

Family Physicians and Exercise Counseling

Can they be influenced to provide more?

DOUGLAS M.C. WILSON, MD
DONNA CILISKA, PHD
JOEL SINGER, PHD
KIMBERLY WILLIAMS, PHD
JULIA ALLEYNE, MD
ELIZABETH LINDSAY, PHD

SUMMARY

This trial took 22 volunteer family physicians and randomly exposed some to training intervention and some to no training to study the effect on frequency and quality of exercise prescription to ambulatory adults. During the 6 weeks after training, the trained physicians addressed the issue of exercise with 35.3% of patients. The untrained physicians discussed exercise with only 8.6% of their patients.

RÉSUMÉ

Cette étude impliquant 22 médecins de famille assignés par randomisation soit pour recevoir une formation d'intervention soit aucune formation a permis d'en analyser l'effet sur la fréquence et la qualité des prescriptions d'exercices auprès d'adultes ambulants. Pendant les six semaines qui ont suivi la période de formation, les médecins formés ont soulevé la question des exercices chez 35.3% de leurs patients. Quant aux médecins non formés, ils ont discuté des exercices avec seulement 8.6% de leurs patients.

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EVIDENCE OF THE VALUE OF exercise in increasing the health of the population continues to mount.¹⁻¹³ The evidence is strongest regarding the link between exercise and cardiovascular morbidity and mortality, but many studies also show that exercise enhances self-esteem and quality of life.¹⁴ Furthermore, physically active people older than 45 years are less likely to experience disability or long-term activity limitation or to need physicians' services.¹⁵

A high proportion of Canadian adults, according to a recent survey, remain sedentary.¹⁶ Although the risks of a sedentary lifestyle have been estimated to be slightly lower than the risks of smoking, high blood pressure, and elevated cholesterol, the proportion of the population for whom inactivity is a risk factor is much higher than that for any of the other risk factors.¹³ Thus, increasing the level of activity in the population could, potentially, greatly reduce the incidence of cardiovascular disease.

It has been estimated that physicians have contact with approximately 75% of the population within a 1-year period.¹⁷ Physicians thus have the potential to be catalysts for initiating healthy lifestyles if brief, cost-effective interventions can be

developed. We do not believe that physicians, acting as the *sole agents* of change, are likely to affect more than short-term patient outcomes. But their credibility and authority about health-related issues and their established relationships with patients can make effective initiators. Physicians can help patients assess lifestyle behaviors and work toward enhanced quality of life and reduced morbidity.

The randomized trial reported here is a first step toward a long-term goal of assessing whether a brief physician intervention can lead patients to begin a physical activity program, as an important first step toward an active lifestyle.

We do not suggest that physicians should be prescribing intensive exercise to all patients. As the intensity of exercise increases, the risk of musculoskeletal injury increases, and the probability of long-term adherence decreases.¹⁷ For older people, the risk of cardiovascular accident means that prescription of a vigorous exercise program requires a time-consuming, costly physical examination. Moreover, the evidence suggests not only that low-intensity exercise can result in significant benefit, but also that the greatest gains in health are gained at the lower end of the scale¹ — that is, relatively sedentary people becoming moderately active.

Before we can attempt to measure patient outcomes, however, we need an intervention potentially effective enough to

All authors were members of the Faculty of Health Sciences at McMaster University, Hamilton, Ont, at the time of the study.

Table 1. PHYSICIAN PERCEPTIONS OF THE EFFECT OF EXERCISE

HEALTH OUTCOME	Effect	Trained (%)	Untrained (%)	P
Cardiac disease	None	0	0	.64
	Little or moderate	18.2	36.4	
	Strong or very strong	81.8	63.7	
Depression	None	0	0	1.00
	Little or moderate	36.4	45.5	
	Strong or very strong	63.7	54.6	
Weight reduction	None	0	0	.39
	Little or moderate	27.3	54.6	
	Strong or very strong	72.8	45.5	
Self-esteem	None	0	0	1.00
	Little or moderate	9.1	0	
	Strong or very strong	91.0	100.0	
Stress reduction	None	0	0	1.00
	Little or moderate	9.1	9.1	
	Strong or very strong	90.9	90.9	

integrate into practice. That was the goal of this study.

We hypothesized that family physicians who are trained in "physician's exercise prescription" are more likely to ask patients about exercise and offer advice than untrained physicians, and that their advice will be more comprehensive. We decided to measure the frequency and comprehensiveness of advice by patient report. A later trial will evaluate how effective the advice is in changing patient behavior.

METHODS

Overview

A 2-hour training session was offered to family physicians to teach them to deliver a 3- to 5-minute intervention encouraging

patients to become physically active. This intervention could be done at the end of any office visit. A flow sheet was developed to overcome the physician-perceived barriers of lack of time and lack of a reminder system. Patients were phoned 3 to 5 days later and asked whether the physician had raised the topic of exercise and what was discussed.

Sample size

Our main question was whether physicians trained to administer an exercise protocol would 1) approach more patients and 2) exhibit certain trained behaviors more often within the context of exercise advice. There are two problems inherent in estimating sample size for these particular questions. First, the physician serves as the unit of analysis, yet we know very little about the variability between physicians. Second, we had to decide how many patients to follow per physician to give adequate estimates of each physician's performance. The trial was designed to have a power of 80%, using an error of 5%, with 11 practices in each group and 20 patients from each practice. To minimize contamination, only a single physician per practice was recruited into the study.

Physician recruitment

We invited participation from 283 family physicians in the Ontario Medical Registry who practise in the Hamilton region. Of these, 33 (11.7%) physicians responded positively. Seven physicians were excluded because they practised with another who volunteered, and four physicians withdrew before randomization, leaving 22 physicians in the study.

Patient recruitment

Receptionists recruited patients by distributing a questionnaire and consent form to patients in the waiting room. To determine eligibility, we used an adaptation of the mini-lifestyle status questionnaire, based on the FANTASTIC lifestyle questionnaire.^{18,19} The adapted questionnaire addressed not only exercise, but other lifestyle factors (diet, tobacco consumption, seat belt use, and stress). Patients were also asked whether they were capable of being physically active and the reason for visiting the doctor.

We set eligibility criteria to define a group that we believed would benefit most from a prescription of moderate exercise. Patients were included if they were ambulatory, were 18 years or older, had exercised less than two times weekly during the past month, and were visiting for health advice, routine health examination, monitoring of a chronic condition, or recent or sudden condition or illness from which they were mostly recovered. Patients were excluded if they were visiting the physician for long-term illness or injury that prevented physical activity or for a recent or sudden condition or illness that was still causing symptoms.

The receptionist recruited eligible patients into the study for 4 weeks before the training (23% consented to participate in the study) and for 5 weeks after the training (25% consented to participate in the study). A research assistant collected the questionnaire and consent forms from each office twice a week and checked to see whether patients met the eligibility criteria.

Physician training

The 11 physicians randomized to the training group were sent mailed packages of relevant literature reviews. They then participated in a 2-hour workshop designed to teach the physician a standardized form of exercise prescription, and received a manual of exercise resources in the community and selected patient motivational and instructional material. The objectives of training were:

- to educate physicians about the physical and mental health benefits of exercise;
- to increase their understanding of the intervention;
- to provide them with the necessary skills and materials for advising patients about exercise; and
- to motivate them to increase exercise prescription in their practice.

Mailed materials included a review of the epidemiological evidence of the relationship between exercise and cardiovascular health¹ and summary sheets on key issues, recommendations, and research areas. Physicians were also sent a bibliography on the physical activity profile of Canadians, screening and risk assessment for low- to

moderate-intensity exercise, physical activity and coronary heart disease, physical activity and other diseases, benefits of low- to moderate-intensity exercise, effects of physical activity on quality of life, barriers to promotion of physical activity, motivational and compliance strategies, and exercise prescription.

The 2-hour training session consisted of three components: a discussion forum, a practical teaching session, and an overview of resources. The discussion forum covered the following topics: rationale for promoting exercise, selecting patients most likely to benefit, how to broach the subject of exercise after a regularly scheduled office visit, screening for contraindications and evaluating risks of exercise, tailoring the exercise prescription to the patient's needs, negotiating lifestyle changes with the patient, and overcoming barriers to exercise prescription. The practical session taught the content and skills of a standardized intervention. It encompassed verbal instruction, demonstration of the intervention with real patients on videotape, and an opportunity for feedback. The third component presented an overview of community resources and a package of self-help pamphlets for patients covering the basic principles of initiating an exercise program and tailoring the activity to age and fitness level. We also gave physicians flow sheets, prescription pads, and community resource manuals.

All physicians were informed that we would be monitoring the frequency and comprehensiveness of their exercise-prescribing behavior.

Patient intervention

The recommended patient intervention is modeled on one that had been effective in a randomized trial of smoking cessation.²⁰ It consisted of asking, advising, and assisting the patient to become more physically active. Patients were asked about their exercise history and about barriers that prevented them from being physically active. The physician then determined whether the patient was willing to discuss becoming more physically active. If so, the patient was screened for exercise readiness with the PAR-Q.^{21,22}

Patients who responded positively to a question on the PAR-Q, thus indicating

Table 2. PHYSICIAN BASELINE ATTITUDES AND ACTIONS

ATTITUDES AND ACTIONS	Response Category (%)	Trained	Untrained (%)	P
It is my responsibility to address increasing physical activity with sedentary patients	Disagree or strongly disagree	9.1	9.1	1.00
	Agree somewhat	0	9.1	
	Agree or strongly agree	90.9	81.9	
I discuss exercise with sedentary patients	Rarely or never	0	0	.30
	Sometimes	18.2	45.5	
	Often or always	81.8	54.6	
I discuss exercise with patients when I believe it is appropriate	Rarely or never	0	0	.47
	Sometimes	0	20.0	
	Often or always	100.0	80.0	
I believe that I received adequate training in medical and postgraduate education to be prepared to prescribe exercise to patients	Yes	45.5	9.1	.15
	No	54.5	90.9	
I would take advantage of educational opportunities for exercise prescription in the future	Yes	100.0	100.0	

possible precautions for exercise, were evaluated further. If symptoms of coronary artery disease occurred during previous bouts of physical activity, the patient was sent for a stress test at one of the listed centers. Patients responding negatively to the PAR-Q were directly prescribed low- to moderate-intensity exercise. Patients not willing to discuss becoming more physically active were told that the physician would be happy to discuss exercise with them on another visit if they changed their minds.

Physicians advised patients to become more physically active by tailoring recommendations to the patient's needs, age, interests, and fitness level. They advised patients to choose enjoyable activities that

they could do regularly (three times weekly for 30 minutes or more, starting at low intensity and building to moderate intensity).

Physicians assisted patients to become more physically active by giving them a manual of community resources (organized alphabetically by activity) or self-help and motivational pamphlets, along with a written behavioral prescription to "be physically active at least three times weekly for 30 minutes or longer." Patients were told to call the physician if they experienced any chest pain or felt faint or lightheaded during or after physical activity.

Outcome measures

The primary outcome of this study was the frequency with which physicians raised the issue of exercise, as reflected by reports of patients telephoned within 3 to 5 days of the doctor's visit. In addition, an index was constructed on the basis of whether the physician mentioned certain important items that were dealt with in the training session. Patients who said that the physician spoke to them about exercise were asked specifics of the discussion, and a score was computed for the comprehensiveness of the discussion.

Statistical methods

The unit of randomization in this study was the physician practice. Physicians were randomized to training or no training using a computer-generated randomization list. The only restriction on randomization was that there would be an equal number of physicians in each of the two groups. The proportion of the patients to whom exercise was advised was computed for each physician. In addition, an index score reflecting the quality of each exercise prescription was computed for each patient and a mean computed for each physician. Covariance was then analyzed to compare the trained and untrained group means on each of the outcome variables, adjusting for baseline exercise prescription as well as any other physician or practice variables that proved to be correlated with outcome.

RESULTS

Physician characteristics

Prerandomization demographic information was obtained from physicians who

agreed to participate in the study (22 in total). They were predominantly male (76.9%), with a mean age of 43.1 years, and a mean of 18.3 years since graduation. They represented both solo practices (45.5%) and group practices (54.6%). The participants reported being physically active for 20 minutes or more three or more times per week (45.5%), twice per week (31.9%), or less than twice per week (22.8%) in the 6-month period before they were recruited into the study. No significant differences were observed in physician characteristics between the untrained and trained groups.

All physicians perceived that exercise had an effect on cardiac disease, depression, weight reduction, self-esteem, and stress reduction. They believed that exercise was most highly related to self-esteem (95.5%) and stress reduction (90.9%) and least related to depression (59.2%) and weight reduction (59.2%). Most physicians (72.8%) perceived exercise to have a strong to very strong effect on cardiac disease. No significant difference in these beliefs was observed between the physicians randomized to the untrained and trained groups (*Table 1*).

Most physicians agreed that it was their responsibility to address increasing physical activity with sedentary patients (86.4%) and that they often or almost always address the topic of exercise with their patients when they believe it is appropriate (90%). However, only 27.3% of the physicians believed that they had been adequately prepared in their medical and postgraduate education to prescribe exercise. All participants said they would take advantage of future educational opportunities in exercise prescription. No significant difference was observed in physician attitudes and actions about exercise between the physicians randomized to the untrained and trained group (*Table 2*).

Physicians rated time availability (54.6%) and remembering to raise the issue (50.1%) as very important factors in determining whether they discuss exercise with their patients. In contrast, only 15% considered important being paid by the Ontario Health Insurance Plan for the counseling. Other factors mentioned included belief in the benefit of exercise, competence, and per-

ceived effectiveness. No significant difference was observed between trained and untrained physicians in attitudes about these factors.

Patient characteristics

Physician's receptionists handed out mini-lifestyle status questionnaires and consent forms to 1908 patients. One hundred seven patients refused to participate. In total, 1801 patients filled out the questionnaire and consented to be in the study. Of these, 420 (23%) were eligible for the study and 1381 (77%) were ineligible, by the criteria mentioned earlier. Of those considered eligible, 202 were from the untrained physician group and 218 were from the trained group. Eligible patients of physicians randomized to both the trained and untrained groups were predominantly female (71.2%). Their average age was 41.1 years (SD = 20.2). The education levels attained were elementary (9.4%), high school (53.1%), college (18.8%), or university (20.2%).

When asked about lifestyle practices in the past month, 32.1% of the patients reported that they currently smoke; 68.1% eat a balanced diet most to all of the time; 88.0% use seat belts; and 80.8% are able to cope with the stresses in their lives. The patients' reasons for visiting their physicians were for health advice (27.1%), for routine health examination (18.6%), for checkup or monitoring of chronic conditions (19.4%), for long-term illness or injury that prevents physical activity (1.2%), or for recent or sudden condition or illness (33.8%). Of patients in the last category, 76.9% were mostly recovered and 23.2% were still having symptoms that prevented physical activity (*Table 3*).

Outcomes

The primary outcome of this study was the frequency with which physicians talked to patients about exercise, as reflected by patient reports. Baseline measurements taken over the 3.6 weeks before the training session demonstrated that trained physicians talked to a mean of 18.6% (SD = 12.2%) of their patients and that untrained physicians talked to 14.0% (SD = 10.1%) of their patients. No significant difference was observed between the two groups. However, during the 6-week period after the training session, the trained physicians

talked to approximately four times as many patients as the untrained physicians. Thus, 35.3% (SD = 22%) of the patients of trained physicians reported that the doctor had talked about exercise compared with 8.6% (SD = 9.4%) of the patients of untrained physicians (Table 4). This difference was significant ($P = 0.003$).

Table 3. PATIENTS' REASONS FOR VISITING THE PHYSICIAN

REASON FOR VISIT	Patients of trained physicians (%) (N = 211)	Patients of untrained physicians (%) (N = 199)
Health advice	26.5	27.6
Routine health examination	17.1	20.1
Checkup or monitoring of chronic condition	23.2	15.6
Long-term illness or injury that prevents physical activity	1.4	1.0
Recent or sudden condition or illness	31.8	35.7

Table 4. MEAN PERCENTAGE OF PATIENTS WITH WHOM PHYSICIAN DISCUSSED EXERCISE

STUDY PERIOD	Physician	Average no. of patients having discussions	N	P
Baseline	Trained	18.6 (SD = 12.1)	10	.35
	Untrained	14.0 (SD = 10.1)	11	
After training	Trained	34.9 (SD = 21.5)	11	.002
	Untrained	8.6 (SD = 9.4)	11	

To assess the comprehensiveness of the physician's talk about exercise, patients were asked whether nine specific items (highlighted in the physician training sessions) were raised during the discussion. The mean number of items raised during the discussion about exercise per physician gave an index of the comprehensiveness of the talk.

Across all patients in the study, trained physicians mentioned 1.9 (SD = 2.5) items ($n = 11$) and untrained physicians mentioned 0.3 (SD = 17) items ($n = 11$). However, when the analysis was restricted to only patients with whom the physicians discussed exercise, trained physicians

mentioned 5.4 (SD = 1.13) items ($n = 10$) and untrained physicians mentioned 2.5 (SD = 1.1) items ($n = 9$). Trained physicians also spoke more comprehensively (Table 5); and this difference was statistically significant ($P = 0.0002$).

Trained physicians raised the following items (Table 6) more often: asking patients whether they were interested in becoming more physically active ($P = 0.003$), helping patients choose an activity that was appropriate for them ($P = 0.004$), indicating how much physical activity the patient should do ($P = 0.000$), suggesting ways to make physical activity a part of their daily life ($P = 0.000$), telling patients about programs and facilities in the community ($P = 0.005$), giving patients a manual of community resources for exercise and fitness ($P = 0.001$), giving patients pamphlets to help them get started on a regular exercise program ($P = 0.002$), and writing a prescription for increased physical activity ($P = 0.017$).

DISCUSSION

The results indicate that the physician training procedure, which taught a standardized intervention to be offered to ambulatory "sedentary" patients who attend a family practice, increased physicians' rates of advice. Patients were four times as likely to be advised by their physician if he or she had been trained in the simple intervention. In addition, the advice was more comprehensive, including key elements taught at the training session.

Physicians were not blind to the outcome measures, potentially biasing the result. However, both groups knew that the study would monitor their interventions. There is evidence (Table 4) that the monitoring alone in the untrained group did not have an effect beyond the 4-week baseline data collection, as the mean percentage of patients talked to about exercise dropped from 14% to 8.6%. In addition, one would expect the Hawthorne effect of the attention to have some impact on the trained group, biasing the results in a positive direction. Nevertheless, it seems clear that the effect was genuine.

This study is really the beginning of clinical trials to examine the effect on

patients of the family physician's prescribing exercise. We have demonstrated that physicians can be trained to identify, assess, and advise sedentary patients to increase physical activity. There are a number of key issues yet to be resolved. This study is really an efficacy trial of motivated physicians. Can the training be effective for the general population of physicians? Is the effect of the physician training maintained beyond 6 weeks? Does this kind of physician intervention lead patients to change their behavior? If so, is it cost effective?

Equally important is the challenge of developing and evaluating a more systematic approach to lifestyle issues. One of the greatest barriers to addressing an issue such as exercise is time; when some time is available, the physician must usually choose among many lifestyle issues, depending on their perceived importance to the patient. With more acute problems to deal with, current conditions seem to make family physicians' potential contribution more limited than we would wish. A more integrated approach to addressing lifestyle issues in general could be warranted. We speculate that it might be more effective and more cost effective to develop a team approach, with other health professionals offering lifestyle counseling in the physician's office. ■

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Requests for reprints to: Dr Douglas Wilson, Department of Family Medicine, Room 2V9, McMaster University Medical Centre, 1200 Main St W, Hamilton, ON L8N 3Z5

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Table 5. COMPREHENSIVENESS OF PHYSICIANS' DISCUSSION OF EXERCISE BASED ON PATIENT REPORT

PATIENTS	Physicians	Mean no. of items discussed	N	Range of items discussed	P
Total	Trained	1.87 (SD = 1.2)	11	0-4.2	.001
Total	Untrained	0.25 (SD = 0.4)	11	0-1.17	.001
Only those with whom exercise was discussed	Trained	5.42 (SD = 1.1)	10	3.7-7.5	<.001
Only those with whom exercise was discussed	Untrained	2.52 (SD = 1.1)	9	1.0-4.0	<.001

Table 6. PATIENT REPORT OF ITEMS MENTIONED BY THE PHYSICIAN

ITEMS MENTIONED	Trained Physicians (N = 80)	Untrained Physicians (N = 18)	P
Current level of physical activity	76.3	66.7	.40
Active in the past	46.3	44.4	.85
What prevents regular exercise	52.5	33.3	.13
Interest in becoming more physically active	68.6 ^a	33.3	.005
Recommend increasing physical activity	82.5	77.8	.64
Help in choosing a particular activity that is appropriate	65.0 ^a	27.8	.004
Help in choosing level of physical activity	70.0 ^a	16.7	<.001
Ways to make physical activity part of daily life	41.3 ^a	0	<.001
Programs and facilities available in the community	27.5 ^a	5.6	.047
Received manual of community resources for exercise and fitness	43.8 ^a	0	<.001
Received pamphlets for helping one start exercising regularly	47.5	5.6	.001
Received prescription for increasing physical activity	27.5 ^a	0	.011

^aResult was statistically significant.

CONDENSED PRESCRIBING

INFORMATION

NAME OF DRUG

ALUPENT

(orciprenaline sulphate)
SYRUP

ALUPENT

(orciprenaline sulphate)
TABLETS

ALUPENT

(orciprenaline sulphate)
INHALATION AEROSOL

ALUPENT

(orciprenaline sulphate)
INHALATION SOLUTION

THERAPEUTIC CLASSIFICATION

BRONCHODILATOR

INDICATION AND CLINICAL USES

Alupent (orciprenaline sulphate) has been found useful in the following conditions: bronchial asthma, chronic bronchitis, pulmonary emphysema.

Alupent is also useful in sarcoidosis, silicosis, carcinoma of the lung and tuberculosis when bronchospasm contributes to the disability. When used regularly, Alupent offers effective management of chronic bronchospasm with reduction in frequency and severity of acute attacks.

CONTRAINDICATIONS

Known sensitivity to the drug or other sympathomimetic amines. The use of Alupent (orciprenaline sulphate) and other beta stimulants is generally considered to be contraindicated in patients with cardiac arrhythmias associated with tachycardia. Beta blocking agents, e.g., propranolol, effectively antagonize the action of Alupent. Their concomitant use, except in the treatment of accidental overdosage, is therefore contraindicated.

WARNINGS

Use in Pregnancy

Alupent (orciprenaline sulphate) should not be administered to pregnant women or to women of childbearing potential unless in the opinion of the physician the expected benefits outweigh the possible risks to the fetus. In rabbits, high oral doses (100 mg/kg) and low subcutaneous doses (0.2 mg/kg) have resulted in malformed offspring in some experiments, but not in others. Studies in the rat, mouse and rhesus monkey have shown no adverse effects on the developing fetus. Other sympathomimetic drugs tested, viz., ephedrine and phenylephrine, produced teratogenic effects in the rabbit when given orally at high doses as did isoproterenol given subcutaneously at low doses. The significance of these findings is not known. However, clinical evidence presently available from the use of Alupent in pregnancy is limited.

General

Occasional patients have been reported to have developed severe paradoxical airways resistance with repeated excessive use of sympathomimetic inhalation preparations. The cause of this refractory state is unknown. It is advisable that in such instances the use of the preparation be discontinued immediately and alternate therapy instituted since, in the reported cases, the patients did not respond to other forms of therapy until the drug was withdrawn. Fatalities have been reported following excessive use of isoproterenol inhalation preparations and the exact cause is unknown. Cardiac arrest was noted in several instances.

Patients should be advised to seek medical aid in the event that they do not respond to their usual dose of a sympathomimetic amine aerosol. The failure to respond may be due to retention of viscid bronchial secretions, associated with an allergic or infective exacerbation of the patient's condition. Increased airways resistance on the basis of bronchospasm alone is reversed promptly by bronchodilators and, if this does not

occur, a more serious condition should be suspected. Admission to the hospital for intensive support of the cardiovascular and respiratory systems may be necessary.

PRECAUTIONS

In acute tests Alupent (orciprenaline sulphate) has been shown to have minimal effect on blood pressure and pulse. The drug should be used with care, however, in asthmatic or emphysematous patients who also have systemic hypertension, coronary artery disease, acute and recurring congestive heart failure, diabetes mellitus, glaucoma or hyperthyroidism. Extreme care must also be exercised in the concomitant use of Alupent with epinephrine or MAO inhibitors.

ADVERSE REACTIONS

In the recommended dosage, adverse reactions to Alupent (orciprenaline sulphate), such as tremor or palpitation, have been infrequent. Mild tachycardia, nausea, vomiting, minimal hypertension, nervousness and bad taste, have been reported.

DOSAGE AND ADMINISTRATION

As with all drugs, the ideal dosage of Alupent (orciprenaline sulphate) varies from patient to patient.

The following recommended dosages represent general guidelines which will be found suitable for the majority of patients.

Alupent Tablets:

Adult Dosage: 20 mg t.i.d. or q.i.d.
Pediatric Dosage: Ages 4-12: 10 mg t.i.d.
Above 12: 20 mg t.i.d.

Alupent Syrup

Adult Dosage: 20 mg (10 mL) t.i.d. or q.i.d.
Pediatric Dosage: Ages 4-12: 10 mg (5 mL) t.i.d.
Above 12: 20 mg (10 mL) t.i.d.

Alupent Inhalation Aerosol:

One or two inhalations will usually provide control of an acute attack of bronchospasms for periods of up to 5 hours or longer. As a general rule, patients should not exceed a total of 12 inhalations per day.

Alupent Inhalation Solution 5%:

Hand nebulizer: 5 to 15 inhalations of 50 mg/mL (5%) solution by hand nebulizer (Devilbiss No. 40 or 42) administered up to three times daily.
Intermittent positive pressure breathing: 1/2 to 1 mL of 50 mg/mL (5%) solution diluted if desired and administered over a period of about 20 minutes.

AVAILABILITY

Tablets:

Alupent (orciprenaline sulphate) tablets are round, white, flat bevelled edge compressed tablets, engraved with the Boehringer Tower symbol. The reverse side is scored with each half engraved with Alupent 20 mg tablets: "20A" Supplied in amber glass bottles of 100 and 500 tablets.

Syrup:

Alupent syrup is clear, sugar-free and woodruff-flavored. 5 mL contains 10 mg of active ingredient. Bottles of 250 mL.

Inhalation Aerosol:

Alupent inhalation aerosol is supplied as a 15 mL metal canister (with disposable mouthpiece) containing 300 individual doses. Each depression of the valve releases 0.75 mg of active ingredient as a micronized powder.

Inhalation Solution:

Alupent inhalation solution 50 mg/mL (5%) is supplied in bottles of 10 mL.

The complete Product Monograph for Alupent (orciprenaline sulphate) is available to health professionals on request.



**Boehringer
Ingelheim**



Boehringer Ingelheim (Canada) Ltd./Ltee
5180 South Service Rd., Burlington, Ontario L7L 5H4

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