

UMDNJ



**SCHOOL OF  
PUBLIC HEALTH**

University of Medicine & Dentistry of New Jersey

**Tobacco  
Dependence Clinic**

**Annual Report 2006**

**January 1 – December 31, 2006**

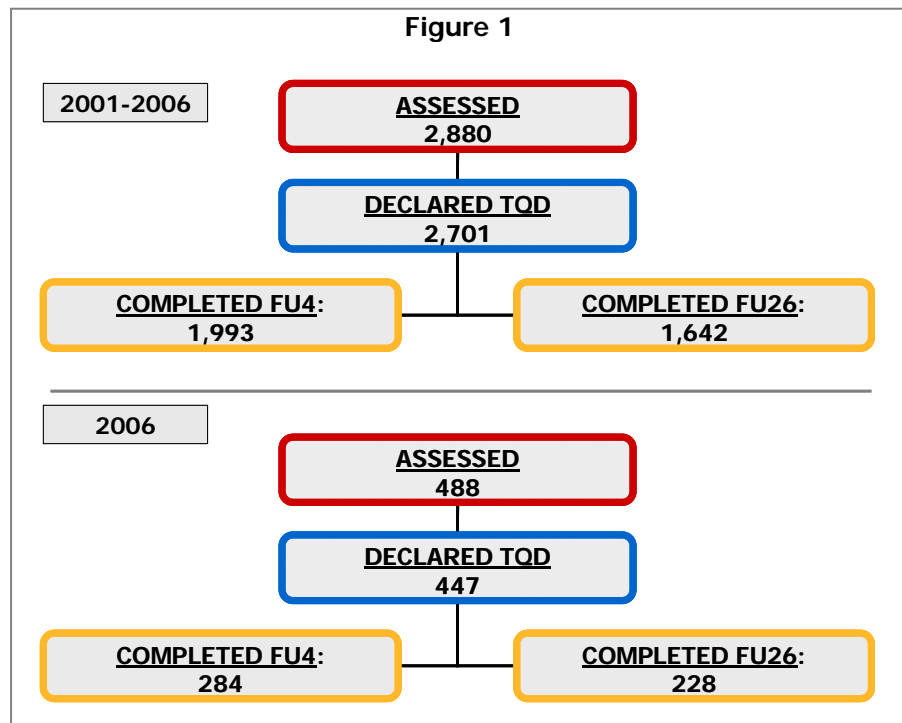
## SUMMARY

The Tobacco Dependence Clinic at UMDNJ–School of Public Health saw 488 new patients for assessment in 2006, and 447 (92%) of those patients made an attempt to quit tobacco by setting a target quit date with the Clinic. As in previous years, the majority of patients seen were female (55%), and the average age was 44 (range 15-84). Fifty-two percent of the Clinic’s patients identified themselves as Caucasian/White (non-Hispanic), 24% as African American/Black and 18% as Hispanic/Latino. In keeping with previous years, the proportion of patients without health insurance continued to rise in 2006 (33%). The number one referral source among our patients is friends and family (28%), but a significant number of patients are self-referred or are referred by health care professionals. The average patient seen at the Clinic in 2006 smoked 19 cigarettes per day, smoked the first cigarette of the day 27 minutes after waking in the morning, had been smoking for 22 years, and had made 5 unsuccessful quit attempts prior to attending the Clinic.

Four hundred forty-seven patients made a quit attempt and were eligible for follow-up in 2006, of whom 64% were reached for follow-up after 4 weeks, and 51% were reached at 6 months. Assuming that those patients not reached for follow-up continued to use tobacco at least as much as at assessment, the quit rates for 2006 were 36% at 4 weeks post-quit date and 21% at 6 months, and an additional 13% and 10% reduced their cigarette consumption by at least 50% at the 4-week and 6-month follow-up points. Abstinence rates were higher, however, among patients who attended more face-to-face treatment sessions and used cessation medications.

About 90% of the patients who were assessed in 2006 and were reached for 4-week follow-up reported having used at least one cessation medication during their quit attempt, and abstinence rates were nearly two and a half times higher among patients who used medications than among those who did not. Additionally, abstinence rates among patients attending at least six treatment appointments were more than twice as high as those attending just one. Finally, 98% of patients completing 4-week follow-up rated the service as excellent or good (75% and 22%, respectively).

Over the first six years of operation, the Tobacco Dependence Clinic at UMDNJ-School of Public Health has treated more than 2,800 patients, of whom 25% remained tobacco-free at 6 months post-quit date. This compares well with the quit rate of 22% in 55 trials of “high intensity” treatment reviewed in the Public Health Service Clinical Practice Guidelines. The clinic’s thorough individual assessment, combined group and individual counseling, plus combination pharmacotherapy provides a highly effective treatment for tobacco dependence. The clinic aims to continue to provide state-of-the-art tobacco dependence treatment to the diverse population of New Jersey smokers who require specialist services to overcome their addiction to tobacco.



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## INTRODUCTION

The Tobacco Dependence Clinic at University of Medicine and Dentistry (UMDNJ)-School of Public Health is funded by the New Jersey Department of Health and Senior Services as part of New Jersey's Comprehensive Tobacco Control Program. The Clinic's primary function is to provide a specialist tobacco dependence treatment service to the local community and as well as a tertiary referral and consultation service to health professionals throughout New Jersey. The Tobacco Dependence Clinic is the treatment component of the Tobacco Dependence Program at UMDNJ-School of Public Health, which has a wider role in education, treatment, research, and advocacy to reduce the harm to health caused by tobacco.

A multidisciplinary team of specialists in tobacco dependence treatment provided clinical services, including Donna Richardson LCSW LCADC CTTS (Clinic Coordinator), Roena Vega (Latino Outreach Coordinator), Michael Steinberg MD MPH (Clinic Medical Director), Jill Williams MD (Psychiatrist), Stacey Zelenetz LCSW (Mental Health Clinician), and Jonathan Foulds PhD (Director, Tobacco Dependence Program). The clinic has also benefited from input from other staff and faculty at the Tobacco Dependence Program including psychiatry residents from Robert Wood Johnson Medical School receiving specialist training in addiction psychiatry, public health graduate students from UMDNJ-School of Public Health, and social work trainees from Rutgers Graduate School of Social Work. The clinic provides a multidisciplinary approach to tobacco dependence treatment, based on the evidence-based assessment and treatment procedures outlined in the US Public Health Service Clinical Practice Guideline on Treating Tobacco Use and Dependence [Fiore MC, et al., 2000] and the New Jersey Guidelines for Tobacco Dependence Treatment [Slade J, et al., 2001]. The clinical staff is also involved in training and consulting to the network of tobacco dependence treatment clinics throughout New Jersey known as New Jersey Quitcenters and to other providers of tobacco treatment.

Patients generally contact the Clinic on their own or through referral from a health care professional. The Clinic is centrally located in New Brunswick at 317 George Street, Suite 210. Parking is available and the Clinic is easily accessible via public transportation. Patients typically call to set up an appointment (732-235-8222) and this is usually scheduled within a week of first telephone contact. Efforts are also made to see patients who may walk into the clinic without a scheduled appointment.

This report summarizes the direct clinical work carried out at the Tobacco Dependence Clinic from its launch in January, 2001 through to December, 2006 and includes detailed descriptions of our patients as well as short-term and longer-term outcomes.



## PATIENT VOLUME

### Total Patient Visits

A total of 1,895 patient visits occurred in 2006, of whom 1,044 (55%) were individual sessions and 851 (45%) were group sessions. However, note that all patients attend at least one individual session prior to attending group sessions, therefore the 1,044 individual treatment sessions include 488 initial assessments. Since the Clinic's inception in 2001, nearly 12,000 face-to-face treatment sessions have been performed (Table 1).

**Table 1**

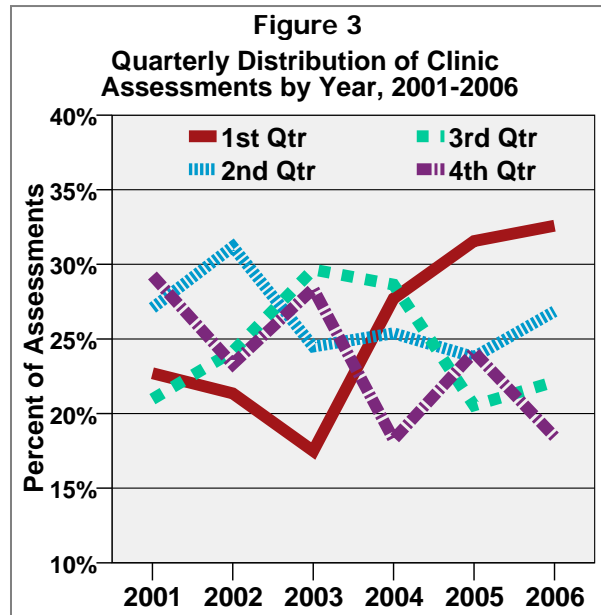
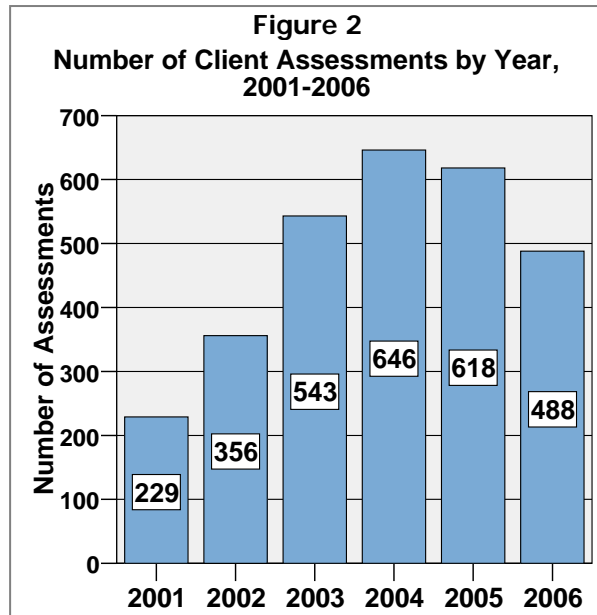
**Clinic Treatment Sessions by Type and Year, 2001-2006**

	2001	2002	2003	2004	2005	2006	Overall
<b>Group*</b>	499	1,066	1,158	725	1,064	851	5,363
<b>Individual</b>	457	942	1,173	1,227	1,406	1,044	6,249
<b>Total</b>	956	2,008	2,331	1,952	2,470	1,895	11,612

\*"Total Group sessions" are calculated based on the number of clients in attendance at each group (i.e., 1 hour group session x 10 clients in the group = 10 treatment sessions)

### Patient Intake Assessments

In 2006, the Clinic assessed 488 new patients, bringing the grand total to 2880 patients seen since opening in 2001. Overall, the Clinic averaged 480 new assessments each year over this 6 year period (Figure 2). Shown in Figure 3, a trend across each quarter is emerging, as the proportion of assessments performed earlier in the year has been rising over the past several years.



Declaration of Target Quit Dates

Among all patients assessed in 2006, 447 (92%) declared a target quit date. As shown in **Table 2**, the percentage of patients declaring a target quit date has consistently exceeded 90% since 2003.

	2001 (n=229)	2002 (n=356)	2003 (n=543)	2004 (n=646)	2005 (n=618)	2006 (n=488)	Overall (N=2880)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Declared a Target Quit Date</b>	204 (89)	322 (90)	512 (94)	616 (95)	600 (97)	447 (92)	2701 (94)

**PATIENT CHARACTERISTICS**

The average Clinic patient assessed during 2006 was female (55%), about 44 years old, Caucasian (63%), had 2 children, completed about 14 years of formal education (33%), was employed full-time (44%), did not report an approximate annual household income (46%), had privatized health insurance (46%), and was referred by a health professional, family member, or friend (40%). Details about demographic distribution of our Clinic population are presented below.

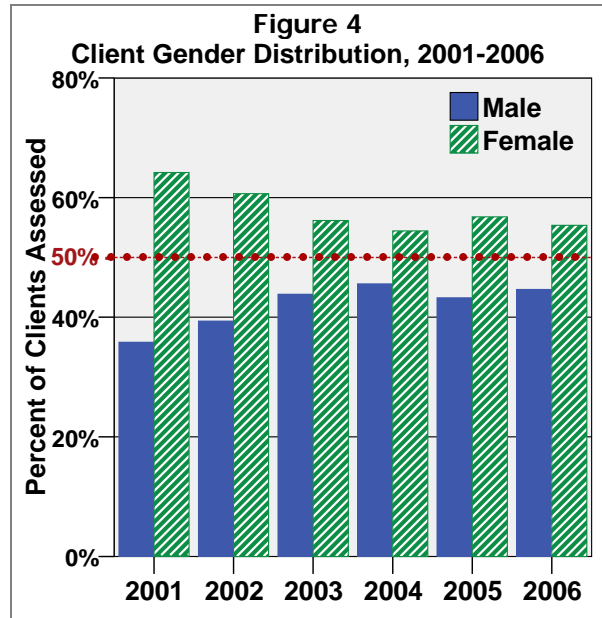
Age, Gender, Marital Status, & Children

Demographic characteristics of our Clinic population by year are displayed in **Table 3** below.

	2001 (n=229)	2002 (n=356)	2003 (n=543)	2004 (n=646)	2005 (n=618)	2006 (n=488)	Overall (N=2880)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Age (Years)</b>	<25	11 (5)	16 (4)	97 (18)	146 (23)	46 (7)	360 (13)
	25 - 44	115 (50)	153 (43)	240 (44)	262 (41)	284 (46)	1250 (43)
	45 - 64	88 (38)	159 (45)	187 (34)	214 (33)	262 (42)	1133 (39)
	65+	14 (6)	27 (8)	19 (3)	23 (4)	25 (4)	132 (5)
<b>Gender</b>	Male	82 (36)	140 (39)	238 (44)	294 (46)	265 (43)	1235 (43)
	Female	147 (64)	216 (61)	305 (56)	351 (54)	348 (56)	1635 (57)
<b>Marital Status</b>	Married, Cohabitan	108 (47)	165 (46)	189 (35)	231 (36)	239 (39)	1091 (38)
	Div., Wid., Sep.	55 (24)	99 (28)	124 (23)	112 (17)	148 (24)	656 (23)
	Single, Never Married	66 (29)	91 (26)	228 (42)	289 (45)	186 (30)	1008 (35)
<b>Have Children?</b>	Yes	135 (59)	213 (60)	292 (54)	304 (47)	356 (58)	1564 (54)
	No	92 (40)	129 (36)	238 (44)	294 (46)	215 (35)	1127 (39)

Percentages may total <100% where some clients did not provide a valid response  
Div., Divorced; Wid., Widowed; Sep., Separated

As shown in **Table 3**, patient age distributions have not changed very much since the clinic's inception in 2001, the average age at assessment having remained in the lower to mid forties over these six years. After a marked increase from 2001 to 2003, male-to-female patient ratio has remained about 45:55 since 2004 (**Figure 4**). The 2006 distribution of patients' marital status varied little from 2005; however, there has been a decrease in married or cohabitating patients and an increase in unmarried patients since 2001. Finally, the proportion of patients with children and the average number of children were comparable to previous years.

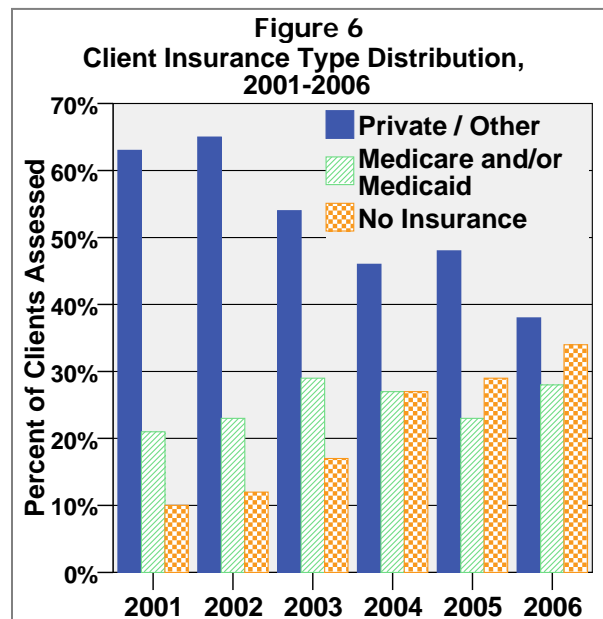
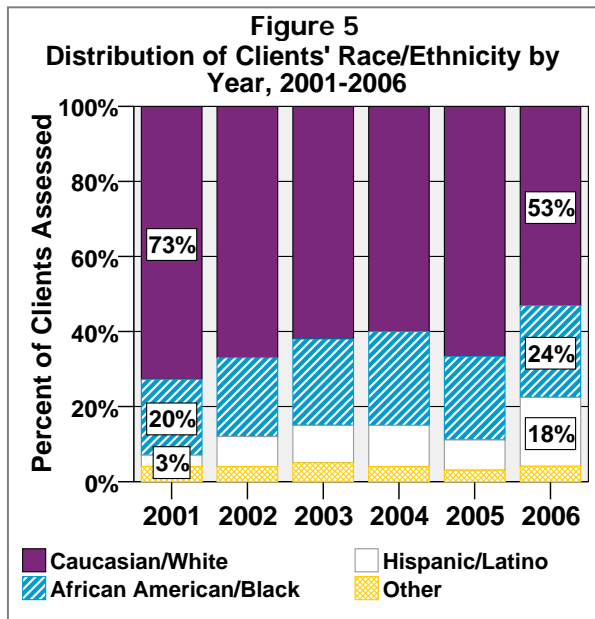


Race, Ethnicity & Socioeconomic Characteristics

**Table 4** displays racial, ethnic, and socioeconomic characteristics of our Clinic population over the past six years. Our Clinic population has become more ethnically diverse, with a decreasing proportion of Caucasian patients and an increase in African American and Hispanic patients (**Figure 5**). The marked increase in Hispanic / Latino patients this year can be largely attributed to the inception of *Proyecto Vida: Latino deje de Fumar*, an outreach project that targets Latino smokers in New Jersey. We have further improved our accommodations for the Latino community by employing bilingual staff and providing Clinic forms in Spanish.

		2001 (n=229)	2002 (n=356)	2003 (n=543)	2004 (n=646)	2005 (n=618)	2006 (n=488)	Overall (N=2880)
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Race/ Ethnicity</b>	African American / Black	46 (20)	73 (21)	123 (23)	160 (25)	133 (22)	118 (24)	653 (23)
	Asian	6 (3)	7 (2)	13 (2)	15 (2)	12 (2)	16 (3)	69 (2)
	Caucasian / White	165 (72)	239 (67)	336 (62)	386 (60)	407 (66)	253 (52)	1786 (62)
	Hispanic / Latino	7 (3)	29 (8)	53 (10)	68 (11)	52 (8)	87 (18)	296 (10)
	Other Race*	3 (1)	7 (2)	16 (3)	11 (2)	4 (1)	6 (1)	47 (2)
<b>Education</b>	< HS Diploma	19 (8)	40 (11)	86 (16)	106 (16)	62 (10)	68 (14)	381 (13)
	HS Diploma or GED	58 (25)	74 (21)	151 (28)	161 (25)	176 (28)	140 (29)	760 (26)
	Some College/Tech. School	81 (35)	142 (40)	190 (35)	248 (38)	255 (41)	157 (32)	1073 (37)
	College or Grad. Degree	70 (31)	100 (28)	115 (21)	125 (19)	120 (19)	112 (23)	642 (22)
<b>Employment</b>	Employed Full Time	115 (50)	174 (49)	229 (42)	230 (36)	299 (48)	206 (42)	1253 (44)
	Employed Part Time	24 (10)	30 (8)	38 (7)	63 (10)	53 (9)	77 (16)	285 (10)
	Sick, Disabled	37 (16)	44 (12)	89 (16)	73 (11)	90 (15)	81 (17)	414 (14)
	Unemployed	19 (8)	42 (12)	74 (14)	131 (20)	87 (14)	62 (13)	415 (14)
	Other**	33 (14)	63 (18)	112 (21)	138 (21)	60 (10)	46 (9)	452 (16)
<b>Type of Insurance</b>	Private, Other	157 (69)	233 (65)	294 (54)	298 (46)	294 (48)	177 (36)	1453 (50)
	Medicare and/or Medicaid	49 (21)	81 (23)	157 (29)	174 (27)	144 (23)	130 (27)	735 (26)
	No Insurance, No Answer	23 (10)	42 (12)	92 (17)	172 (27)	179 (29)	161 (33)	669 (23)

Percentages have been rounded to the nearest whole number and may total <100% where some clients did not provide a valid response;  
 \*E.g., Native American/Alaskan Native, Native Hawaiian/Pacific Islander, Other; \*\*E.g., Retired, Student, Homemaker  
 HS, High School; GED, General Educational Development Certificate; Tech., Technical

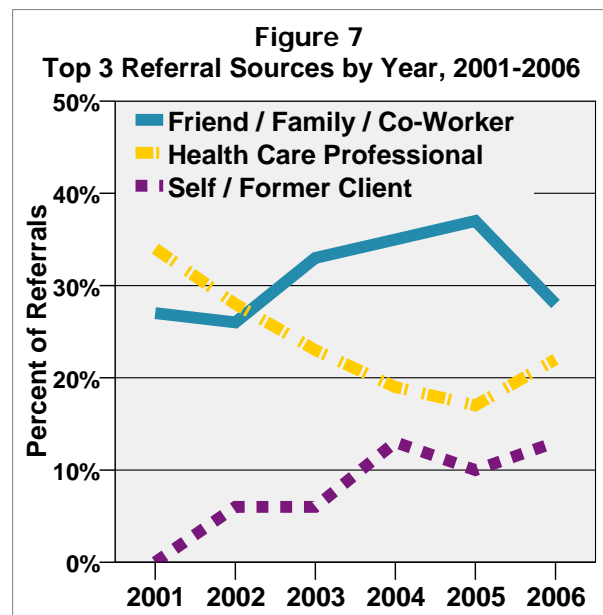


In addition to increased racial and ethnic diversity, patients' type of health insurance has seen changes in distribution since 2001. The proportion of patients with private health insurance has decreased, while the proportions of uninsured patients and patients under Medicare and/or Medicaid have increased. This change occurred gradually over the past 6 years, and the proportion of patients in 2006 with private health insurance was less than two thirds of that in 2001, while the proportion of uninsured patients more than tripled from 2001 to 2006 (Figure 6).

While no overall trend is apparent over the past six years with respect to educational achievement and employment status, some changes in the past two to three years should be noted. The proportion of patients with a high school diploma and less than high school diploma was higher than average in 2006, as was the proportion of part-time workers and sick or disabled patients. These factors may help explain the aforementioned increase in uninsured patients.

Referral Sources

Figure 7 depicts the changes in patient referral sources experienced at the Clinic since 2001. Most noticeably, the proportion of patients who are self-referred (i.e., former Clinic patients) has increased, and friend/family/coworker referrals remain the most common referral source. This reinforces the message that word-of-mouth, via patients and health professionals that are satisfied with Clinic services, remains a significant means for Clinic patient recruitment.





## TOBACCO USE CHARACTERISTICS

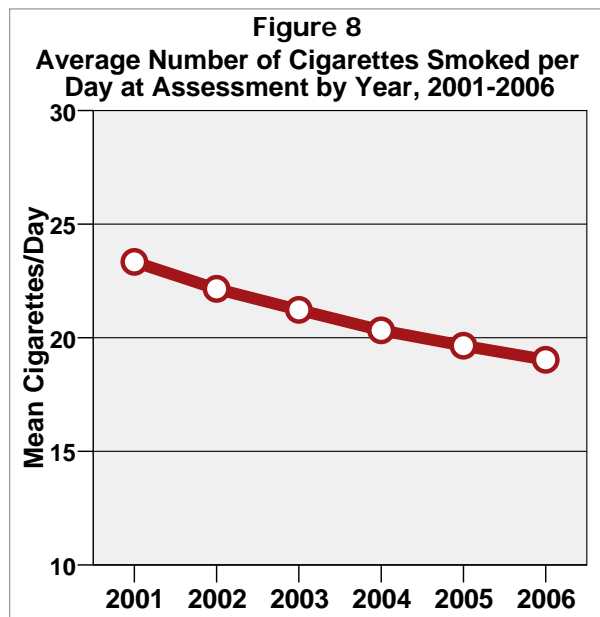
As shown in **Table 5**, the average Clinic patient assessed in 2006 began tobacco use at age 15 (SD, 4), had been using tobacco for about 22 (SD, 15), was smoking about 19 (SD, 11) cigarettes per day, had an expired Carbon Monoxide (CO) reading of 16 (SD, 11) ppm, used tobacco approximately 27 (SD, 51) minutes after waking in the morning, and had tried to quit tobacco use 5 (SD, 12) times in the past. Additionally, 44% of patients reported sometimes waking at night to use tobacco, 42% reported smoking 'light' or 'low tar' cigarettes, and 38% reported smoking mentholated cigarettes. Details about patient tobacco use characteristics since 2001 are summarized below.

**Table 5**  
**Tobacco Use Characteristics by Year, 2001-2006**

	2001 (n=229)	2002 (n=356)	2003 (n=543)	2004 (n=646)	2005 (n=618)	2006 (n=488)	Overall (N=2880)
	m (SD)	m (SD)	m (SD)	m (SD)	m (SD)	m (SD)	m (SD)
<b>Age of First Tobacco Use</b>	15 (4)	15 (5)	15 (4)	15 (4)	15 (4)	15 (4)	15 (4)
<b>Age began Regular Tobacco Use</b>	18 (5)	18 (5)	17 (4)	17 (4)	17 (5)	18 (5)	17 (5)
<b>Years of Regular Tobacco Use</b>	22 (12)	26 (14)	22 (14)	21 (14)	24 (13)	22 (15)	23 (14)
<b>Baseline Cigarettes per Day</b>	23 (15)	22 (12)	21 (11)	20 (11)	20 (11)	19 (11)	21 (12)
<b>Minutes to First Cigarette of Day</b>	27 (55)	27 (57)	29 (58)	25 (48)	21 (34)	27 (51)	26 (50)
<b># Prior Quit Attempts</b>	9 (16)	7 (16)	6 (15)	5 (8)	5 (11)	5 (12)	6 (13)
<b>Baseline Expired CO (ppm)</b>	19 (14)	19 (12)	16 (11)	16 (11)	17 (12)	16 (11)	17 (11)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Wake at Night to Smoke</b>	106 (46)	167 (47)	260 (48)	351 (54)	288 (47)	217 (44)	1389 (48)
<b>Smoke Light/Low Tar Cigarettes</b>	133 (58)	208 (58)	264 (49)	312 (48)	275 (44)	207 (42)	1399 (49)
<b>Smoke Menthol Cigarettes</b>	86 (38)	116 (33)	257 (47)	336 (52)	231 (37)	185 (38)	1211 (42)

m, Mean; SD, Standard Deviation

In general, indicators of tobacco dependence have been stable since 2001; however, a slow but steady decline in baseline number of cigarettes per day is evident (**Figure 8**). This trend may be a result of the changing patient demographics seen at our Clinic over the past several years, including an increased proportion of patients who are not regularly employed, combined with increased price of tobacco products. This price increase is largely due to a \$1.78 rise in state cigarette taxes since 2001 (\$0.80 in 2001, \$2.58 in 2006). Additionally, our clinicians have noted an increase in the proportion of patients who report smoking one cigarette over the course of several smoking sessions (i.e., lighting up, smoking some of the cigarette, then putting out and saving for later). It is possible that, as cigarettes become more and more expensive, we are seeing a larger proportion of patients who cannot afford to smoke as many cigarettes per day as they once could, explaining the decrease in daily consumption since 2001. However, if patients are in fact adjusting to this by changing how much – but not how often – they smoke each day, then this decrease in average number of cigarettes per day may not be indicative of decreased addiction to cigarettes. Furthermore, considering the stability of other tobacco dependence indicators over the past six years, it is clear that the average Clinic patient assessed in 2006 is just as dependent on tobacco and in need of cessation services as were the average patients of previous years.



## HEALTH AND MOTIVATIONAL FACTORS

### Physical and Mental Health Characteristics

As with many other chronic conditions, when treating a patient for tobacco dependence, it is important to consider certain health-related factors that may effect Clinic treatment and outcome. For these reasons, patients are asked several questions about their physical and mental health histories. The distribution of responses is presented in **Table 6** below.

**Table 6**  
**Physical and Mental Health Characteristics by Year, 2001-2006**

	2001 (n=229)	2002 (n=356)	2003 (n=543)	2004 (n=646)	2005 (n=618)	2006 (n=488)	Overall (N=2880)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Current Tobacco Use-Related Disease/Symptoms</b> <sup>a</sup>	143 (62)	206 (58)	302 (56)	362 (56)	360 (58)	264 (54)	1637 (57)
<b>History of Psychological Treatment</b> <sup>b</sup>	131 (57)	182 (51)	275 (51)	288 (45)	249 (40)	213 (44)	1338 (46)
<b>History of Substance Use Treatment</b> <sup>c</sup>	63 (28)	84 (24)	164 (30)	168 (26)	170 (28)	119 (24)	768 (27)

a. Determined by an answer of 'Yes' to the question, 'Currently, do you have any symptoms or a disease that you believe is caused or made worse by your tobacco use?'

b. Determined by an answer of 'Yes' to the question, 'Have you ever received counseling, treatment or medication for a mental health, emotional or behavioral problem?'

c. Determined by an answer of 'Yes' to the question, 'Have you ever received counseling, treatment or medication for alcohol or other drug problems?'

### Motivational Factors

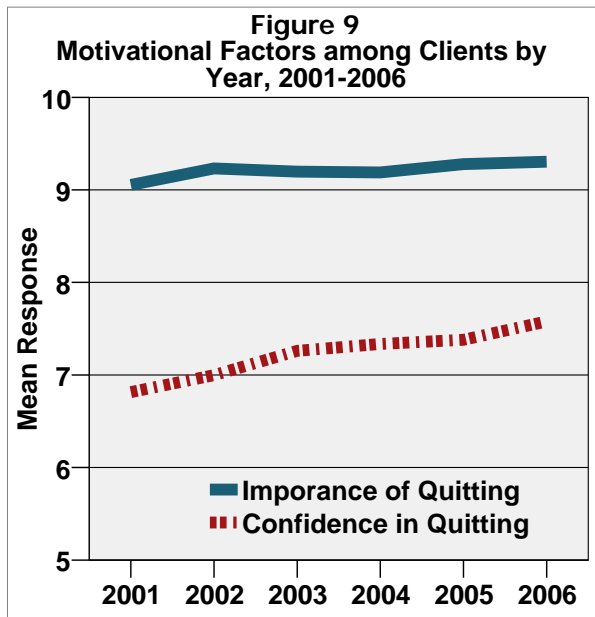
When treating tobacco dependence, it is also important to consider motivational factors. Patients are asked to decide what their 'current situation' is with respect to why they have come to the Clinic and helps our clinicians determine how to approach a particular patient. For example, a new patient who is interested in quitting within a month, as was the case for 75% of patients assessed in 2006 (84% overall, 2001-2006), should be getting help from our Clinic to prepare for an upcoming quit date. On the other hand, a patient who is not interested in quitting must first be motivated to want to quit by the Clinician before preparing for a quit date. As shown in **Table 7**, the distribution of responses to this item has not changed significantly since 2001.

**Table 7**  
**Clients' Stages of Change by Year, 2001-2006**

	2001 (n=229)	2002 (n=356)	2003 (n=543)	2004 (n=646)	2005 (n=618)	2006 (n=488)	Overall (N=2880)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>No Interest in Quitting or Only Wants to Cut Down</b>	6 (3)	21 (6)	12 (2)	14 (2)	14 (2)	5 (1)	72 (3)
<b>Considering Quitting, but Not within Next 30 Days</b>	9 (4)	15 (4)	11 (2)	9 (1)	28 (5)	21 (4)	93 (3)
<b>Would like to Quit within Next 30 Days</b>	195 (85)	299 (84)	479 (88)	576 (89)	491 (79)	366 (75)	2406 (84)
<b>Quit Very Recently, but Fearful of Relapse</b>	17 (7)	19 (5)	35 (6)	34 (5)	37 (6)	23 (5)	165 (6)
<b>No Tobacco Use for 6 Months or More</b>	1 (0)	0 (0)	0 (0)	0 (0)	4 (1)	5 (1)	10 (0)

Percentages may total < 100% if some patients did not provide a response to this item;

For more information about the Transtheoretical Model, visit



Two additional items on our Initial Assessment Questionnaire<sup>†</sup> address a patient's perceived motivation to quit. The first asks patients to self-rate, on a scale of 1 to 10 (10 being very important), how important it is for him/her to quit tobacco use. The second question, also on a scale of 1 to 10 (10 being very confident), asks for the patient to rate how confident he/she is in quitting tobacco use. As shown in **Figure 9**, our patients consistently rate quitting smoking as being very important to them, and the average rating of confidence in quitting has increased slightly, over the past six years.

## UTILIZATION OF CLINIC SERVICES

The Tobacco Dependence Clinic provides state-of-the-art treatment for tobacco dependence. All patients at the clinic receive a comprehensive assessment, usually consisting of a 60 to 90 minute appointment. Treatment plans are then designed cooperatively with each patient and tailored to his or her individual needs. A treatment plan can include group support sessions, individual support sessions, one or more nicotine replacement medicines, and/or non-nicotine medication(s). Most patients are treated with a combination of individual or group counseling, plus pharmacotherapy. Patients who cannot attend groups are seen individually at hours to suit their needs, and where there is sufficient demand, assessments and treatments can be provided on-site at workplaces or educational institutions. Patient use of services and associated outcomes are detailed below.

### Individual and Group Support Sessions

Among patients reached that were assessed in 2006 and declared a target quit date, the average – or mean (m) – number of total face-to-face treatment sessions was 3, with a standard deviation (SD) of 5. This is lower than the overall average for all six years of 4.3 face-to-face treatment sessions (SD, 9). The averages for each year since 2001 are detailed in **Table 8** below.

**Table 8**

**Average Number of Face-to-Face Treatment Sessions\* by Year, 2001-2006**

2001 (N=204)	2002 (N=322)	2003 (N=512)	2004 (N=616)	2005 (N=600)	2006 (N=447)	Overall (N=2,701)
m (SD)	m (SD)	m (SD)	m (SD)	m (SD)	m (SD)	m (SD)
6.4 (13)	6.6 (12)	4.9 (10)	3.1 (6)	3.9 (6)	3.1 (5)	4.3 (9)

\*Percentages are of total clients assessed that declared a target quit date;  
m, Mean; SD, Standard Deviation

Pharmacotherapy

Among patients assessed in 2006 that declared a target quit date and were reached for 4-week (n=284) and 26-week (n=228) follow-up, 256 (90%) and 207 (91%) reported use of at least one cessation medication during their current quit attempt, respectively, as illustrated in **Table 9**.

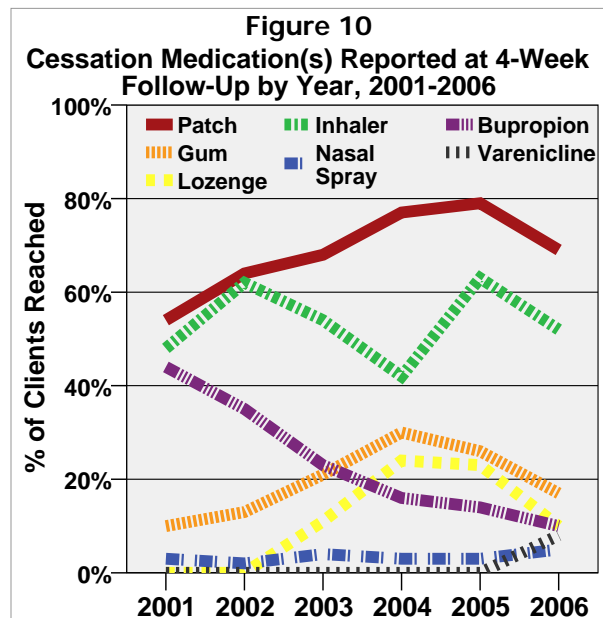
**Table 9**  
**Reported\* Use of Medication(s) at 4 -Week Follow-Up by Year, 2001-2006**

2001 (N=162)	2002 (N=276)	2003 (N=366)	2004 (N=473)	2005 (N=432)	2006 (N=284)	Total (N=1,993)
n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
135 (83)	242 (88)	326 (89)	427 (90)	406 (94)	256 (90)	1792 (90)

\* Percentages are of total clients assessed that declared a quit date and completed 4-week follow-up

Over the past six years, the nicotine patch has consistently been the most commonly reported cessation medication, followed by the nicotine inhaler (**Figure 10**, Note that percentages may total >100% due to use of more than one medication by some patients). The proportion of patients using bupropion as a cessation medication, on the other hand, has decreased markedly from 44% to 10% since 2001. Additionally, a new non-nicotine cessation medication, Varenicline (aka Chantix®), was introduced in the second half of 2006; however the new medication option did not dramatically affect the use of more traditional cessation medications, such as nicotine patch and nicotine gum, as only 8% of patients reached for follow-up reported its use.

One hundred sixty-seven (59%) of patients who were assessed in 2006 and reached for 4-week follow-up reported use of more than one cessation medication during their quit attempt. A complete break-down of number of medications used among all patients assessed between 2001 and 2006 that declared a quit date and were reached for follow-up is shown in **Table 10**.



**Table 10**  
**Number of Cessation Medications Reported by Client at 4-Week Follow-Up by Year\*, 2001-2006**

	2001 (N=162)	2002 (N=276)	2003 (N=366)	2004 (N=473)	2005 (N=432)	2006 (N=284)	Total (N=1,993)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>0</b>	27 (17)	34 (12)	40 (11)	44 (10)	27 (6)	28 (10)	200 (10)
<b>1</b>	49 (30)	66 (24)	84 (23)	101 (21)	79 (18)	89 (31)	468 (23)
<b>2</b>	54 (33)	116 (42)	167 (46)	191 (40)	184 (43)	119 (42)	831 (42)
<b>3+</b>	32 (20)	60 (22)	75 (20)	135 (29)	143 (33)	48 (17)	493 (25)

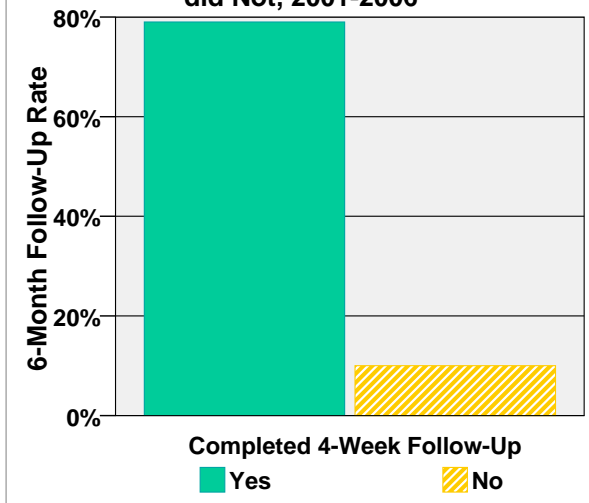
\*Percentages are of total clients that declared a target quit date and were reached for 4-week follow-up

## PATIENT FOLLOW-UP

The Tobacco Dependence Clinic attempts to contact all patients 4 weeks and 26 weeks (6 months) after their initial target quit date. This involves completing a standard questionnaire<sup>†</sup> and is often done over the phone (especially at 6 months). The primary purpose of follow-up is to help evaluate treatment. As is the standard in tobacco cessation research, we report treatment results based on the Intent-to-Treat Principle. This means that all patients who completed an assessment and declared a target quit date are included in analysis, and any patients who cannot be reached for follow-up are assumed to be using tobacco at the same or higher rate as at assessment. Therefore, in order to accurately evaluate our treatment services, we must do our best to reach as many patients as possible to collect follow-up data. Follow-up contact also offers an opportunity to provide words of support and, if a patient has resumed tobacco use, encourage him or her to return to the Clinic for another quit attempt. In general, patients are appreciative of the follow-up phone calls, because it reminds them that we are genuinely concerned for their wellbeing.

At assessment, each patient signs a form granting the Clinic permission to contact them for follow-up 4 and 26 weeks after his or her target quit date. When a patient is due for follow-up, a trained research assistant will begin attempts to contact him or her. If, after four telephone messages have been left for the patient, there is no response, the Clinic will try to reach him or her by mail. If there is still no response, then that patient is assumed to be using tobacco in analysis. Twenty-six-week follow-up rates tend to be slightly lower than 4-week rates due to the increased time elapsed from the start of treatment. However, as shown in **Figure 11**, patients who successfully complete follow-up at 4 weeks are much more likely to be reached for 26-week follow-up.

**Figure 11**  
6 Month Follow-Up Rates among Clients that Completed 4-Week Follow-up vs. Clients that did Not, 2001-2006



Among patients who were assessed in 2006 and declared a target quit date, 284 (64%) and 228 (51%) were reached for 4 and 26-week follow-up, respectively. As shown in **Table 11**, the follow-up success rates of 2006 were below average. These lower-than-usual rates were the result of reduced funding and loss of staff at the Clinic, and we anticipate that the 2007 follow-up rates will be similar to those of previous years.

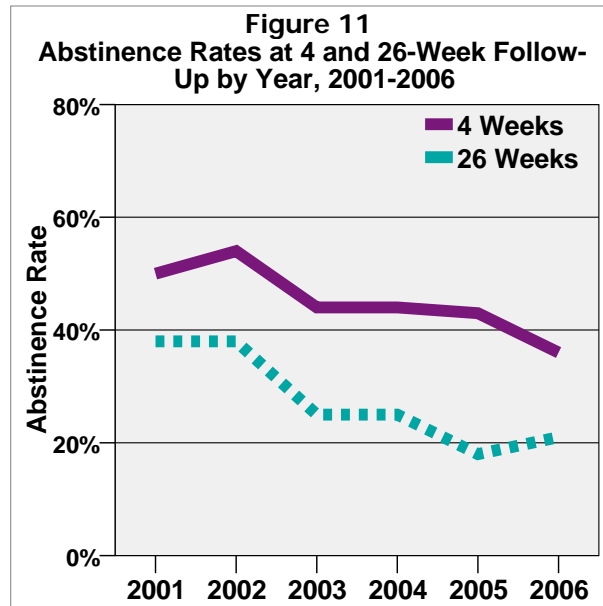
**Table 11**  
4 and 26-Week Follow-Up Rates\* by Year, 2001-2006

	2001 (N=204)	2002 (N=322)	2003 (N=512)	2004 (N=616)	2005 (N=600)	2006 (N=447)	Overall (N=2,701)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>4-Week</b>	162 (79)	276 (86)	366 (71)	473 (77)	432 (72)	284 (64)	1993 (74)
<b>26-Week</b>	152 (75)	224 (70)	318 (62)	431 (70)	289 (48)	228 (51)	1642 (61)

NOTE: Percentages are of total clients that declared a quit date

## TREATMENT OUTCOMES

The primary outcome reported by the Clinic is abstinence from tobacco at the time of follow-up, which is determined by an answer of 'No' to the question, 'Have you used tobacco in the past 7 days.' In 2006, of the 447 patients who completed assessment and declared a target quit date, 160 (36%) and 92 (21%) reported abstinence from tobacco at 4 and 26-week follow-up, respectively. The overall 4 and 26-week abstinence rates among all patients assessed from 2001 through 2006 that declared a target quit date are 44% and 25%, respectively. Quit rates for all 6 years are shown in **Figure 11**. The lower-than-average quit rates of 2006 can likely be attributed to the year's below-average follow-up rates. As previously explained, patients who cannot be reached for follow-up are assumed to be using tobacco at the time they were due for follow-up. Therefore, lower follow-up rates can lead to assuming non-abstinence for a larger proportion of patients than in previous years. In fact, when considering 4 and 26-week quit rates among only those patients who were reached for follow-up, the treatment success rates of 2006 are more similar to those of previous years.



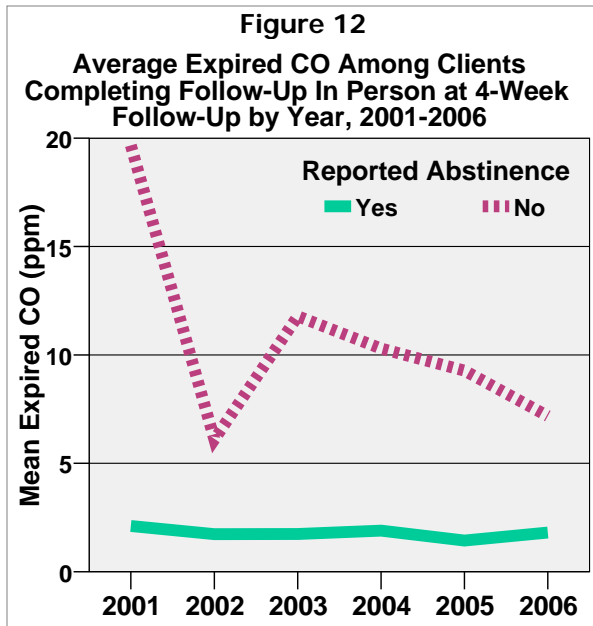
To assess the validity of the primary outcome measure as an indicator of "true" or "longer-term" abstinence, the item is followed by the question, "How many days have passed since you last used tobacco." Of the 92 patients who reported abstinence at 26-week follow-up, an average of 67 days had elapsed since their previous tobacco use, supporting the validity of our primary outcome measure.

As a secondary outcome, the Clinic also reports whether a patient's tobacco consumption is significantly less than (50% or less), less than (51% to 99%), or the same or more than at assessment. As shown in **Table 11**, the majority of patients who complete assessment and declare a quit date report at least some reduction in tobacco consumption at follow-up.

		2001	2002	2003	2004	2005	2006	Overall
		(N=204)	(N=322)	(N=512)	(N=616)	(N=600)	(N=447)	(N=2,701)
		n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
4 Weeks	Quit	103 (50)	174 (54)	223 (44)	273 (44)	258 (43)	160 (36)	1191 (44)
	Significantly less	32 (16)	42 (13)	73 (14)	78 (13)	85 (14)	57 (13)	367 (14)
	Less	9 (4)	30 (9)	32 (6)	42 (7)	27 (5)	21 (5)	161 (6)
	Same or more	60 (29)	76 (24)	184 (36)	223 (36)	230 (38)	209 (47)	982 (36)
26 Weeks	Quit	77 (38)	123 (38)	127 (25)	157 (25)	109 (18)	92 (21)	685 (25)
	Significantly less	29 (14)	40 (12)	71 (14)	85 (14)	46 (8)	46 (10)	317 (12)
	Less	21 (10)	31 (10)	57 (11)	72 (12)	49 (8)	24 (5)	254 (9)
	Same or more	77 (38)	128 (40)	257 (50)	302 (49)	396 (66)	285 (64)	1445 (53)

\*Percentages are of total clients that completed assessment and declared a target quit date;  
 \*\*Clients that could not be reached for follow-up are assumed to be using tobacco

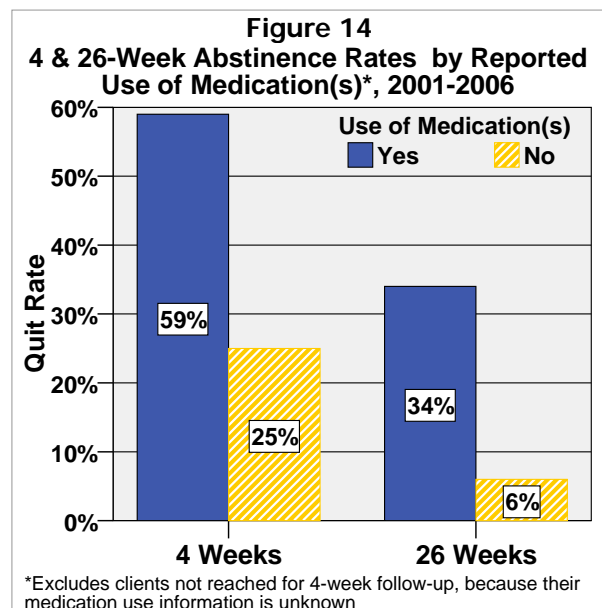
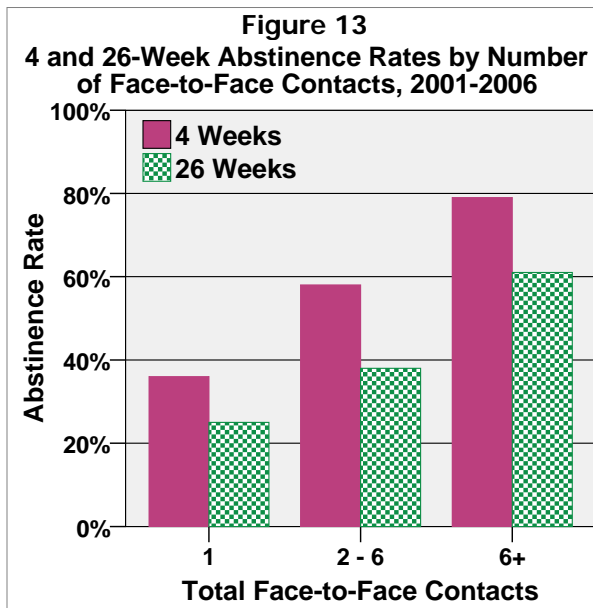
Verification of Abstinence



In situations where follow-up is completed in person, reported abstinence is confirmed by an expired Carbon Monoxide (CO) reading of less than ten parts per million (ppm). Of the 284 patients who were assessed in 2006, declared a target quit date, and completed 4-week follow-up, 160 reported abstinence from tobacco. Thirty-one of these patients were followed up in person and provided a CO reading, and 29 (94%) of the readings were less than 10 ppm and averaged 2 ppm, thus supporting their non-smoking status. Note that the average CO level at assessment among Clinic patients is about 17 ppm. The average expired CO readings among patients completing follow-up in person are depicted by year in **Figure 12**.

Treatment Factors Associated with Outcome

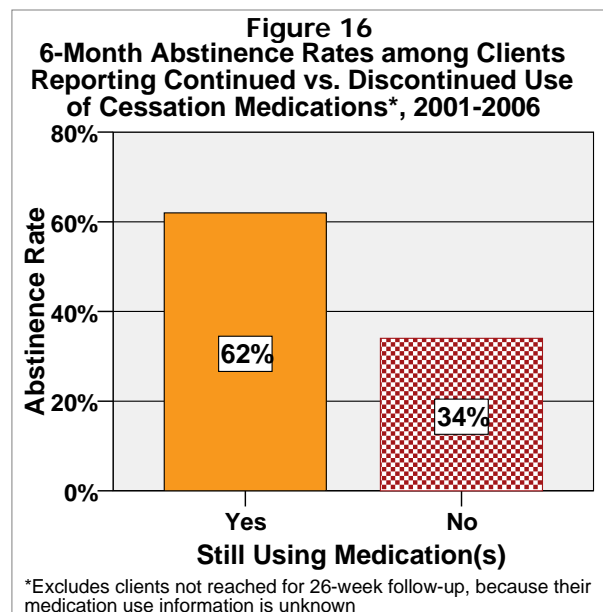
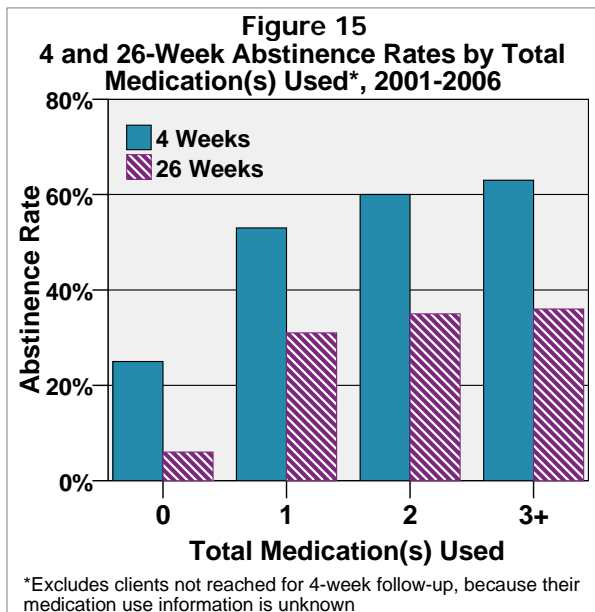
In general, increased utilization of treatment services, be it support sessions or pharmacotherapy, is associated with improved odds of achieving abstinence from tobacco after 4 and 26 weeks.



As with previous years, abstinence rates are strongly and positively associated with the number of treatment sessions attended. In other words, the more contacts a patient had with the Clinic, the better his or her chances of quitting. This relationship is illustrated in **Figure 13**; however, it is important to note that the high quit rates among patients attending more appointments may be due in part to patient self-selection into the "6+ appointments" category. For example, a patient who is finding benefit at the clinic is more likely to continue attending follow-up sessions, whereas a patient who is struggling may discontinue treatment altogether. The Clinic continues to encourage patients to make use of group

treatment (typically a 6-week Stop Smoking Group on Tuesday evenings), our relapse prevention group (typically every Thursday evening), and an appropriate combination of nicotine replacement therapy (NRT) and/or non-nicotine cessation medications. The outcomes of our 6-week group treatment are described in detail in our 2002 annual report.

As illustrated in **Figure 14**, using one or more cessation medications during a quit attempt (Determined by an answer of 'Yes' to the question, 'Have you used any medications to help you stop using tobacco on this quit attempt?') also increases a patient's chances of quitting tobacco. In fact, patients who reported use of at least one cessation medication at 4-week follow-up were more than twice as likely to be abstinent from tobacco at 4-week follow-up than patients who did not use cessation medications. This relationship continues through 6 month follow-up, where patients who report use of medication(s) are 1.6 times as likely to be abstinent than those who did not. Additionally, increased number of cessation medications is associated with improved outcome (**Figure 15**), and patients reporting continued use of at least one medication(s) at 26-week follow-up are nearly twice as likely to also report abstinence at 26-week follow-up as patients reporting that they had discontinued medication use (**Figure 16**).



### Patient Satisfaction

A patient satisfaction question is administered to each patient at follow-up. Of the 284 patients assessed in 2006 that declared a target quit date and completed 4-week follow-up, 203 (71%) answered the patient satisfaction question. As shown in **Table 12**, 97% of those patients rated the clinic's services as good or excellent, and satisfaction rates have been consistently positive since 2001.

**Table 12**  
Client's Satisfaction Ratings at 4-Week Follow-Up\* by Year, 2001-2006

	2001 (N=87)	2002 (N=199)	2003 (N=273)	2004 (N=287)	2005 (N=294)	2006 (N=203)	Total (N=1,343)
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
<b>Excellent</b>	60 (69)	165 (83)	225 (82)	224 (78)	238 (81)	153 (75)	1065 (79)
<b>Good</b>	24 (28)	25 (13)	36 (13)	51 (18)	52 (18)	45 (22)	233 (17)
<b>Satisfactory</b>	3 (3)	9 (5)	10 (4)	9 (3)	2 (1)	5 (2)	38 (3)
<b>Poor</b>	0 (0)	0 (0)	2 (1)	3 (1)	2 (1)	0 (0)	7 (1)

\*Percentages are of total clients that declared a quit date, completed 4-week follow-up, and provided a satisfaction rating



## DISCUSSION & CONCLUSION

Several detailed analyses of baseline and treatment factors have been performed on data from this clinic in order to identify predictors of treatment outcome (i.e., which factors appear to influence who succeeds in quitting smoking).

In analyses of all the patients who made a quit attempt at the clinic during the first three years, 19 baseline and treatment variables were statistically related to outcome in univariate analyses [Foulds J, et al., 2006]. When controlling for other variables related to treatment outcome, those who were unemployed, had less education, had no private health insurance, smoked within 5 minutes of waking in the morning, and woke up at night to smoke, were found less likely to be abstinent 6 months after their target quit date. However, those who used smoking cessation medications, attended more individual and group appointments, had two or more children, and were of older age (65 or over) were more likely to be abstinent from tobacco six months later. In another detailed analysis of the effects of medication use in a subset of patients in whom we had complete data on medication use, we found that the more medications patients used, the better their outcomes were at 4-week follow-up, although this relationship was less strong by 6 months [Steinberg MB, et al., 2005]. Additionally, patients who continued to use medications at 6 months had significantly higher 6-month abstinence rates than those who stopped their medications prior to the 6-month point. Another study [Han, et al., 2006] examined the characteristics and outcomes of patients who returned for repeat treatment after a relapse to tobacco use and found that these patients exhibited higher markers for tobacco dependence and were more likely to have a history of psychological treatment than patients who made only one quit attempt at the Clinic. The authors concluded that Clinicians should encourage smokers who relapse after an initial treatment episode to return for treatment, and repeat treatment should focus on addressing high nicotine dependence and potentially co-occurring mental health problems in order to improve cessation outcomes. A fourth study [Bover MT, et al., 2008] compared abstinence rates among patients who reported waking at night to smoke or use tobacco ("night-smoking") to those of non-night-smokers and found that night-smoking behavior was associated with poor treatment outcome at 26-week follow-up. These results suggest that night-smoking behavior should be part of standard tobacco dependence assessment and modified treatment regimens may be required to treat this significantly large (about 50% of our Clinic population) group of tobacco users.

As mentioned earlier, the clinic saw a larger proportion of patients from underserved populations in 2006. Given that such factors are associated with lower chances of long-term tobacco abstinence, treating more patients with these factors will naturally cause a decline in the clinic's overall quit rates. It is also worth noting that over the six years covered by this report, the annual funding for the Tobacco Dependence Program has been cut significantly. Due to these budget restrictions, the clinic is no longer able to distribute free NRT, which reduces both patient incentives to initially come to the clinic and patient compliance with respect to pharmacotherapy and follow-up session recommendations. Funding cuts have also left the Clinic with fewer resources for collecting follow-up data, and, since patients not reached for follow-up are assumed to be using tobacco, poor follow-up rates are inevitably coupled with poor abstinence rates.

In knowing that cessation rates increase with number of NRT/medications used and number of clinic appointments attended, the Clinic continues to strive to devise new and creative ways to improve treatment recruitment and compliance. For example, Clinic staff developed a 'Fax-to-Quit' referral system, where health care professionals can fax a patient referral directly to our Clinic. Also, our clinicians now are able to identify patients at the nearby Robert Wood Johnson University Hospital who are tobacco users with interest in quitting. With these new referral systems in place, our clinicians spend time each week reaching out to Fax-to-Quit and hospital-referred patients. Additionally, a new follow-up tracking system has been implemented for more efficient monitoring of follow-up data collection. With this new process there is less administrative work, and staff have more time to spend contacting patients.

Despite funding shortages, the Tobacco Dependence Clinic aims to continue to provide state-of-the-art tobacco dependence treatment to the diverse population of New Jersey smokers who require specialist services to overcome their addiction to tobacco.

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†Clinic assessment and follow-up forms are publicly available at [www.tobaccoprogram.org/questionnaires.htm](http://www.tobaccoprogram.org/questionnaires.htm)

‡The Clinic Fax-to-Quit form is publicly available at [www.tobaccoprogram.org/faxtoquit.htm](http://www.tobaccoprogram.org/faxtoquit.htm)

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If you have any questions about the content of this report, please contact the Tobacco Dependence Clinic at (732) 235-8222 or visit our website at [www.tobaccoprogram.org](http://www.tobaccoprogram.org).

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Comprehensive Tobacco Control Program

The Tobacco Dependence Program is primarily funded by New Jersey Department of Health and Senior Services as part of New Jersey's Comprehensive Tobacco Control Program. A complete list of funding sources is available at [www.tobaccoprogram.org/pdf/Funding\\_for\\_the\\_Tobacco\\_Dependence\\_Program\\_at\\_UMDNJ.pdf](http://www.tobaccoprogram.org/pdf/Funding_for_the_Tobacco_Dependence_Program_at_UMDNJ.pdf)