice location. Only 26 respondents provided responses to open-ended items regarding barriers and facilitators to seeing young children. We reviewed the responses to the open-ended items and coded them for emergent themes. We also compared selected survey findings with neighborhood-level Medicaid enrollee information from the NYSDOH Medicaid Management Information System (Lindsay W. Cogan, M.S., research scientist II, Office of Health Insurance Programs, Bureau of Quality Measurement and

TABLE 1

Respondent and practice characteristics.				
CHARACTERISTIC	OVERALL, NO. (%)	GENERAL DENTISTS, NO. (%)	PEDIATRIC DENTISTS, NO. (%)	$\chi^2$ (P VALUE)*
<b>Total No. of Respondents</b>	1,057 (100)	974 (92)	83 (8)	
<b>Years in Practice</b>				
0-5	65 (6)	48 (5)	17 (21)	33.4 (< .001)
6-15	342 (33)	320 (33)	22 (27)	
16-30	440 (42)	414 (43)	26 (31)	
More than 30	204 (19)	186 (19)	18 (22)	
<b>Practice Type†</b>				
Solo	600 (57)	577 (60)	23 (28)	32.5 (< .001)
Group	410 (39)	354 (37)	56 (68)	
Solo and group	43 (4)	39 (4)	4 (5)	
<b>Practice Setting</b>				
Private office	958 (91)	902 (93)	56 (69)	< .001
Community health center	46 (4)	24 (3)	22 (27)	
Hospital clinic	46 (4)	43 (4)	3 (4)	
<b>No. of Ancillary Staff Members</b>				
0-2	648 (62)	634 (65)	14 (17)	< .001
3-5	301 (29)	263 (27)	38 (46)	
6-10	61 (6)	44 (5)	17 (21)	
More than 10	42 (4)	29 (3)	13 (16)	
<b>Percentage of Patients Enrolled in Medicaid</b>				
0-30	444 (42)	430 (44)	14 (17)	33.8 (< .001)
31-50	310 (30)	286 (30)	24 (29)	
More than 50	296 (28)	252 (26)	44 (54)	
<b>Percentage of Referrals From Pediatricians</b>				
0-5	657 (76)	626 (79)	31 (44)	< .001
6-30	160 (18)	136 (17)	24 (34)	
31-50	31 (4)	23 (3)	8 (11)	
More than 50	22 (3)	14 (2)	8 (11)	
<b>Pediatric Patients per Week</b>				
0	37 (4)	36 (4)	1 (1)	204.8 (< .001)
1-25	742 (78)	731 (82)	11 (16)	
More than 25	179 (19)	121 (14)	58 (83)	

\* Only the *P* value is provided when the results are from the Fisher exact test instead of the  $\chi^2$  test.

† Some respondents were in both solo and group practice; these respondents were directed to respond for their largest solo practice.

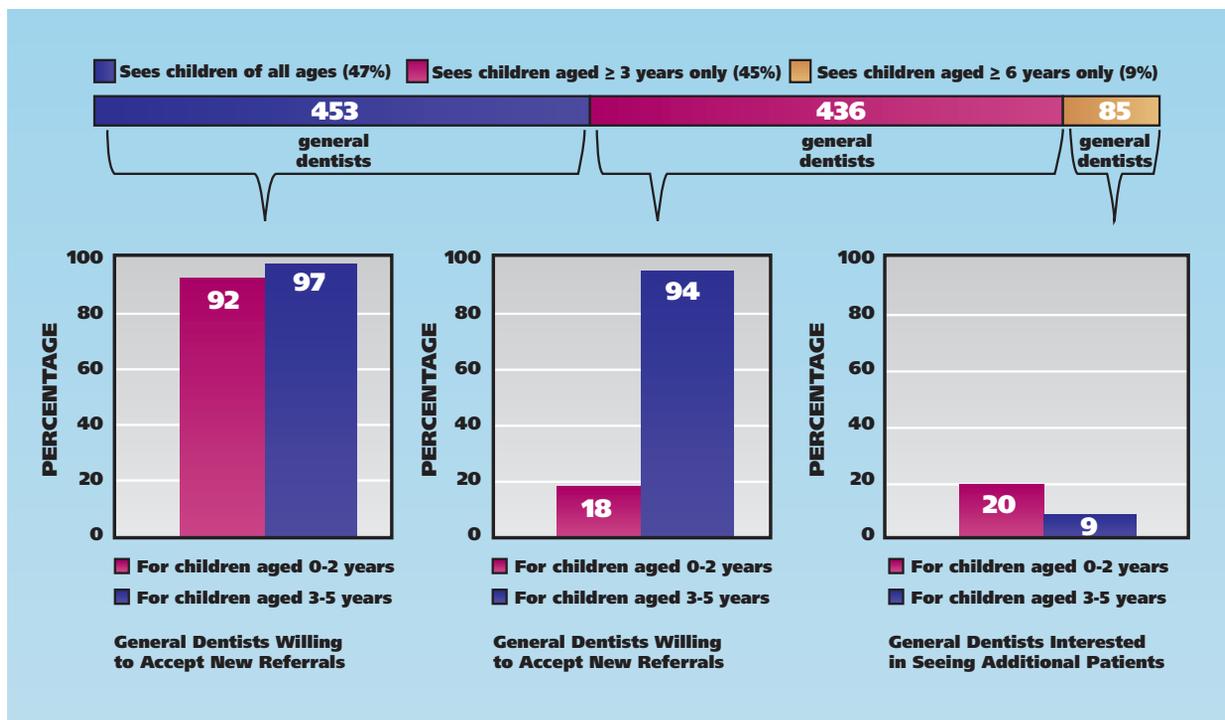
Improvement, Division of Quality and Evaluation, New York State Department of Health, unpublished data, 2011), and provider information from the NYSDOH Health Provider Network data system.<sup>22</sup> We analyzed data by using descriptive statistics and  $\chi^2$  analyses. We used a Fisher exact test to conduct specific bivariate analyses in which  $\chi^2$  testing was inappropriate owing to small cell sizes.

## RESULTS

### Respondent and practice characteristics.

The survey sample was composed of 92 percent GDs and 8 percent PDs (Table 1). These percentages were similar to those in the sample of

dentists to whom the survey was mailed (94 percent GD; 6 percent PD). We noticed practice characteristic differences between GDs and PDs. Overall, 57 percent of respondents worked only in a solo practice. However, PDs were less likely to report working in solo practice than were GDs (28 percent versus 60 percent). Length of time in practice also differed between GDs and PDs; 5 percent of GDs had been practicing for fewer than six years compared with 21 percent of PDs. Most respondents practiced in a private office setting, but PDs were significantly more likely to practice in a community health center setting than were GDs ( $P < .001$ , Fisher exact test). About two-thirds of practice sites (62 per-



**Figure.** Youngest age of patients seen and potential for new referrals among general dentists (n = 974).

cent) indicated having zero to two ancillary staff members. As we expected, PDs typically saw more than 25 pediatric patients 18 years and younger per week (83 percent), which is significantly different from the 14 percent of GDs who indicated they saw this volume of children in a typical week ( $P < .001$ ). PDs were significantly more likely to have a higher proportion of Medicaid enrollees in their practices than were GDs ( $P < .001$ ).

**Youngest age of patient seen and current referral availability.** Fewer than one-half (47 percent) of GDs saw patients aged 0 through 2 years (Figure). Provider type, years in practice and percentage of patients in the practice who were enrolled in Medicaid were all significantly associated with youngest child seen. Among GDs, the tendency to see younger children was associated negatively with length of years in practice; providers who had been in practice for more than 30 years were less likely to see children 2 years and younger than were providers who had been in practice for less than six years (42 percent versus 70 percent;  $P = .003$ ). Among both PDs and GDs, the tendency to see younger children was associated positively with the proportion of Medicaid enrollees within the practice; providers were more likely to see the youngest children (0-2 years) as the proportion of Medicaid enrollees in

their practice increased ( $\chi^2 = 44.2$ ;  $P < .001$ ).

Pediatric practices almost universally accepted patients of all ages; only 2 percent of PDs restricted their practices to children 3 years or older. Among GDs, however, access for the youngest children was more limited. The figure shows the distribution of GDs according to the youngest patient accepted in the practice and by the GD's willingness to accept new referrals for the youngest pediatric patients. Less than one-half of GDs (47 percent) saw children of all ages, and 45 percent restricted their practice to patients 3 years and older. Nine percent of GDs did not see children younger than 6 years (Figure).

Most GDs who already were seeing children of all ages also accepted new referrals for patients aged 0 through 2 years (92 percent) and 3 through 5 years (97 percent). Among GDs who limited their practices to children 3 years and older, 18 percent were interested in seeing patients aged 0 through 2 years, but most were accepting new referrals for patients aged 3 through 5 years (94 percent). Inadequate reimbursement was the most frequently reported reason (70 percent) for not accepting new referrals. PDs indicated that their practices were actively accepting referrals for patients in both age groups—0 through 2 years (95 percent) and 3 through 5 years (96 percent).

TABLE 2

Dental services provided, according to provider type and youngest age seen.			
DENTAL SERVICE, ACCORDING TO PATIENT'S AGE	GENERAL DENTISTS, NO. (%)	PEDIATRIC DENTISTS, NO. (%)	$\chi^2$ (P VALUE)*
<b>Services Provided to Patients Aged 0 Through 2 Years</b>	<b>Seeing Patients of All Ages (n = 453)</b>	<b>Seeing Patients of All Ages (n = 81)</b>	
Examination/diagnosis/treatment planning or education	428 (95)	79 (98)	(.555)
Preventive therapy	361 (80)	76 (94)	8.5 (.004)
Simple restorative treatment	234 (52)	73 (90)	40.7 (< .001)
Complex restorative treatment	79 (18)	60 (73)	112.8 (< .001)
Depends on behavior, etc.	296 (66)	55 (68)	0.1 (.748)
<b>Services Provided to Patients Aged 3 Through 5 Years</b>	<b>Seeing Patients 3 Years and Older (n = 889)</b>	<b>Seeing Patients 3 Years and Older (n = 83)</b>	
Examination/diagnosis/treatment planning or education	831 (94)	81 (98)	(.221)
Preventive therapy	797 (90)	79 (96)	3.4 (.065)
Simple restorative treatment	709 (80)	77 (93)	7.9 (.005)
Complex restorative treatment	303 (34)	76 (92)	104.5 (< .001)
Depends on behavior, etc.	637 (72)	57 (69)	0.4 (.513)

\* Only the P value is provided when the results are from the Fisher exact test instead of the  $\chi^2$  test.0

**Age-specific services.** Dental care providers who saw the youngest children (0-2 years) typically offered basic diagnostic services, including examination, treatment planning and patient and parent education (Table 2). However, PDs were significantly more likely than were GDs to offer preventive therapy (94 percent versus 80 percent;  $P = .004$ ) and simple restorative treatment (90 percent versus 52 percent;  $P < .001$ ). PDs also were four times as likely to provide complex restorative treatment (73 percent versus 18 percent;  $P < .001$ ).

For children aged 3 through 5 years, we found no statistically significant difference between PDs and GDs in terms of the level of basic diagnostic services and preventive therapy offered (Table 2). However, PDs were more likely than GDs to provide simple restorative treatment (93 versus 80 percent,  $P = .005$ ) and were almost three times as likely to provide complex restorative treatment (92 versus 34 percent;  $P < .001$ ). Notably, about two-thirds of respondents of either dental care provider type said the services they offered depended on the child's behavior.

**Barriers and facilitators.** In the survey, we asked respondents who did not already see the youngest children questions regarding perceived barriers to seeing young children. We asked all respondents questions regarding desired facilitators. Data from respondents whose practices did

not see all patients of all ages suggested that the main reasons were discomfort with small children (56 percent), concern about possible disruption due to crying (31 percent) and inadequate reimbursement (26 percent). Despite potential facilitators cited for seeing young children, about one-fifth of practitioners who were seeing children 3 years and older were interested in treating children aged 0 through 2 years (Figure). Only one in 10 practitioners who saw children 6 years and older (9 percent) were interested in adding children aged 3 through 5 years.

Additional training and access to consulting PDs were identified as potential facilitators to seeing additional young children. As shown in Table 3, GDs who saw children of all ages cited different facilitators for adding more young children to their practices than did GDs who did not see the youngest children. GDs who saw patients 0 through 5 years were more likely to cite additional training as a facilitator than were GDs who did not see patients aged 0 through 2 years (48 percent versus 36 percent;  $P = .002$ ) regardless of modality (Web based, live lecture, hands-on workshop or in-office training). By contrast, GDs practicing in sites that did not see the youngest children (aged 0-2 years) were more likely to cite access to a consulting PD as a facilitator than were GDs who saw the youngest children (42 versus 34 percent;  $P = .030$ ). We found no statistically significant differences

TABLE 3

Facilitators for seeing young children aged 0 through 5 years.			
FACILITATING RESOURCE	GENERAL DENTISTS SEEING PATIENTS OF ALL AGES, NO. (%)	GENERAL DENTISTS NOT SEEING PATIENTS AGED 0-2, NO. (%)	$\chi^2$ (P VALUE)
<b>Any of A-D (Below)</b>	296 (100)	282 (100)	Not applicable
<b>A. Additional Training</b>	143 (48)	100 (36)	9.8 (.002)
Web-based	82 (28)	48 (17)	9.5 (.002)
Live lecture	106 (36)	65 (23)	11.3 (.001)
Hands-on workshop	96 (32)	61 (22)	8.5 (.004)
In-office training	90 (30)	46 (16)	15.9 (< .001)
<b>B. Access to Consulting Pediatric Dentist</b>	100 (34)	120 (42)	4.7 (.030)
<b>C. Additional Dental Assistants or Hygienists</b>	43 (15)	39 (14)	0.1 (.810)
<b>D. Increased Reimbursement</b>	209 (71)	187 (66)	1.2 (.267)

between proportions of survey respondents citing additional staff (hygienists or dental assistants) and increased reimbursement as potential facilitators to seeing additional young children. The results of our review of the open-ended responses indicated three dominant themes as potential barriers or facilitators: financial considerations, comfort level in seeing young children and training. Additional themes regarding parent education, pediatrician education and pediatrician referral also emerged, although they appeared less frequently.

**Provider supply and geographical location.** We noted some discord between the distribution of Medicaid enrollees aged 0 through 5 years and the distribution of dental care providers actively accepting new referrals for patients aged 0 through 5 years (Table 4<sup>23</sup>) (Lindsay W. Cogan, M.S., research scientist II, Office of Health Insurance Programs, Bureau of Quality Measurement and Improvement, Division of Quality and Evaluation, New York State Department of Health, unpublished data, May 2011).<sup>22</sup> Although the largest populations of Medicaid enrollees aged 0 through 5 years resided in Brooklyn, Queens and the Bronx, the proportion of dentists accepting Medicaid was highest in Manhattan and Staten Island. According to the results of our survey, the ability of all dentists to accept additional referrals reflects a slightly different pattern, with a relatively higher capacity among providers in Queens and lowest capacity among providers in the Bronx.

A correlation of the distribution of GDs and PDs with neighborhood socioeconomic status revealed a relative shortage of dentists in neighborhoods with the highest poverty levels. In very low-poverty neighborhoods (defined as

those with < 10 percent of residents living below the federal poverty threshold), the results of our survey showed a ratio of more than 300 dental care providers who accepted referrals for every 100,000 Medicaid enrollees aged 0 through 5 years. In contrast, in the high-poverty neighborhoods (defined as > 30 percent of residents living below the federal poverty threshold), the results of our survey showed a ratio of 75 dental care providers accepting all age referrals per 100,000 Medicaid enrollees aged 0 through 5 years.

## DISCUSSION

We conducted this survey to determine access to dental care for young children in NYC and to identify barriers to and potential facilitators for the provision of care for this population. We also assessed the extent to which dentists accepting MMC saw young children and were interested in seeing additional children. In NYC, 89 percent of the Medicaid-eligible population is enrolled in MMC, and nationwide 71 percent of all Medicaid beneficiaries are covered through managed care arrangements.<sup>21,24</sup> As such, the potential role of MMC organizations in increasing access to dental care and monitoring use of dental services can be critical in improving oral health for low-income children.

Almost all PDs who responded to our survey saw patients of all ages and provided a comprehensive range of services. PDs, however, constituted only 8 percent of survey respondents and 6 percent of dentists listed on the NYSDOH Health Provider Network data system.<sup>22</sup> The results of our analysis showed that the availability of PDs in low-income communities was further limited. GDs who responded to the survey also saw children; however, consistent

TABLE 4

### Supply of dental providers seeing pediatric patients, according to demographics and Medicaid child enrollment.

DEMOGRAPHIC	NO. OF MEDICAID ENROLLEES AGED 0 THROUGH 5 YEARS	NO. OF SURVEY RESPONDENTS ACCEPTING NEW REFERRALS FOR PATIENTS AGED 0 THROUGH 2 YEARS PER 100,000 MEDICAID ENROLLEES AGED 0 THROUGH 5 YEARS	NO. OF MEDICAID MANAGED CARE PEDIATRIC DENTISTS PER 100,000 MEDICAID ENROLLEES AGED 0 THROUGH 5 YEARS
<b>Borough</b>			
<b>Bronx</b>	105,946	77.4	81.2
<b>Brooklyn</b>	162,732	112.5	60.8
<b>Manhattan</b>	45,422	169.5	105.7
<b>Queens</b>	111,110	150.3	43.2
<b>Staten Island</b>	15,830	107.4	101.1
<b>Neighborhood Poverty Level (%)*</b>			
<b>Very low (&lt; 10)</b>	18,257	334.1	164.3
<b>Low (10-20)</b>	144,092	146.4	60.4
<b>Moderate (21-30)</b>	106,081	116.9	59.4
<b>High (&gt; 30)</b>	172,610	75.3	67.8

\* Defined based on the percentage of residents in United Hospital Fund neighborhood areas (zip code aggregations) living below the federal poverty threshold.<sup>23</sup>

with findings from several other studies, only about one-half accepted patients younger than 2 years.<sup>12-18</sup> Moreover, among GDs who saw children younger than 2 years, the proportion who provided services beyond general examinations or preventive care decreased with the complexity of treatment, which also was consistent with findings from other studies.<sup>18,25</sup>

Despite a robust survey response rate (46 percent), our findings are subject to the biases of self-reported data. As has been suggested by investigators in similar surveys, it is possible that GDs who chose not to respond to the survey were even less likely to see children than were those who responded.<sup>14</sup> This survey was conducted only among providers affiliated with MMC in NYC, therefore the generalizability of these findings to all dentists is uncertain. Although the results of our survey provide information about the practice settings of respondents, we were not able to determine the settings in which most children enrolled in MMC actually were treated. Likewise, although we can comment on the capacity of our survey respondents to accept new referrals, we do not know the extent to which other dental care providers' practices and pediatric dental residency programs in NYC have the capacity to absorb more children. Regardless of these uncertainties, it is clear that a large proportion of children in NYC aged 2 through 18 years enrolled in MMC are not receiving dental care<sup>8</sup> and that reluctance among GDs to see young

children further reduces the treatment capacity available to such children.

The results of our study showed that PDs serving the MMC population are interested in accepting additional referrals of young children; therefore, in the short term, a strategy to improve access to dental care for the youngest children should focus on increasing referrals to PDs. A sustainable increase in dental service capacity, however, requires changes in the practices of GDs. The resources most commonly cited by GDs who indicated their willingness to increase treatment of young children included access to additional training and access to consulting PDs. MMC organizations are well situated to facilitate consultation between GDs and PDs by establishing and promoting referral resources within their provider networks. Professional dental organizations and academic dental centers also can facilitate the establishment of consulting and referral relationships. Strategies designed to reduce the barriers cited by GDs should be developed and evaluated. Inadequate reimbursement was cited most frequently as a barrier in our survey. The 2011 Institute of Medicine report recognized that increasing Medicaid reimbursement can increase dentists' participation in publicly funded programs but cautioned that measures also should be taken to reduce the administrative burdens of publicly funded programs.<sup>19</sup>

The results of research have shown that inclusion of hands-on experience working with

young children in dental education programs can increase the likelihood that GDs will see younger children.<sup>14,25</sup> Investigators in several studies have documented that the proportion of dentists who are aware of and agree with recommendations from the AAPD and other professional organizations concerning the initiation of dental examinations by the age of 1 year is lower than expected.<sup>13-16,18,25</sup> It is possible that lack of awareness of or agreement with recommendations regarding early referral for dental examinations among dentists and pediatricians contributes to suboptimal dental care for young children. Results from our survey suggest the need for educational programs to equip practicing GDs better for seeing young children. The 2011 Institute of Medicine report recommends strengthening dental professional education to equip dentists better to serve populations in need, as well as the establishment of oral health competencies for nondental health care professionals.<sup>19</sup> However, it is important that the impact of dental training programs be evaluated, because investigators in some studies have documented that not all dentists perceive training as a need.<sup>13,18</sup>

We undertook this survey as part of a broader QI collaboration between the NYC DOHMH and managed care organizations serving NYC MMC enrollees. The results of a survey conducted in 2006 by NYSDOH showed that MMC enrollees in NYS who received dental benefits through their health plans were more likely to report having a good oral health status and at least one dental visit within the past year than were MMC enrollees whose dental benefits were not covered by their health plan.<sup>26</sup> The MMC environment may facilitate the implementation of some strategies recommended on the basis of our survey, such as strengthened opportunities for referral and consultation within the network, as well as the provision of training for GDs affiliated with the MMC plans. The impact of these strategies on access to dental care requires further examination.

## CONCLUSIONS

National and NYC statistics on utilization of dental care among young children indicate a lack of access to recommended care.<sup>6-8</sup> The results of our study suggest that a barrier to accessing dental care for young children in NYC is the high proportion of GDs affiliated with MMC who do not treat this population. Because GDs constitute most of the dentists in practice, they must be the focus of strategies used to increase access to appropriate dental care for

young children. Training programs for GDs regarding the treatment of young children coupled with opportunities for consultation with PDs should be pilot tested and evaluated in terms of their impact on dental practice patterns. The MMC environment, with its network of dental care providers, may offer unique advantages for developing and evaluating such programs and interventions. ■

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