

# SURVEY OF ASTHMA AMONG SCHOOL STUDENTS 2002-2003 School Year, Southeastern Connecticut

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## *SUMMARY*

This survey was carried out to determine the prevalence of asthma, and details of medical and environmental care, among students in the Asthma Shoreline Action Partnership (ASAP) region of southeastern Connecticut. School nurses in eight school districts, plus two regional schools and seven private schools compiled data for the 2002-03 school year. All students enrolled in 62 schools are included in the survey, for a total student population of 25,385.

The prevalence of asthma in school records within the ASAP region is 9.8%, which is approximately 1.5% higher than expected from national figures and trends. Asthma prevalence is highest among middle school students, and several middle schools report prevalence in the range of 14-19%. Participation of students or schools is recorded for asthma intervention programs, including: Putting On Airs, Open Airways, Individual Health Care emergency plan, and Asthma Action Plan. Some schools are implementing the Tools For Schools program of the Environmental Protection Agency. The impact of these and other intervention programs will be tracked as multi-year data become available in future.

## *DISCUSSION*

The number of asthmatic students recorded in school nursing records within the ASAP region is 2,492, among a total student population of 25,385, representing an asthma prevalence of 9.8% (Table 1). As far as is known, the only children not included in the survey are those who are home-schooled or enrolled in very small, private institutions. In some school districts, the records include asthmatic children whose diagnosis was provided by a source other than a physician (e.g., parent or guardian), accounting for about 14% of all asthmatic students. If these cases are excluded from the count, the

prevalence is 8.4%. Either of these prevalence levels is higher than national figures published on the National Center for Environmental Health web site [1]. According to this source, the prevalence of asthma among children and adolescents increased from 3.2% in 1980 to 6.2% in 1996, an increase of 0.16% per year. If this increase continued from 1996 to 2003, the expected prevalence in 2003 would be 7.3%. These figures are in agreement with other government sources [2].

Asthma prevalence is highest among middle school students (Table 2). When tabulated by grade, prevalence of all asthma (regardless of source of diagnosis) increases from 8-10% in elementary, to 11-13% in middle school, and decreases to 7-10% in high school (Table 3).

Review of ASAP's data reveals that asthma severity is likely to be not recorded in school records (Table 4). Participation in asthma-related programs tends to be low (Table 5). Only 10.6% of students have Asthma Action Plans at school, and 31.2% have Individual Health Care emergency plans (Table 5). To date, programs like Putting on AIRS and Open Airways have reached only a small fraction of asthmatic students, and large differences exist among school districts.

*(Technical note: for survey questions about Parent Questionnaires, Putting On AIRS, and Open Airways, an affirmative response to "returned" or "participated" was taken to imply an affirmative to "issued" or "referred", regardless of the answer given.)*

The three school districts within the ASAP region with highest prevalence (at least 9.5%) of asthma (excluding diagnosis by non-physician) are New London, Groton, and Ledyard (Table 1). Impact in individual schools within school districts across the ASAP region is provided in Tables 6 and 7. In some schools, prevalence reaches 15-19% of the student body.

Information for this report was compiled by school nurses, under direction of ASAP, in collaboration with regional public health and nursing authorities. Questionnaires were developed by ASAP and completed by school nurses under full compliance with HIPAA confidentiality regulations. Data were entered into a Microsoft Access® database, extracted into Microsoft Excel® spreadsheets, analyzed using Statistica® (StatSoft, Tulsa OK), and presented using Microsoft Word®.

## REFERENCES

1. <http://www.cdc.gov/nceh/airpollution/asthma/children.htm>
2. U.S. Department of Health & Human Services, Center for Disease Control and Prevention, National Center for Health Statistics: "Summary Health Statistics for U.S. Children: National Health Interview Survey, 2002", [http://www.cdc.gov/nchs/data/series/sr\\_10/sr10\\_221.pdf](http://www.cdc.gov/nchs/data/series/sr_10/sr10_221.pdf)

Table 1. Student counts and asthma prevalence by School District

District	All Students	All Asthma		Exclude Non-Phys Asthma	
		Count	Percent*	Count	Percent*
East Lyme	3273	239	7.3%	195	6.0%
Groton	5537	642	11.6%	532	9.6%
Ledyard	3110	338	10.9%	297	9.5%
Lyme Old Lyme	1596	115	7.2%	102	6.4%
New London	3154	324	10.3%	320	10.1%
North Stonington	871	56	6.4%	42	4.8%
Private	1530	118	7.7%	107	7.0%
Regional	846	80	9.5%	70	8.3%
Stonington	2424	280	11.6%	218	9.0%
Waterford	3044	300	9.9%	260	8.5%
<b>TOTALS</b>	<b>25385</b>	<b>2492</b>	<b>9.8%</b>	<b>2143</b>	<b>8.4%</b>

\* Students with asthma, as a percentage of all students

Table 2. Asthma prevalence by School Level

School Level	All	Exclude Non-Phy
Elementary	9.1%	7.4%
Middle School	11.7%	10.1%
High School	9.3%	8.5%
Private	6.3%	5.6%
Regional	12.1%	10.8%

Table 3. Prevalence of All Asthma, School District × Grade Level

DISTRICT	GRADE						
	Pre-K	K	1	2	3	4	5
East Lyme	10.0%	8.5%	4.6%	6.3%	11.7%	10.6%	8.7%
Groton	8.6%	9.5%	11.7%	9.4%	11.9%	12.4%	11.7%
Ledyard	0.0%	6.9%	5.9%	8.8%	10.4%	12.5%	8.8%
Lyme Old Lyme	1.9%	3.0%	7.4%	8.0%	9.3%	10.5%	12.1%
New London	2.7%	15.4%	7.4%	6.0%	11.1%	10.1%	10.5%
North Stonington		6.6%	4.5%	5.7%	7.8%	12.1%	6.7%
Private	1.2%	6.3%	6.3%	7.9%	2.9%	4.8%	7.3%
Regional							
Stonington	7.5%	4.7%	9.0%	9.0%	11.5%	9.9%	12.8%
Waterford		9.8%	7.5%	7.3%	8.7%	6.8%	13.1%
TOTALS	5.6%	8.7%	7.9%	7.9%	10.2%	10.1%	10.7%

DISTRICT	GRADE							Total
	6	7	8	9	10	11	12	
East Lyme	5.1%	5.1%	5.9%	10.4%	9.2%	5.0%	3.1%	7.3%
Groton	12.4%	14.4%	13.9%	11.7%	11.0%	9.7%	12.0%	11.6%
Ledyard	12.3%	15.9%	11.5%	11.8%	13.7%	11.2%	10.6%	10.9%
Lyme Old Lyme	7.0%	6.3%	6.5%	6.3%	8.8%	4.6%	5.1%	7.2%
New London	12.0%	17.1%	14.7%	11.4%	4.2%	5.9%	3.2%	10.3%
North Stonington	5.8%	7.8%	9.3%	5.5%	4.1%	4.1%	3.6%	6.4%
Private	20.2%	14.2%	20.2%	6.0%	3.8%	0.0%	0.0%	7.7%
Regional	0.0%	0.0%	0.0%	12.4%	11.8%	12.6%	6.1%	9.5%
Stonington	13.8%	20.4%	14.9%	17.0%	8.7%	9.7%	7.7%	11.6%
Waterford	10.9%	12.3%	12.9%	11.8%	8.3%	10.8%	6.8%	9.9%
TOTALS	10.9%	12.9%	12.2%	11.3%	9.6%	8.3%	7.0%	9.8%

Table 4. Asthma Severity by District (reported as percent of all asthmatic children)

District	Asthma Severity/Characteristics								
	Unknown	Reactive	Intermittent	Moderate	Persistent	Severe	Allergy	Cough	Bronchial
East Lyme	83.3%	5.4%	8.8%	1.7%	0.4%	0.4%	0.0%	0.0%	0.0%
Groton	76.8%	7.8%	12.6%	1.9%	0.9%	0.0%	0.2%	0.0%	0.0%
Ledyard	82.2%	3.0%	11.5%	2.7%	0.3%	0.3%	0.0%	0.0%	0.0%
Lyme Old Lyme	80.0%	2.6%	9.6%	3.5%	1.7%	0.0%	0.9%	0.9%	0.9%
New London	77.5%	4.0%	12.7%	4.9%	0.3%	0.6%	0.0%	0.0%	0.0%
North Stonington	92.9%	5.4%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Private	77.1%	1.7%	16.9%	3.4%	0.0%	0.8%	0.0%	0.0%	0.0%
Regional	81.3%	6.3%	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Stonington	93.9%	0.7%	3.2%	0.4%	0.7%	0.0%	0.0%	0.0%	1.1%
Waterford	85.3%	4.0%	8.3%	1.7%	0.7%	0.0%	0.0%	0.0%	0.0%
All Districts	81.9%	4.5%	10.4%	2.2%	0.6%	0.2%	0.1%	0.0%	0.2%

Table 5. Status of Asthma-Related Programs by District (reported as percent of all asthmatic children)

District	Exercise Induced Asthma	Parent Questionnaire		Putting On AIRS		Open Airways		Self-Med Assess. Complete	Asthma Meds at School	IHC Emergency Plan	Asthma Action Plan	Asthma Diag. by Non-Phys
		Issued	Returned	Referral	Participate	Referral	Participate					
East Lyme	15.9%	0.4%	0.0%	14.6%	0.4%	0.0%	0.0%	6.3%	38.1%	8.8%	5.4%	18.4%
Groton	20.6%	16.0%	9.5%	0.0%	0.0%	6.1%	4.5%	13.2%	43.9%	32.1%	13.1%	17.1%
Ledyard	20.1%	10.7%	5.9%	0.9%	0.6%	10.7%	8.3%	7.4%	38.5%	13.9%	12.7%	12.1%
Lyme Old Lyme	14.8%	0.9%	0.0%	0.9%	0.9%	33.0%	6.1%	19.1%	66.1%	78.3%	25.2%	11.3%
New London	9.6%	24.4%	2.8%	4.3%	0.9%	16.4%	0.9%	2.2%	42.6%	5.6%	2.8%	1.2%
North Stonington	21.4%	46.4%	5.4%	0.0%	0.0%	0.0%	0.0%	51.8%	80.4%	69.6%	10.7%	25.0%
Private	25.4%	29.7%	3.4%	7.6%	0.8%	1.7%	0.0%	7.6%	43.2%	58.5%	26.3%	9.3%
Regional	16.3%	85.0%	10.0%	0.0%	0.0%	0.0%	0.0%	21.3%	20.0%	21.3%	11.3%	12.5%
Stonington	28.6%	28.2%	12.9%	0.0%	0.0%	0.7%	0.0%	1.8%	53.2%	76.4%	3.6%	22.1%
Waterford	17.3%	6.7%	2.7%	7.7%	0.7%	0.0%	0.0%	14.0%	42.3%	19.0%	9.7%	13.3%
All Districts	19.0%	18.0%	6.0%	3.4%	0.4%	6.8%	2.7%	10.3%	44.3%	31.2%	10.6%	14.0%

Table 6. Prevalence of Asthma: Individual Schools within Districts

District	Level	School	Total Students	All Asthma		Asthma Excluding Non-Phys Diagnosis	
				Count	Percent	Count	Percent
East Lyme	ES	Flanders	447	36	8.1%	28	6.3%
East Lyme	ES	Lillie B Haynes	321	35	10.9%	25	7.8%
East Lyme	ES	Niantic	308	21	6.8%	21	6.8%
East Lyme	MS	East Lyme MS	995	60	6.0%	51	5.1%
East Lyme	HS	East Lyme HS	1202	87	7.2%	70	5.8%
Groton	ES	Pleasant Valley	243	23	9.5%	17	7.0%
Groton	ES	Colonel Ledyard	155	9	5.8%	3	1.9%
Groton	ES	Charles Barnum	392	47	12.0%	34	8.7%
Groton	ES	Mary Morrisson	241	33	13.7%	33	13.7%
Groton	ES	SB Butler	392	58	14.8%	47	12.0%
Groton	ES	Eastern Point	413	52	12.6%	30	7.3%
Groton	ES	Groton Heights	121	12	9.9%	8	6.6%
Groton	ES	Claude Chester	363	35	9.6%	26	7.2%
Groton	ES	William Seely	215	26	12.1%	12	5.6%
Groton	ES	Noank	378	23	6.1%	23	6.1%
Groton	MS	Cutler MS	472	53	11.2%	49	10.4%
Groton	MS	Fitch MS	505	62	12.3%	58	11.5%
Groton	MS	West Side MS	304	58	19.1%	58	19.1%
Groton	HS	Fitch HS	1343	152	11.3%	135	10.1%
Ledyard	ES	Ledyard Center	471	53	11.3%	49	10.4%
Ledyard	ES	Juliet Long	402	42	10.4%	34	8.5%
Ledyard	ES	Gallup Hill	348	21	6.0%	14	4.0%
Ledyard	ES	Gales Ferry	285	22	7.7%	14	4.9%
Ledyard	MS	Ledyard MS	489	67	13.7%	61	12.5%
Ledyard	HS	Ledyard HS	1115	133	11.9%	125	11.2%
Lyme Old Lyme	ES	Lyme Consolidated	184	12	6.5%	10	5.4%
Lyme Old Lyme	ES	Center	265	34	12.8%	34	12.8%
Lyme Old Lyme	ES	Mile Creek	294	15	5.1%	11	3.7%
Lyme Old Lyme	MS	Lyme/Old Lyme MS	392	25	6.4%	25	6.4%
Lyme Old Lyme	HS	Lyme/Old Lyme HS	461	29	6.3%	22	4.8%
New London	ES	Jennings	359	35	9.7%	35	9.7%
New London	ES	Edgerton	362	59	16.3%	59	16.3%
New London	ES	Harbor	345	11	3.2%	9	2.6%
New London	ES	Winthrop	362	33	9.1%	33	9.1%
New London	ES	Nathan Hale	245	23	9.4%	23	9.4%
New London	MS	Bennie Dover Jackson	775	113	14.6%	113	14.6%
New London	HS	New London HS	706	50	7.1%	48	6.8%
North Stonington	ES	North Stonington	375	27	7.2%	13	3.5%
North Stonington	MS	Wheeler MS	221	16	7.2%	16	7.2%
North Stonington	HS	Wheeler HS	275	13	4.7%	13	4.7%

Table 6, Continued.

District	Level	School	Total Students	All Asthma		Asthma Excluding Non-Phys Diagnosis	
				Count	Percent	Count	Percent
Stonington	ES	West Broad Street	206	20	9.7%	16	3.6%
Stonington	ES	West Vine St	241	21	8.7%	15	3.3%
Stonington	ES	Dean's Mill	503	43	8.5%	42	8.3%
Stonington	MS	Pawcatuck MS	314	44	14.0%	4	1.3%
Stonington	MS	Mystic MS	453	75	16.6%	65	14.3%
Stonington	HS	Stonington HS	707	77	10.9%	76	10.7%
Waterford	ES	Quaker Hill	234	19	8.1%	19	8.1%
Waterford	ES	Southwest	295	20	6.8%	20	6.8%
Waterford	ES	Great Neck	288	28	9.7%	26	9.0%
Waterford	ES	Oswegatchie	264	30	11.4%	22	8.3%
Waterford	ES	Cohanzie	282	24	8.5%	12	4.3%
Waterford	MS	Clark Lane MS	777	93	12.0%	77	9.9%
Waterford	HS	Waterford HS	904	86	9.5%	84	9.3%
Private		St. Mary's	65	6	9.2%	6	9.2%
Private		St. Joseph's	213	9	4.2%	9	4.2%
Private		Solomon Schechter	79	10	12.7%	10	12.7%
Private		Williams	329	10	3.0%	8	2.4%
Private		Pine Point	263	25	9.5%	21	8.0%
Private		Sacred Heart	377	15	4.0%	14	3.7%
Private		St. Michael's	204	21	10.3%	18	8.8%
Regional		Ella Grasso HS	728	80	11.0%	70	9.6%
Regional		ISAAC School	118	22	18.6%	21	17.8%
TOTALS			25835	2493	9.6%	2144	8.3%

Table 7. Prevalence of All Asthma in individual schools,  
Sorted by percent prevalence

District	Level	School	Percent
Private		Williams	3.0%
New London	ES	Harbor	3.2%
Private		Sacred Heart	4.0%
Private		St. Joseph's	4.2%
North Stonington	HS	Wheeler HS	4.7%
Lyme Old Lyme	ES	Mile Creek	5.1%
Groton	ES	Colonel Ledyard	5.8%
East Lyme	MS	East Lyme MS	6.0%
Ledyard	ES	Gallup Hill	6.0%
Groton	ES	Noank	6.1%
Lyme Old Lyme	HS	Lyme/Old Lyme HS	6.3%
Lyme Old Lyme	MS	Lyme/Old Lyme MS	6.4%
Lyme Old Lyme	ES	Lyme Consolidated	6.5%
Waterford	ES	Southwest	6.8%
East Lyme	ES	Niantic	6.8%
New London	HS	New London HS	7.1%
North Stonington	ES	North Stonington	7.2%
East Lyme	HS	East Lyme HS	7.2%
North Stonington	MS	Wheeler MS	7.2%
Ledyard	ES	Gales Ferry	7.7%
East Lyme	ES	Flanders	8.1%
Waterford	ES	Quaker Hill	8.1%
Waterford	ES	Cohanzie	8.5%
Stonington	ES	Dean's Mill	8.5%
Stonington	ES	West Vine St	8.7%
New London	ES	Winthrop	9.1%
Private		St. Mary's	9.2%
New London	ES	Nathan Hale	9.4%
Groton	ES	Pleasant Valley	9.5%
Private		Pine Point	9.5%
Waterford	HS	Waterford HS	9.5%
Groton	ES	Claude Chester	9.6%
Waterford	ES	Great Neck	9.7%
New London	ES	Jennings	9.7%
Stonington	ES	West Broad Street	9.7%
Groton	ES	Groton Heights	9.9%
Private		St. Michael's	10.3%
Ledyard	ES	Juliet Long	10.4%
Stonington	HS	Stonington HS	10.9%
East Lyme	ES	Lillie B Haynes	10.9%
Regional	HS	Ella Grasso HS	11.0%



<b>District</b>	<b>Level</b>	<b>School</b>	<b>Percent</b>
Groton	MS	Cutler MS	11.2%
Ledyard	ES	Ledyard Center	11.3%
Groton	HS	Fitch HS	11.3%
Waterford	ES	Oswegatchie	11.4%
Ledyard	HS	Ledyard HS	11.9%
Waterford	MS	Clark Lane MS	12.0%
Groton	ES	Charles Barnum	12.0%
Groton	ES	William Seely	12.1%
Groton	MS	Fitch MS	12.3%
Groton	ES	Eastern Point	12.6%
Private		Solomon Schechter	12.7%
Lyme Old Lyme	ES	Center	12.8%
Groton	ES	Mary Morrisson	13.7%
Ledyard	MS	Ledyard MS	13.7%
Stonington	MS	Pawcatuck MS	14.0%
New London	MS	Bennie Dover Jackson	14.6%
Groton	ES	SB Butler	14.8%
New London	ES	Edgerton	16.3%
Stonington	MS	Mystic MS	16.6%
Regional		ISSAC School	18.6%
Groton	MS	West Side MS	19.1%