

**PATTERNS OF MEDICATION USE  
IN THE UNITED STATES  
2005**

**A Report from the Slone Survey**



**Slone**

**Epidemiology Center**  
*at Boston University*

## KEY FINDINGS – Adults

- In any given week, 81% of adults in the U.S. are taking at least one medication (prescription or nonprescription drug, vitamin/mineral, herbal/natural supplement); 27% take at least five.
- Women aged 65 years or older use the most drugs: 95% take at least one medication, 63% at least five, and 17% at least ten.
- Prescription drugs are taken by 50% of individuals and 10% take at least five.
- Compared to 1998/1999 when the Slone Survey began, use of multiple prescription drugs has increased.
- Use of Cox-2 inhibitors has declined more than 60% compared to 2004.
- Acetaminophen is taken by about one in five U.S. adults in a given week; it continues to be the most commonly used drug.
- Atorvastatin, the fourth most common drug overall, is the most frequently used prescription drug (6.2%); another cholesterol-lowering drug, simvastatin, ranks eleventh overall.
- Use of vitamins has decreased slightly since 2004, while use of herbals/natural supplements has risen about 20%; lutein remains the most commonly used herbal.
- Fourteen percent of all prescription and OTC drug use among adults is for hypertension

**KEY FINDINGS – Children (age <18 years)**

- In any given week, 54% of children take at least one medication; 20% take at least one prescription drug.
- Acetaminophen and ibuprofen are the most commonly used medications, followed by pseudoephedrine and dextromethorphan.
- Approximately one in five children aged 0-4 years is taking acetaminophen in a given week.
- Three prescription drugs used in the treatment of asthma, albuterol, montelukast, and fluticasone, rank in the top ten most commonly taken drugs in children.
- The proportion of drug episodes accounted for by attention deficit disorder more than doubled, to 7.3%, compared to last year.
- About one in five children is taking a vitamin preparation.
- Use of herbal/natural supplements appears to be increasing in the pediatric population; the prevalence is 5.3%, compared to 2.6% in 2004.
- Upper respiratory infection is the most frequently reported reason for medication use, accounting for 23% of drug use episodes.

In 2005, \$252 billion was spent on prescription medications in the U.S.;<sup>1</sup> substantial amounts were also spent on OTC drugs, vitamins/minerals, and herbal/natural supplements. In order to provide information based on the consumers' experience, the Slone Epidemiology Center of Boston University has conducted since 1998 an ongoing telephone survey of a random sample of the noninstitutionalized U.S. population.<sup>2,3</sup> Summary reports focusing on general patterns of medication use in the ambulatory U.S. adult and pediatric populations are updated annually and posted at this website. Here we provide results for 2005.

## **SURVEY METHODOLOGY**

### **Sampling**

The Slone Survey is conducted by random digit dialing (RDD) a simple random sample of telephone numbers covering the 48 contiguous states in the U.S. plus the District of Columbia. The sample was generated by the GENESYS system,<sup>4</sup> using a list-assisted approach. Residents of households are eligible for inclusion in the survey. Ineligible subjects include individuals without telephones; those residing in nursing homes, rehabilitation hospitals, "group homes" (e.g., halfway houses), or vacation homes (for <3 consecutive months); and individuals in prisons, military barracks, or college/university dormitories without telephones in individual rooms.

At each contacted number, one individual in the household is selected for interview by a computer-generated random number procedure. Children aged 14-17 years are interviewed only with the permission of a parent or guardian; for children under the age of 14, and subjects incapable of responding to the questions because of conditions such as Alzheimer's disease, a surrogate (parent, spouse, or caretaker) who has knowledge of the subject's medications is interviewed. Interviews are conducted in English or Spanish.

## Survey Information

Information is recorded on prescription and nonprescription drugs, vitamins/minerals, and herbal/natural supplements. The last group includes plant extracts except those marketed in regulated drugs (e.g., senna laxatives), amino acids, animal extracts, enzymes, and other unclassified agents (e.g., glucosamine).

The interviewer explains that information is being sought on use of all medications taken during the preceding seven days and asks the subject to gather the relevant bottles or packages. A list of reasons for use (e.g., fever/cough/cold, arthritis/joint pain) is then read to prompt recall of additional medication use. After the names of all reported medications have been recorded, detailed information, e.g. reason for use and route of administration, is obtained for each. For selected products, the dose and number of pills per day are also obtained.

Other information elicited includes age, sex, race, Hispanic origin, years of education, income (in ranges), and for women aged 18-50 years, pregnancy status (including due date or last menstrual period). Beginning in August 2005, a brief series of medical history questions was added to the survey.

## Coding of Medications

Medication names are coded for analysis using the Slone Drug Dictionary (<http://128.197.222.56/slone drug dictionary/index.php>). The dictionary, developed and maintained by the Slone Epidemiology Center, is a computerized linkage system composed of individual agents and multi-component products, including herbal/natural supplements, each assigned specific code numbers. All combination products are linked to their individual components. Thus, groupings of drugs that contain a particular entity (e.g., aspirin-containing products) can be automatically generated. Drugs are classified as 'prescription only' based on the product name and dose; 'prescription only' is not assigned to a drug classification in cases where it is available both as prescription and OTC.

## Participation

The present report covers data collection for the one year period January 1 through December 31, 2005; 3265 subjects were interviewed, including 2684 adults and 581 children (individuals aged <18 years). The participation rate among eligible subjects was 57%.

## Comparison with U.S. Census Data

Demographic information from the subjects interviewed in 2005 was compared to data from the 2000 U.S. Census (race, ethnicity, education, region)<sup>5</sup> and to U.S. Census projections for 2005 (age, sex).<sup>6</sup> The distribution of survey subjects according to race did not differ from that of the U.S. population (white – 78% in survey, 75% in U.S.), and the proportion living within each of four broad regions (Northeast, Midwest, South, and West) was within 1% of the census figures. Survey participants were somewhat older (median age 40 years in survey, 37 years in U.S.) and more likely to be female (57% in survey, 51% in U.S.). The survey included somewhat fewer individuals of Hispanic origin (9% vs. 12%). Survey subjects had more education (37% college graduate vs. 25%) and higher annual household incomes (66% with at least \$35,000 vs. 58%) than the U.S. population. An overrepresentation of women and persons with higher levels of education are consistent with other telephone surveys.<sup>7</sup>

## Analytical Details

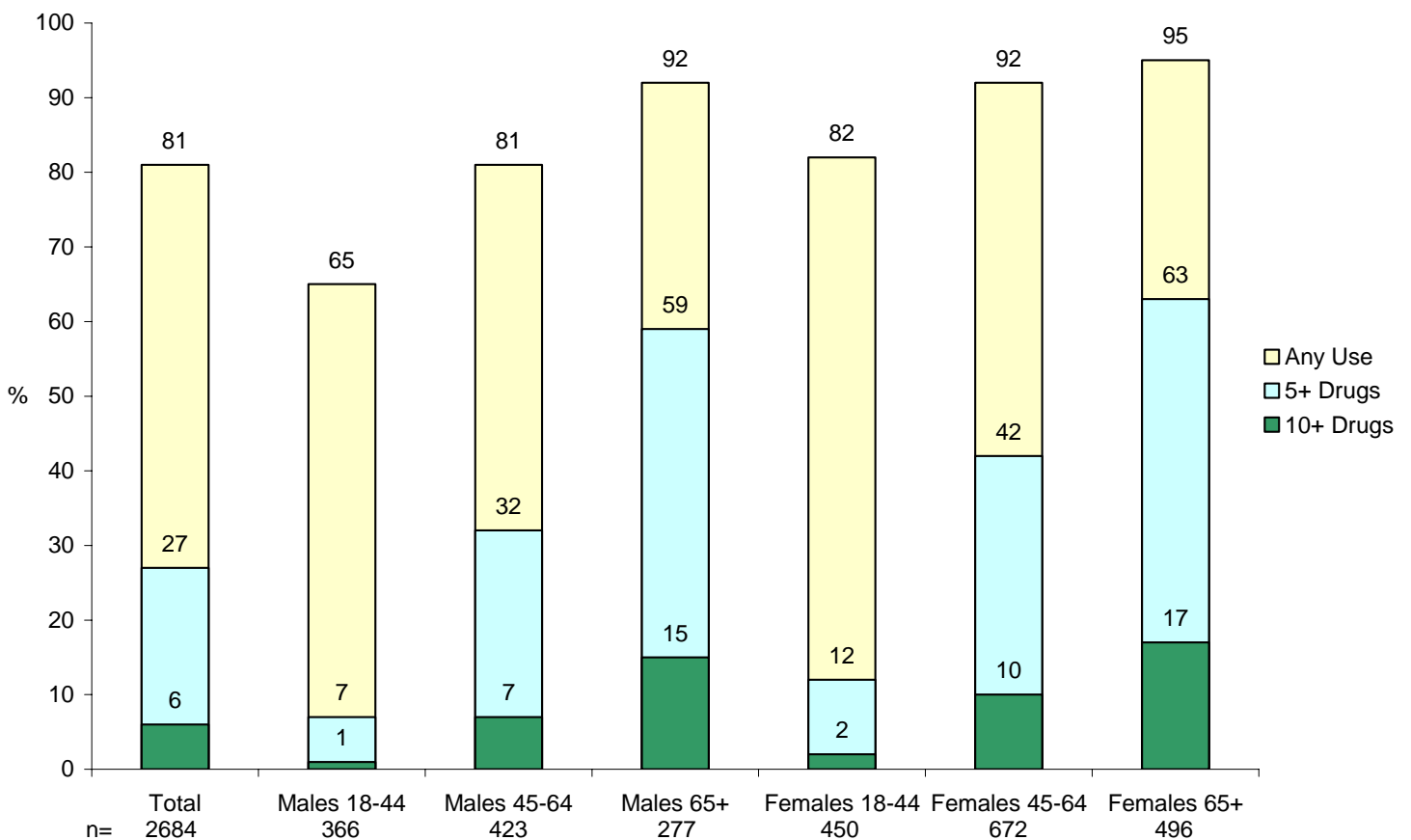
Results are given separately for the 2684 adults and 581 children. One-week prevalence is reported, i.e., any use during the one week period preceding the interview. All percentages are weighted according to household size, a factor that is inversely related to the probability of selection within each household. Overall prevalence estimates are adjusted to the age and sex distribution of the U.S. Census Projections for 2005.<sup>6</sup> As examples of the precision of the results, in the full sample of 2684 adults, for estimates of 1%, the 95% confidence limits are  $\pm 0.4\%$ ; for estimates of 5%,  $\pm 0.8\%$ ; for estimates of 10%,  $\pm 1.1\%$ ; and for estimates of 20%,  $\pm 1.5\%$ . Corresponding figures among the 581 children are  $1 \pm 0.8\%$ ,  $5 \pm 1.8\%$ ,  $10 \pm 2.4\%$ , and  $20 \pm 3.3\%$ .

## MEDICATION USE AMONG ADULTS

### Overall Use

As shown in Figure 1, 81% of the adults in the Slone Survey had taken at least one medication (prescription or OTC drug, vitamin/mineral, or herbal/natural supplement) during the preceding week. The overall prevalence of use increased with age and was greater in women than men in every age group. The highest overall prevalence was among older women: 95% took at least one medication, 63% at least five, and 17% at least ten. Although the lowest prevalence was among 18-44 year old men, fully 65% in this group had taken at least one medication in the preceding week.

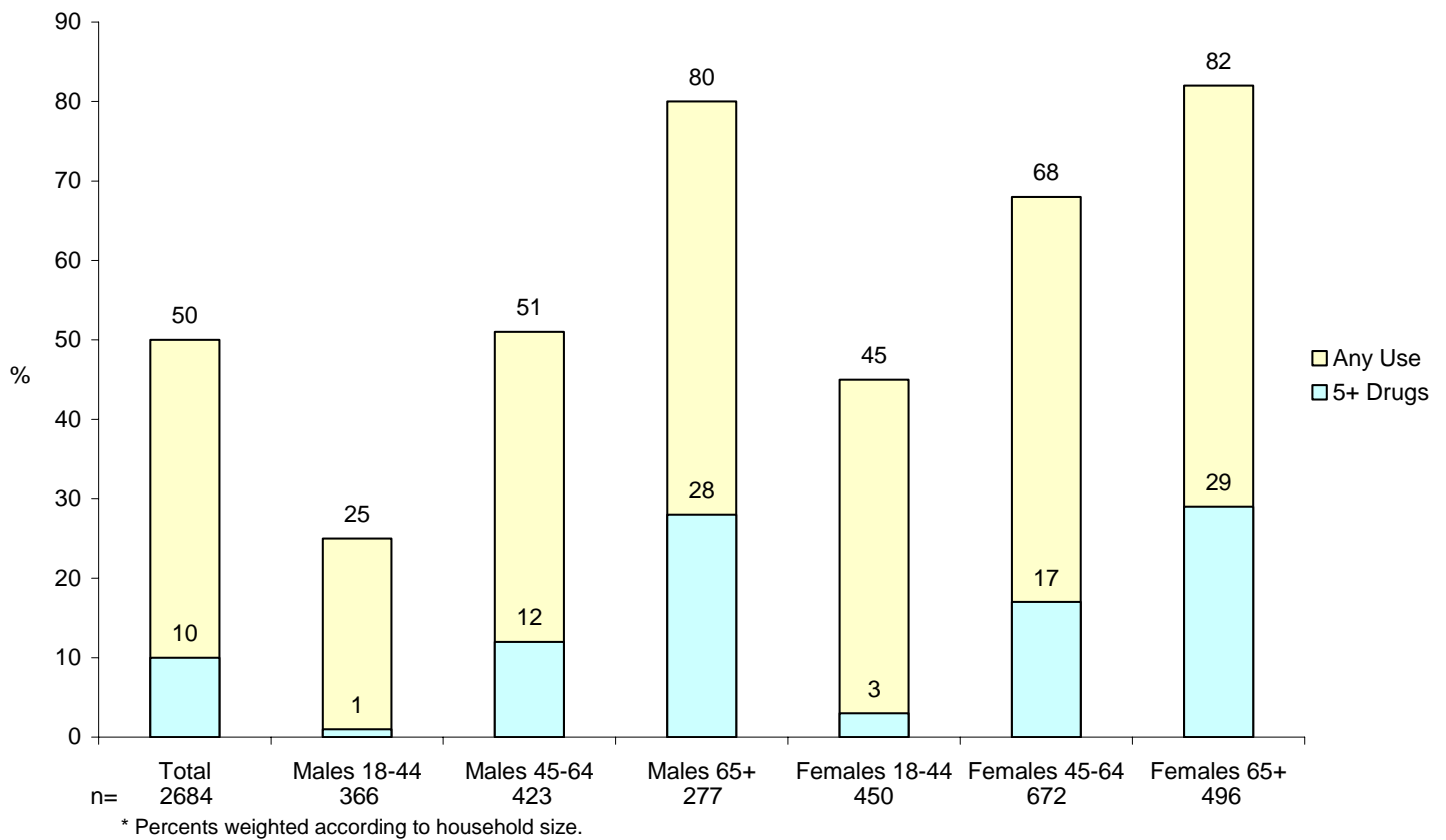
**Figure 1. Use\* of Medications During the Preceding Week Among U.S. Adults, by Sex and Age**



\* Percents weighted according to household size.

Use of drugs available only by prescription is shown in Figure 2. Half of the subjects reported taking at least one prescription drug during the previous week and 10% took five or more; use increased sharply with increasing age. Prescription drugs were used more frequently by women than men in the 18-64 age groups, but drug use was comparable among men and women aged 65 or older: over 80% used at least one and nearly 30% used five or more. While men aged 18-44 were less likely to use prescription drugs than subjects in any other age-sex stratum, one quarter were using a prescription drug.

**Figure 2. Use\* of Prescription Drugs During the Preceding Week Among U.S. Adults, by Sex and Age**





As shown in Table 1, overall use of medications has not increased since the survey's inception in 1998/1999: in both periods, 81% of adult subjects used at least one medication in the preceding seven days. Use of multiple drugs did not change materially, although the recent prevalence was slightly higher in both categories. Regarding drugs available only by prescription, overall use is relatively unchanged since 1998/1999. However, use of multiple prescription drugs has increased from 7.3% to 10% for five or more, and from 0.5% to 1.0% for ten or more.

**Table 1. Use of Medications during the preceding week according to year of interview**

	1998/1999*	2005**
Any Medication		
Total	81%	81%
≥5	25%	27%
≥10	5.2%	6.1%
Prescription Medications		
Total	49%	50%
≥5	7.3%	10%
≥10	0.5%	1.0%

\*Percents weighted according to household size and standardized to the U.S. age-sex population for 2000.

\*\*Percents weighted according to household size and standardized to the U.S. age-sex population projections for 2005.

## Use of Specific Drugs

The 30 most commonly used drug entities (not including vitamin/minerals and herbal/natural supplements) taken either in single or multiple component products are listed in Table 2. As in previous years, the three most commonly used drugs were acetaminophen (taken by 20% of the adult population), aspirin (17%), and ibuprofen (16%). Twenty-two of the top 30 drugs are available only by prescription, but five of the ten most frequently used entities are available OTC. The most frequently used prescription drugs were atorvastatin, a cholesterol-lowering drug (fourth, 6.2%); thyroid supplements (fifth); hydrochlorothiazide, a diuretic (sixth); metoprolol, a beta-blocker (ninth), and lisinopril, an ACE-inhibitor (tenth). Six of the drugs among the top 30 for 2005 were not on the list in 2004: esomeprazole, valsartan, warfarin, loratadine, clopidogrel, and sertraline. The six drugs that appeared in the top 30 list of 2004 but not 2005 included losartan, dextromethorphan, ranitidine, hydrocodone, conjugated estrogens, and celecoxib. As a class, use of Cox-2 inhibitors has declined 61%, from 4.1% in 2004 to 1.6% in 2005.

Some of the drugs had strong sex- or age-specific patterns of use. Aspirin had the highest stratum-specific prevalence; it was taken by 40% of older men and 36% of older women. Ibuprofen was used more often by younger than older subjects: the prevalence was 17% among the youngest men and 25% among the youngest women. Levothyroxine was more frequently used by women than men, and was reported by 15% of women aged  $\geq 65$  years; hydrochlorothiazide was also particularly common (14%) in this group. Other drugs used more by women than men included diphenhydramine, albuterol, sertraline, and alendronate. More older men than women took lisinopril, simvastatin, warfarin, clopidogrel, and salmeterol.

**Table 2. Thirty Most Commonly Used Prescription and Over-the-Counter Drugs Taken by U.S. Adults in 2005 According to Sex and Age**

	Males 18-44 (n=366)		Males 45-64 (n=423)		Males 65+ (n=277)		Females 18-44 (n=450)		Females 45-64 (n=672)		Females 65+ (n=496)		Total (n=2684)	
	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%**)
Acetaminophen	65	(19)	45	(13)	47	(17)	97	(23)	156	(24)	119	(25)	529	(20)
Aspirin	24	(6.7)	111	(26)	112	(40)	27	(5.3)	148	(22)	173	(36)	595	(17)
Ibuprofen	55	(17)	39	(9.8)	18	(6.9)	111	(25)	109	(16)	41	(9.5)	373	(16)
Atorvastatin	8	(1.6)	46	(11)	38	(14)	4	(0.4)	58	(9.4)	70	(14)	224	(6.2)
Levothyroxine	9	(2.4)	9	(2.0)	12	(4.8)	23	(5.1)	69	(10)	75	(15)	197	(5.6)
Hydrochlorothiaz	4	(1.5)	30	(6.0)	28	(10)	9	(1.9)	66	(9.1)	68	(14)	205	(5.3)
Pseudoephedrine	27	(6.2)	18	(4.2)	4	(1.4)	31	(6.5)	45	(6.6)	8	(1.6)	133	(5.3)
Naproxen	11	(3.2)	13	(3.0)	14	(4.1)	22	(4.9)	43	(6.6)	14	(2.5)	117	(4.3)
Metoprolol	4	(1.1)	20	(4.7)	37	(13)	5	(1.1)	33	(5.1)	61	(12)	160	(4.2)
Lisinopril	5	(1.2)	25	(5.4)	33	(15)	5	(0.7)	40	(5.5)	46	(10)	154	(4.0)
Simvastatin	3	(0.8)	29	(5.9)	35	(13)	1	(0.3)	27	(4.1)	35	(7.3)	130	(3.4)
Fluticasone	6	(2.0)	16	(3.5)	13	(5.2)	14	(2.8)	28	(3.9)	23	(4.5)	100	(3.2)
Atenolol	3	(0.5)	23	(4.5)	20	(10)	2	(0.4)	23	(3.1)	55	(11)	126	(3.1)
Amlodipine	4	(0.6)	19	(4.3)	28	(8.8)	2	(0.2)	33	(4.7)	37	(7.8)	123	(3.1)
Diphenhydramine	3	(0.7)	6	(1.3)	5	(1.8)	25	(5.4)	34	(4.8)	25	(4.3)	98	(3.1)
Albuterol	7	(1.9)	9	(1.4)	10	(3.2)	15	(3.1)	31	(4.2)	22	(3.9)	94	(3.0)
Metformin	2	(0.2)	16	(3.6)	16	(6.0)	8	(1.5)	37	(5.4)	27	(5.7)	106	(2.8)
Esomeprazole	5	(1.6)	9	(3.0)	14	(4.6)	6	(1.2)	28	(4.1)	21	(4.4)	83	(2.6)
Furosemide	1	(0.1)	8	(1.8)	28	(9.0)	2	(0.1)	21	(2.9)	45	(9.7)	105	(2.5)
Valsartan	2	(0.7)	10	(2.5)	13	(5.4)	3	(0.7)	17	(2.8)	30	(6.2)	75	(2.2)
Fexofenadine	6	(1.9)	13	(2.9)	4	(1.6)	13	(2.5)	15	(2.1)	8	(1.6)	59	(2.1)
Warfarin	3	(1.0)	6	(1.3)	26	(9.1)	0	--	11	(1.4)	36	(6.9)	82	(2.0)
Omeprazole	6	(1.6)	10	(2.7)	12	(4.8)	4	(0.7)	14	(2.1)	18	(4.0)	64	(2.0)
Salmeterol	4	(1.4)	12	(2.5)	11	(4.6)	7	(1.4)	15	(2.1)	15	(2.9)	64	(2.0)
Loratadine	2	(0.6)	11	(2.8)	5	(1.8)	14	(2.6)	20	(2.8)	7	(1.9)	59	(2.0)
Clopidogrel	1	(0.1)	11	(2.4)	26	(8.5)	0	(--)	11	(1.6)	26	(5.8)	75	(1.8)
Sertraline	2	(0.5)	7	(1.5)	5	(1.4)	7	(1.8)	19	(2.5)	18	(4.2)	58	(1.8)
Lansoprazole	1	(0.1)	8	(1.7)	7	(3.2)	4	(0.7)	27	(3.0)	16	(3.2)	63	(1.5)
Triamterene	0	(--)	6	(1.6)	7	(2.2)	2	(0.4)	18	(2.5)	26	(5.6)	59	(1.5)
Alendronate	1	(0.1)	2	(0.4)	3	(1.0)	0	(--)	23	(2.9)	38	(7.0)	67	(1.3)

\*Weighted according to household size

\*\*Weighted according to household size and adjusted to US 2005 population (ref).

### Use of Multivitamins and Herbal/Natural Supplements

Vitamin products were taken in the week before interview by 40% of the population; much of this was in the form of multivitamins (defined here as products containing at least four different vitamins), which were taken by 26% (Table 3). Use increased with age and was higher among women than men in each age stratum. Herbal/natural supplements were taken by 23% of adults and were most common among women. The 10 most frequently used entities (range, 1-9%) are also shown in Table 3; the rank order for the top eight has not changed since 2004. Lutein, a component in many mainstream multivitamin products, was taken by 9.4% overall. Lycopene, another component in multivitamin products, was the second most frequently taken herbal/natural supplement, at 7.8%. Among older men, glucosamine (8.7%) and saw palmetto (6.3%) were the next most commonly used; among older women, glucosamine (7.7%) and chondroitin (5.7%) were the next most commonly used. Overall, 30% of prescription drug users also reported use of one or more herbal/natural supplements.

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Table .3. Vitamins and Herbal/Natural Supplements Used by U.S. Adults in 2005 According to Sex and Age

	Males 18-44 (n=366)		Males 45-64 (n=423)		Males 65+ (n=277)		Females 18-44 (n=450)		Females 45-64 (n=672)		Females 65+ (n=496)		Total (n=2684)	
	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)**
<b>Vitamins</b>	<b>98</b>	<b>(24)</b>	<b>174</b>	<b>(41)</b>	<b>141</b>	<b>(51)</b>	<b>164</b>	<b>(35)</b>	<b>368</b>	<b>(54)</b>	<b>326</b>	<b>(63)</b>	<b>1271</b>	<b>(40)</b>
Multivitamins	72	(18)	120	(28)	83	(30)	115	(25)	236	(35)	182	(35)	808	(26)
<b>Herbal/nat. supp</b>	<b>60</b>	<b>(16)</b>	<b>113</b>	<b>(24)</b>	<b>78</b>	<b>(29)</b>	<b>85</b>	<b>(20)</b>	<b>208</b>	<b>(32)</b>	<b>169</b>	<b>(33)</b>	<b>713</b>	<b>(23)</b>
Lutein	22	(4.8)	44	(9.2)	47	(17)	23	(5.2)	89	(13)	102	(21)	327	(9.4)
Lycopene	25	(5.5)	44	(9.8)	31	(12)	16	(3.7)	68	(9.6)	78	(16)	262	(7.8)
Glucosamine	7	(2.5)	31	(6.1)	24	(8.7)	5	(1.0)	38	(5.4)	38	(7.7)	143	(4.0)
Garlic	9	(2.6)	9	(2.3)	7	(2.6)	7	(2.0)	25	(4.1)	13	(2.6)	70	(2.6)
Chondroitin	4	(1.3)	22	(4.3)	13	(4.0)	3	(0.7)	26	(3.5)	28	(5.7)	96	(2.5)
Ginkgo biloba	5	(1.4)	9	(2.3)	7	(2.4)	7	(1.5)	8	(1.2)	11	(2.1)	47	(1.6)
Co-enzyme Q	2	(0.5)	6	(1.1)	10	(3.8)	6	(1.3)	14	(2.1)	13	(2.7)	51	(1.5)
Saw palmetto	7	(1.6)	16	(3.6)	16	(6.3)	0	(--)	0	(--)	0	(--)	39	(1.4)
Flaxseed oil	2	(0.6)	6	(1.4)	5	(1.8)	6	(0.9)	18	(2.4)	7	(1.2)	44	(1.3)
<i>Thea sinensis</i>	3	(0.8)	4	(1.0)	4	(1.6)	7	(1.5)	11	(1.6)	5	(0.8)	34	(1.1)

\*Weighted according to household size.

\*\*\*Weighted according to household size and adjusted to 2005 U.S. population projections.

## Reasons for Use

Table 4 shows the ten most commonly reported reasons for use of prescription and OTC drugs; the listed reasons accounted for 60% of all medication use. Hypertension was the most common reason, representing 14% of reported episodes of drug use. Other frequently mentioned reasons, each accounting for more than 5% of drug use episodes, were “heart”, pain, headache/migraine, and “cholesterol”. All of the reasons in the top 10 for 2005 were also in the top ten for 2004. However, the rank order for “heart” increased from fourth in 2004 to second in 2005; the proportion of total reasons for use accounted for by anticoagulation also increased. This may be at least partially a reflection of the older median age among 2005 participants.

**Table 4. Ten Most Commonly Reported Reasons for Medication Use During the Week Before Interview by U.S. Adults in 2005\***

Reason	No.	(%)	Rank in 2004
Hypertension	1070	(14)	1
Heart	579	(7.4)	4
Pain	551	(7.1)	3
Headache/Migraine	515	(6.7)	2
Cholesterol	487	(6.3)	5
Anticoagulation	333	(4.3)	9
Arthritis/Joint Problems	325	(4.2)	6
Diabetes	312	(4.0)	7
Allergy	292	(3.8)	8
Depression	223	(2.9)	10

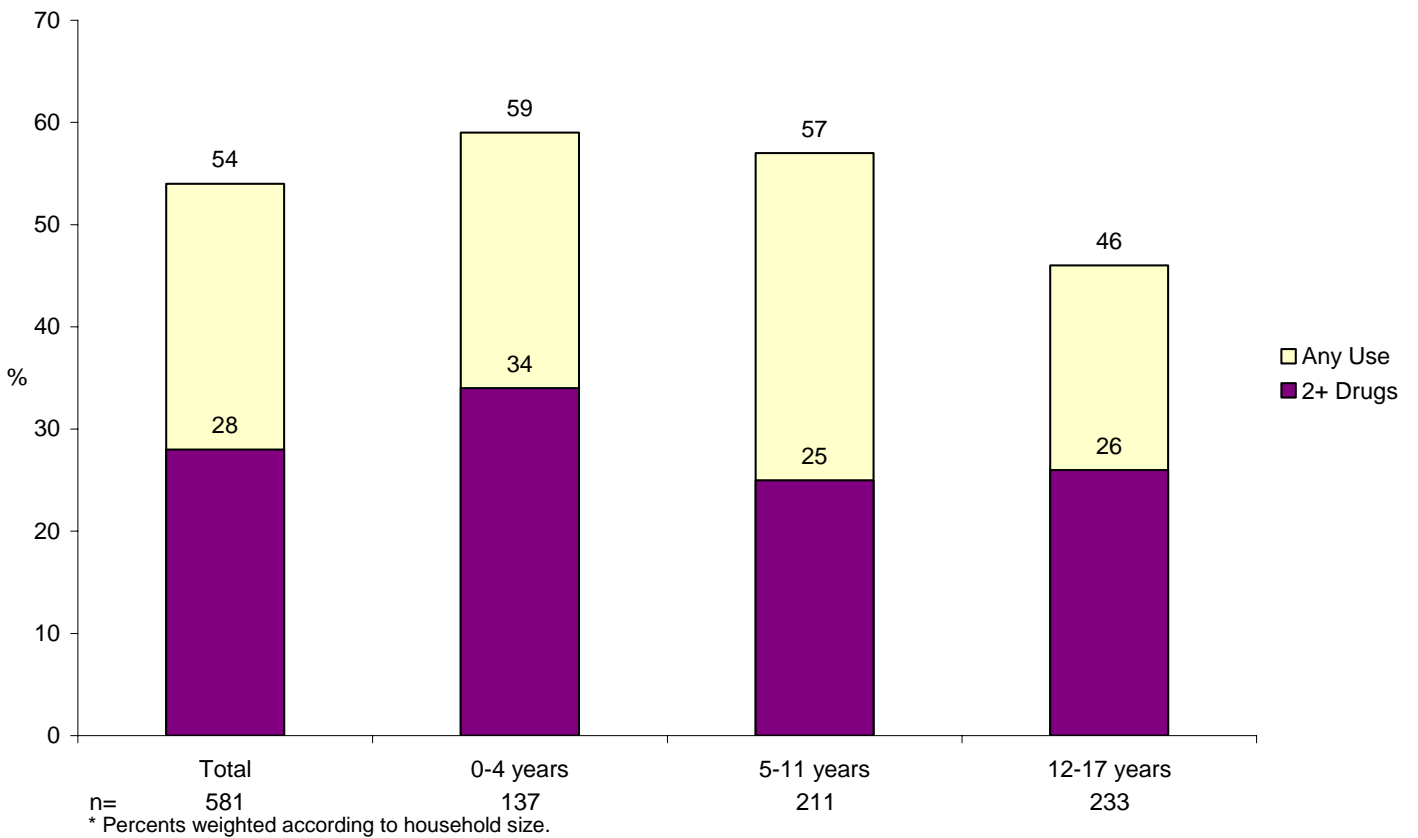
\*Denominator is 7776 episodes of drug use.

**MEDICATION USE AMONG CHILDREN**

**Overall Use**

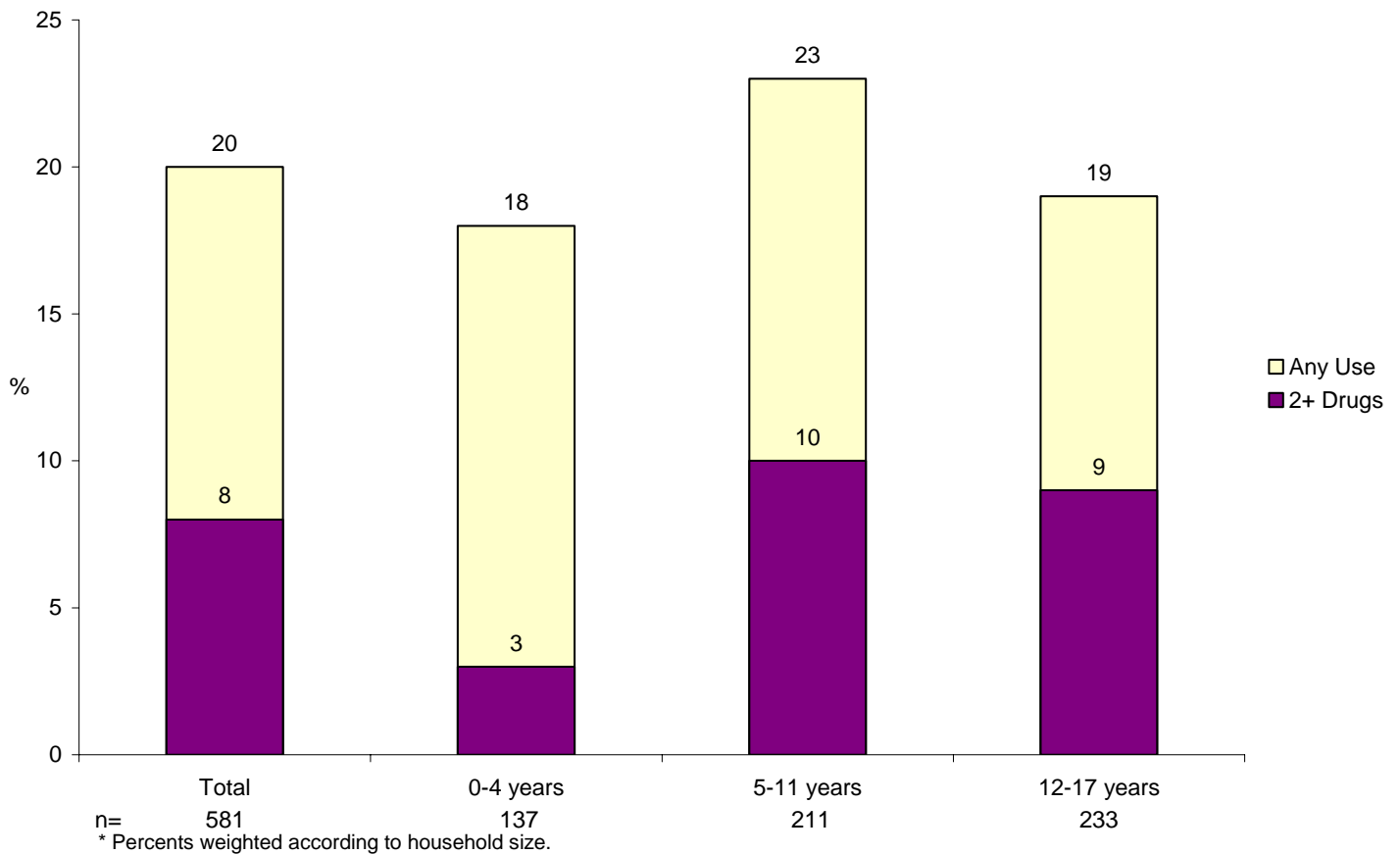
As shown in Figure 3, 54% of children had taken at least one medication (prescription or OTC drug, vitamin/mineral, or herbal/natural supplement) during the preceding week, and 28% had taken two or more drugs. The overall prevalence of use for children aged 0-4 and 5-11 years (59% and 57%, respectively) did not differ appreciably; the prevalence was lower among children 12-17 years old.

**Figure 3. Use\* of Medications During the Preceding Week Among U.S. Children (<18 years), by Age**



Use of drugs available only by prescription is shown for children in Figure 4: 20% had taken at least one prescription drug during the previous week and 8% took at least two. Use of any prescription drug was somewhat more common in children aged 5-11 than in the other age groups. Nine to ten percent of children older than four years were taking two or more prescription drugs, compared to only 3% of younger children.

**Figure 4. Use of Prescription Drugs During the Preceding Week Among U.S. Children, by Age**



**Use of Specific Drugs, Multivitamins, and Herbal/Natural Supplements**

The ten most commonly used prescription and OTC drug entities taken by children are listed in Table 5. Six of the products were available OTC, including the top four: acetaminophen (9.7%), ibuprofen (9.6%), pseudoephedrine (5.7%), and dextromethorphan (4.5%). Three of the four most



frequently used prescription-only drugs are used in the treatment of asthma: albuterol (fifth), montelukast (eighth), and fluticasone (tenth). Two antihistamines, diphenhydramine (seventh) and loratadine (ninth) and an antibiotic, amoxicillin (sixth), were the remaining drugs on the list. The highest prevalence for ibuprofen (12%) and fluticasone (2.5%) was among children aged 12-17 years. The highest prevalence for acetaminophen, pseudoephedrine, dextromethorphan, amoxicillin, and diphenhydramine was among the youngest children.

**Table 5. Ten Most Commonly Used Prescription and Over-the-Counter Drugs Taken by U.S. Children in 2005, by Age**

Medication	0-4yrs (n=137)		5-11yrs (n=211)		12-17yrs (n=233)		Total (n=581)	
	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)**
Acetaminophen	24	(18)	14	(6.6)	16	(6.4)	54	(9.7)
Ibuprofen	13	(8.9)	16	(7.6)	27	(12)	56	(9.6)
Pseudoephedrine	16	(12)	11	(5.4)	5	(1.9)	32	(5.7)
Dextromethorphan	14	(11)	5	(2.6)	4	(2.1)	23	(4.5)
Albuterol	0	(2.7)	9	(5.1)	7	(2.8)	16	(3.0)
Amoxicillin	7	(4.7)	6	(2.5)	4	(2.0)	17	(2.9)
Diphenhydramine	4	(3.3)	5	(2.0)	5	(2.5)	14	(2.6)
Montelukast	3	(2.4)	5	(2.7)	4	(1.5)	12	(2.3)
Loratadine	0	(0.4)	7	(2.8)	7	(2.6)	14	(2.0)
Fluticasone	1	(0.9)	4	(1.9)	5	(2.5)	10	(1.8)

\*Weighted according to household size.

\*\*Weighted according to household size and adjusted to 2005 U.S. population projections.

Vitamin products were taken in the week before interview by 22% of children overall (Table 6); the majority of the use was in the form of multivitamins, for which the prevalence was highest in the youngest children (24%). Although herbal/natural supplements are not commonly used by children,

the overall prevalence, 5.3%, represents a doubling of use since 2004. The seven most commonly used are listed; the overall prevalence for each of these entities ranged between 0.4% and 1.0%.

**Table 6. Vitamins and Herbal/Natural Supplements Taken by U.S. Children in 2005, by Age**

	0-4yrs (n=137)		5-11yrs (n=211)		12-17yrs (n=233)		Total (n=581)	
	No.	(%)*	No.	(%)*	No.	(%)*	No.	(%)**
<b>Vitamins</b>	<b>40</b>	<b>(29)</b>	<b>52</b>	<b>(24)</b>	<b>34</b>	<b>(15)</b>	<b>126</b>	<b>(22)</b>
Multivitamins	32	(24)	42	(20)	30	(13)	104	(18)
<b>Herbal/natural supplement</b>	<b>6</b>	<b>(4.5)</b>	<b>6</b>	<b>(2.7)</b>	<b>12</b>	<b>(5.5)</b>	<b>29</b>	<b>(5.3)</b>
Echinacea	2	(1.7)	0	(--)	2	(1.2)	4	(1.0)
Thea sinensis	0	(--)	1	(0.3)	3	(1.3)	4	(0.7)
Coenzyme Q	0	(--)	1	(0.3)	3	(1.5)	4	(0.6)
Ananas comosus	1	(0.7)	1	(0.3)	1	(0.4)	3	(0.5)
Vitis vinifera	1	(0.7)	2	(0.8)	0	(--)	3	(0.4)
Melatonin	0	(--)	1	(0.3)	2	(0.7)	3	(0.4)
Lutein	0	(--)	1	(0.7)	1	(0.4)	2	(0.4)

\*Weighted according to household size.

\*\*Weighted according to household size and adjusted to 2005 U.S. population projections - 2005.

### Reasons for Use

Table 7 provides the 10 most commonly reported reasons for use of prescription and OTC drugs; combined, these reasons accounted for 90% of all episodes of drug use in children. The most common reason was upper respiratory infection (23%), followed by allergy (14%) and headache/migraine (10%). The proportion of drug use episodes accounted for by attention deficit disorder more than doubled since 2004, from 3.5% to 7.3%; increases were also observed for

asthma, skin conditions, fever, otitis/earache, and gastrointestinal symptoms. Use of drugs for depression/anxiety declined from 2.8% to 1.5% (data not shown).

**Table 7. Ten Most Commonly Reported Reasons for Medication Use During the Week Before Interview by U.S. Children in 2005\***

Reason	No.	(%)	Rank Order in 2004
Upper Respiratory Infection	93	(23)	1
Allergy	57	(14)	2
Headache/Migraine	43	(10)	3
Asthma	40	(9.7)	5
Attention Deficit Disorder	30	(7.3)	8
Skin Conditions	28	(6.8)	6
Fever	24	(5.8)	7
Pain	19	(4.6)	4
Otitis/Earache	19	(4.6)	10
Teeth/Dental	13	(3.1)	11

\*Denominator is 413 episodes of drug use.

## THE FINDINGS IN CONTEXT

These recent findings from a population-based telephone survey document the continuing high prevalence of medication use in the U.S. population. In 2005, four out of five adults and more than half of children took at least one medication in the preceding week. Use of prescription drugs was also widespread: 50% of adults and 20% of children took at least one. Women aged 65 years or older were the heaviest consumers of medications: 95% took at least one, 63% took five or more, and 17% ten or more. Use of prescription drugs was similarly high in men and women in the oldest age group, with estimates of 80-82% and 28-29%, respectively, for at least one and at least five drugs.

OTC analgesics continued to be the most frequently used individual “drug” products (excluding vitamin/minerals or herbals/natural supplements) in adult subjects, taken by 16-20%. Prescription drugs predominated among the remaining commonly used compounds. The most common prescription drugs among older women were a thyroid supplement, a cholesterol-lowering drug, and a diuretic; among older men, they were two cholesterol-lowering drugs, an ACE-inhibitor, and a beta blocker. Among OTC agents, decongestants, antihistamines, and anti-ulcer agents followed analgesics in frequency.

Since the inception of the Slone Survey in 1998, the overall prevalence of medication use and the use of prescription drugs in adults are largely unchanged. However, use of multiple drugs has increased somewhat, particularly use of multiple prescription drugs. Some drugs have waned in popularity, and Cox-2 inhibitors deserve special mention because of the considerable controversy surrounding these agents in 2004. The Slone Survey Report of 2004 noted a decline in use of these drugs compared to the previous years, but celecoxib was still among the 30 most commonly used drugs by adults. For 2005, however, the prevalence of Cox-2 inhibitors has decreased even further, to 1.6%, a 61% drop.

Forty percent of the adult population took a vitamin product, mostly multivitamins. Herbal/natural supplements are also widely used: 23% of the survey respondents had taken at least one product containing an herbal component in the preceding week, an increase over the prevalence of 19% in 2004. The most common individual herbal/natural supplements, lutein and lycopene, were taken by 9.4% and 7.8%, respectively, of the adult population. These substances have been added to multivitamins in recent years, representing an increasing source of exposure to herbals and one that may be unintentional or unrecognized on the part of the consumer.<sup>10</sup>

Among children, the four individual drugs with the highest prevalence of use were an OTC analgesic (acetaminophen), an NSAID (ibuprofen), and cough/cold preparations (dextromethorphan and pseudoephedrine). Ibuprofen use was particularly common among children aged 12-17 years and acetaminophen, dextromethorphan, and pseudoephedrine among children aged 0-4 years. Multivitamins were taken by 22% of children; the prevalence was highest in those aged less than five

years. Herbal/natural supplement use was uncommon in the children (5.3%), but has increased since 2004. The proportion of drug episodes accounted for by attention deficit disorder more than doubled, to 7.3%, compared to last year.

## **PERSPECTIVE ON THE SLONE SURVEY**

The Slone Survey provides comprehensive population-based information on use of medications, including herbal/natural supplements, in the U.S. The regional and racial distributions of the Slone Survey population are similar to the U.S. population. Differences from U.S. Census data include a deficit of male subjects and a higher median age in the Slone Survey. To account for these differences, the overall prevalence estimates were adjusted to the age-sex distribution of the U.S. population. The largest difference is a deficit of survey subjects from lower socioeconomic levels. Both the latter underrepresentation and the excess of female participants are typical of RDD surveys.<sup>10</sup>

Selection bias is a possibility in any survey. Although the Slone Survey participation rate of 57% is high for RDD studies, participants may differ from nonparticipants with regard to medication use. Another potential source of error, differential reporting of the use of specific products, was minimized: all interviewers were rigorously trained to conduct the interviews in a consistent manner, the exposure interval of interest was brief and recent, and subjects were asked to confirm the names of as many medications as possible from containers.

On balance, we judge that the Slone Survey data provide an accurate overall picture of medication use that can be extrapolated to the U.S. population.

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