

Web-enabled Chronic Disease Management Solutions

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MyHealthyLife Network at PDHI

- ◆ 10 Disease-Specific Health Channels
- ◆ New Channels in Development (1/Month)
- ◆ Interactive Self-Care Web Sites
- ◆ Empower and Enable Patients to Manage Their Chronic and Episodic Diseases
- ◆ Subscription Service to
 - Pharmaceutical Sponsors
 - Healthcare Organizations
 - Employers

Burden of Chronic Illness

- ◆ More Than 90 Million Americans Live With Chronic Illness.
- ◆ 70% of All Deaths in the United States Are Attributed to Chronic Diseases.
- ◆ 60% of the Nation's Medical Care Costs Are Spent on Chronic Illness.

The Robert Wood Johnson Foundation, Annual Report 1994: Health, United States, 1994

Self-Care in Chronic Diseases

- ◆ Studies Have Shown That Self-care:
 - Improves Health Behaviors
 - Improves Health Status
 - Results in Fewer Hospitalizations
 - Reduces Hospital Length of Stay

Traditional Self-Care

- ◆ Mailings/questionnaires
 - Identify Personal Risk Profile
 - Patient Education
 - Facilitate Access to Specific Care Programs
- ◆ Follow-up
 - Telephonic Case Management
 - Home Care

Interactive Self-Care

- ◆ Data Entry Through Questionnaire
- ◆ Feedback Based on Data Entry
 - Graphs
 - Reports
 - Reminders
 - Educational Material
- ◆ Physician Access to Summary Data

The PDHI Health Channels

- ◆ Disease Tracking
 - Interactive Personal Diaries
- ◆ Graphs and Reports
 - Customized Feedback to the User
 - Disease Status and Progress
- ◆ Counseling From Advanced Practice Nurses
 - Based on National Clinical Guidelines
- ◆ Forums
 - User-to-user Discussion and Support

The PDHI Health Channels

- ◆ Education
 - Disease-specific Educational Material
 - Monthly Updates
- ◆ Multidisciplinary Support, e.g.
 - Pharmacologist
 - Dietician
 - Exercise Physiologist
 - Mental Health Professional

MyDiabetes - Daily Diary - New - Microsoft Internet Explorer

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http://www.mydiabetes.com/patient/data/daily.asp?_PV=Y&_CX=31640&_NV=PatHome&_NT=Data

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Daily Diary - NewSIMON

JanFebMarAprMayJunJulAugSepOctNovDec199920002001

12345678910111213141516171819202122232425262728293031

* Times should be entered as 'hhmm' using the 24-hour clock (eg, 0930, 1445).

* Values should be entered in time order from left to right.

* Don't worry if you leave some fields blank.

Blood Glucose Measurements

* Please enter the blood glucose measurements that you have taken today.

* Blood glucose values should be in mg/dl (1 mg/dl = 18 mmol/l).

* [Click here](#) for an explanation of the types.

	1	2	3	4	5
Time (hhmm)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Value (mg/dl)	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Type	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	6	7	8	9	10

Internet

Start

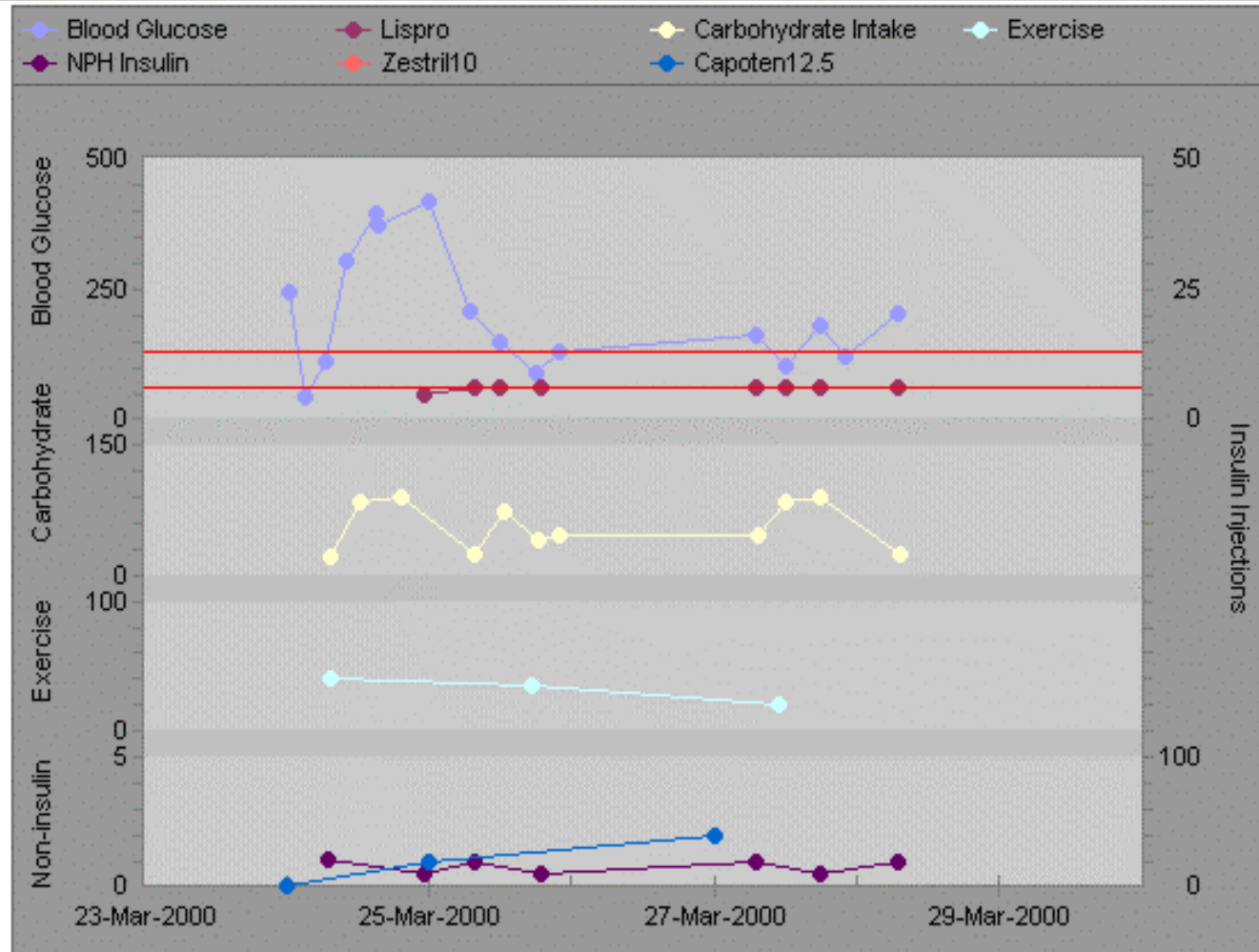
MyDiabetes - Daily Dia...

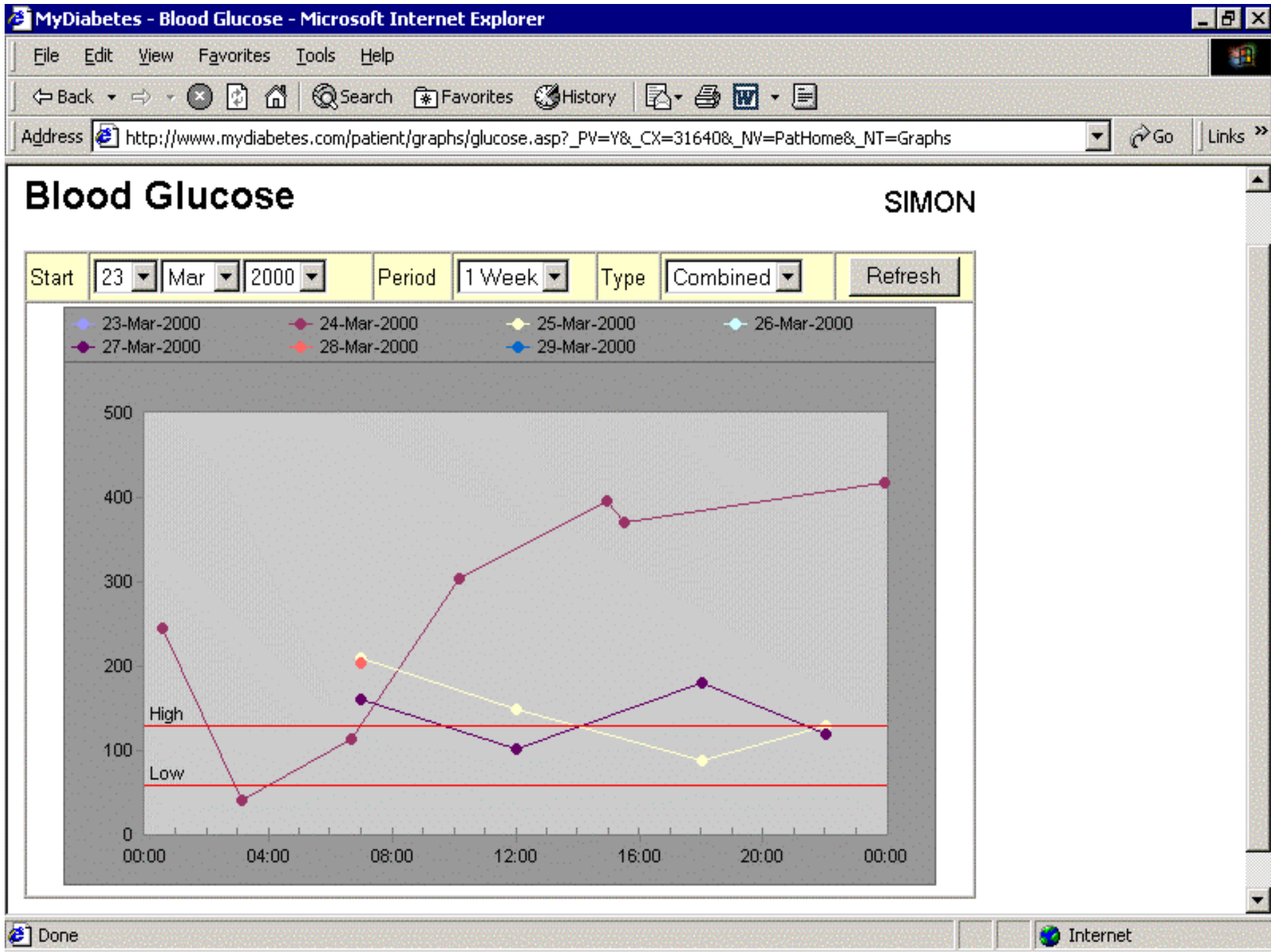
Microsoft PowerPoint

1:04 PM



Start 23 Mar 2000 Period 1 Week Type Detail Refresh





MyDiabetes - Care Plan - Microsoft Internet Explorer

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http://www.mydiabetes.com/patient/data/schedule.asp?_PV=Y&_CX=31793&_NV=PatHome&_NT=Data

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Care Plan

SIMON

This care schedule uses the **American Diabetes Association** recommendations for target values and frequency of monitoring.

Doctor Visit <i>Every 3 months if you use insulin, every 6 months if you do not.</i>	Date	04Jul1999
	Due Date	04-Oct-1999
Foot Examination (without shoes and socks) <i>Every 3 months if you use insulin, every 6 months if you do not.</i>	Date	04Jul1999
	Result	Abnormal
	Due Date	04-Oct-1999
Weight <i>Every 3 months if you use insulin, every 6 months if you do not.</i>	Date	04Jul1999
	Target	190 lbs
	Actual	200 lbs
	Due Date	04-Oct-1999
Blood Pressure <i>Every 3 months if you use insulin, every 6 months if you do not.</i> Adult target is <130/80 mm/Hg. Your target may be different; please discuss with your doctor.	Date	04Jan1999
	Target	130 / 70 mmHg
	Actual	140 / 85 mmHg
	Due Date	04-Apr-1999

Done

Internet

Start

Self-Management and the...

MyDiabetes - Care Pla...

2:51 PM

MyDiabetes - Care Plan - Microsoft Internet Explorer

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Addresshttp://www.mydiabetes.com/patient/data/schedule.asp?_PV=Y&_CX=31793&_NV=PatHome&_NT=DataGoLinks

Glycated Hemoglobin (HbA1c)
Every 3 months if you use insulin, every 6 months if you do not.
Adult target is <7%, equivalent to average blood glucose of 150 mg/dL. Your target may be different; please discuss with your doctor.

Date04Jul1999

Target7%

Actual9%

Due Date04-Oct-1999

Kidneys (microalbuminuria)
Annually.
Adult target is <30 mg per day. Your target may be different; please discuss with your doctor.

Date04Apr1999

Targetmg/day

Actualmg/day

Due Date04-Apr-2000

Blood Lipids
Annually.
Adult targets are:
- Triglycerides <200 mg/dL
- LDL <100 mg/dL
- HDL >35 mg/dL
Your targets may be different; please discuss with your doctor.

Date04Jan1999

Triglycerides Target200mg/dL

Triglycerides Actual350mg/dL

LDL Target130mg/dL

LDL Actual175mg/dL

HDL Target35mg/dL

HDL Actual35mg/dL

DoneInternet

StartSelf-Management and the...MyDiabetes - Care Pla...

2:52 PM

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Address http://www.mydiabetes.com/patient/data/schedule.asp?_PV=Y&_CX=31793&_NV=PatHome&_NT=Data Go Links >>

Blood Lipids <i>Annually.</i> Adult targets are: - Triglycerides <200 mg/dL - LDL <100 mg/dL - HDL >35 mg/dL Your targets may be different; please discuss with your doctor.	Date	04Jan1999
	Triglycerides Target	200 mg/dL
	Triglycerides Actual	350 mg/dL
	LDL Target	130 mg/dL
	LDL Actual	175 mg/dL
	HDL Target	35 mg/dL
	HDL Actual	35 mg/dL
	Due Date	04-Jan-2000
Dilated Eye Examination <i>Annually.</i>	Date	09Jul1999
	Result	Normal
	Due Date	09-Jul-2000
Flu Shot <i>Annually.</i>	Date	25Sep1999
	Due Date	25-Sep-2000

SaveCancel

DoneInternet

Benefits of Interactive Care

- ◆ Always Available
- ◆ Easy to Deliver Complex Information
- ◆ Care Team has Access to Patient Data
- ◆ Personalized to Address Specific Needs of the User
- ◆ Anonymous and Non-Judgmental

Results of Interactive Care

- ◆ Patients Love the System
- ◆ Quality of Life Improves
- ◆ Behavior Changes Sustained
- ◆ Scalable & Efficient Solution

User Quotes

◆ MyAsthma User:

- “I can’t say enough about this web site. The information, the data input, and the interaction with the asthma nurse all have made a big difference.”

◆ MyDiabetes User:

- “This web site has been a life-saver. It's much more fun to chart my data on the net and to receive information and feedback from the nurses.”

◆ MyBP User:

- “I have been entering from 2-4 blood pressure readings a day, letting the program calculate a daily average. I like being able to track trends with the charts (particularly to see if diet changes, exercise, etc. are having any effect).”

[illegible]

Summary

- ◆ Interactive Self-care Improves
 - Health Status
 - Compliance
 - Outcomes
 - Quality of Life

MyHealthyLife.com

- ◆ Arthritis
- ◆ Asthma
- ◆ Allergy
- ◆ Back Pain
- ◆ Congestive Heart Failure
- ◆ Coronary Artery Disease
- ◆ Diabetes
- ◆ Hormone Replacement
- ◆ Hypertension
- ◆ Urinary Incontinence
- ◆ MyJoints.com
- ◆ MyAsthma.com
- ◆ MyAllergy.com
- ◆ MyBackpain.com
- ◆ MyCHF.com
- ◆ MyCardio.com
- ◆ MyDiabetes.com
- ◆ MyHRT.com
- ◆ MyBP.com
- ◆ MyBladder.com

MyAsthma.com—Effectiveness

- ◆ **18 Million persons affected by asthma in the United States**
- ◆ **Direct and Indirect Costs of Care Exceed \$5 Billion Annually**
- ◆ **Pharmaceutical Interventions of Proven Efficacy are Underutilized**
- ◆ **National Asthma Education Program (NAEP) emphasizes patient ‘self-care’ (disease knowledge, patient behavior, symptom control, use of pharmaceutical and preventive health interventions)**

MyAsthma.com—Effectiveness

- ◆ Can Web-enabled disease management programs influence asthma patient compliance with appropriate drug regimens?
- ◆ Can Web-enabled disease management programs be effective in improving patient self-reported functional status and quality of life indicators derived from baseline and follow-up instrument?

MyAsthma.com—Drug Use

- ◆ Clinical research shows that overuse of inhaled beta agonists (rescue medications) is associated with poor outcomes
- ◆ Clinical trials have shown that inhaled corticosteroids (ICSs) prevent recurrence of asthma symptoms, improve lung function, and may reduce use of health services for uncontrolled symptoms

MyAsthma.com—Study Group

- ◆ **The study population was drawn from self-selected participants who met the following criteria:**
 - ◆ **Ages 16 years and above.**
 - ◆ **Completed at least two or more self-reported medication use profiles during participation in the MyAsthma intervention.**
 - ◆ **Reported symptoms at baseline that are consistent with a diagnosis of asthma.**

MyAsthma - Drug Use Assessment

- ◆ Participants' drug utilization patterns were assessed using a self-reported medication use questionnaire administered online.
- ◆ Participants were asked to describe current anti-asthmatic medication use (drug name, dose, and route of administration) at the time of registration and at periodic intervals to update their profile.
- ◆ Participants were reminded and encouraged to seek information

MyAsthma.com—Results

Drug Use Patterns among Self-Selected Participants

Baseline Drug(s)	Update Drug(s)				No Update	Total
	Beta Agonists	Steroids	Anti Leukotrienes	Combination Drugs		
Beta Agonists	0 (0%)	529 (16%)	28 (0.8%)	56 (1.7%)	755 (22.8%)	1368 (41.4%)
Steroids	12 (0.4%)	0 (0%)	4 (0.1%)	99 (3%)	246 (7.4%)	361 (10.9%)
Anti Leukotrienes	18 (0.5%)	4 (0.1%)	0 (0%)	2 (0.1%)	23 (0.7%)	47 (1.4%)
Combination Drugs	24 (0.7%)	16 (0.5%)	22 (0.7%)	0 (0%)	1470 (44.4%)	1532 (46.3%)
Total	54 (1.6%)	549 (16.6%)	54 (1.6%)	157 (4.7%)	2494 (75.4%)	3308 (100%)

MyAsthma.com—Results

- ◆ Recent findings show that adult asthma patients underutilize effective ICS medications
- ◆ This evaluation suggests that the Internet can be effective in urging patients to change medication-taking behaviors.
- ◆ Given the widespread difficulty in implementing effective direct-to-consumer (DTC) educational interventions use of the Internet may represent an important supplement to existing and more traditional patient educational strategies.

MyAsthma.com—Quality of Life

- ◆ Pre-test/Post-test quasi-experimental design
- ◆ Baseline and six month follow-up
- ◆ Mini-Asthma Quality of Life Questionnaire (MiniAQLQ) used to assess self-reported outcomes
- ◆ Population
 - Ages 16 years and above
 - Completed at least two Mini-AQLQ assessments
 - Utilized the MyAsthma.com tools/instruments at least three times during six-month observation period
 - Time Frame: Study participants identified retrospectively for one year to accommodate seasonal change in self-reported symptoms

MyAsthma.com—Quality of Life

- ◆ Mini-AQLQ—Outcome Domains
 - Global
 - Symptom Scale
 - Emotional Scale
 - Environmental Scale
 - Activity Scale
- ◆ Seasonality—Symptoms reported during the months of March, April, May, June were coded as ‘seasonal’ and controlled for in analysis
- ◆ Demographic characteristics derived from online questionnaires self-administered at registration

MyAsthma.com—Quality of Life

- ◆ Mini-AQLQ—Outcome Domains
 - 7 point scale
 - 0.5 points considered clinically significant
 - Statistical significance does not equal clinical significance
- ◆ Number Needed to Treat (NNT)
 - Accepted measure of clinical efficacy
 - Derived from simple relationship as the reciprocal of the absolute risk reduction
- ◆ Differences at follow-up over baseline

MyAsthma.com—Quality of Life

Pre/Post-test scores, scale values, and number needed to treat (NNT)

Mini-AQLQ Scores	Number of Items	1 to 7 scale		Difference	NNT
		Pre	Post		
All Participants					
Global	15	3.738	4.06	0.322	22
Symptom	5	3.661	4.018	0.357	20
Activity	4	4.578	4.767	0.189	37
Emotional	3	3.542	3.997	0.455	15
Environmental	3	3.143	3.409	0.266	26
Hi Volume Visit Participants					
Global	15	3.535	4.277	0.742	9
Symptom	5	3.486	4.249	0.763	9
Activity	4	4.368	4.893	0.525	13
Emotional	3	3.332	4.382	1.05	7
Environmental	3	2.877	3.5	0.623	11
Lo Volume Visit Participant					
Global	15	3.913	4.179	0.266	26
Symptom	5	3.822	4.186	0.364	19
Activity	4	4.816	4.977	0.161	43
Emotional	3	3.703	4.011	0.308	23
Environmental	3	3.248	3.486	0.238	29

MyAsthma.com—Quality of Life

- ◆ Engaged use of MyAsthma.com is associated with statistical and clinical improvements in quality of life
- ◆ High volume participants were 1.6 times as likely to report improved quality of life as low volume participants
- ◆ High volume, engaged participants reported clinically significant improvements in quality of life measures after six months of observation