

Respiratory drugs prescribing at the Out-Patient Clinic, Chulalongkorn Hospital.*

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Itthipanichpong C, Pavichitr N, Tangphao O. Respiratory drugs prescribing at the Out Patient Clinic, Chulalongkorn Hospital. Chula Med J 1994 Mar;38(3): 137-143

Drugs that were prescribed for treating respiratory diseases in the Out-Patient Clinic of Chulalongkorn Hospital from February 1989 to January 1990 were studied retrospectively by analysing the prescriptions for respiratory disease patients once a week for 52 weeks. Among 1,513 of these patients, URI was the most prominent disease (26.04%); others included asthma, bronchitis, COPD etc. Prescribing for the treatment of URI were drugs that suppressed respiratory symptoms: including antihistamines, nasal decongestants, antitussives, expectorants and antibiotics for eliminating infection. Amoxycillin was the most widely prescribed antibiotic in URI. Aminophylline and B₂ adrenergic drugs (in systemic and inhaler forms) were bronchodilators commonly prescribed for asthmatic patients and those with COPD. For patients who suffered from allergic rhinitis, antihistamine was used for relieving symptoms related to the effects of histamine. Antihistamine and nasal decongestant combinations were the preferred prescriptions for such patients (41.67 %). However, classic H₁-receptor antagonists still were the most commonly used drugs. It may be concluded that the efficacy, side-effects and cost-effectiveness were the main factors influencing the patterns of drug prescribing. The highest cost of drug treatment in respiratory disease was asthma (average 196.75 baht).

Key words : Respiratory drugs.

Rerint request : Itthipanichpong C, Department of Pharmacology, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand.

Received for publication. March 17, 1994.

* This research work is supported by Rachadapiseksompoj Grant, Faculty of Medicine, Chulalongkorn University.

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จันทน์ อธิพานิชพงศ์, นภอร ภาวจิตร, อรณี ตั้งเผ่า. การสั่งใช้ยาาระบบทางเดินหายใจที่แผนกผู้ป่วยนอก โรงพยาบาลจุฬาลงกรณ์. จุฬาลงกรณ์เวชสาร 2537 มีนาคม; 38(3) : 137-143

การศึกษาการสั่งใช้ยาาระบบทางเดินหายใจที่แผนกผู้ป่วยนอก โรงพยาบาลจุฬาลงกรณ์ ระหว่างเดือน กุมภาพันธ์ 2532 ถึงเดือนมกราคม 2533 ได้เก็บใบสั่งยาเพื่อทำการศึกษาสัปดาห์ละ 1 ครั้ง เป็นเวลา 52 สัปดาห์ พบจำนวนผู้ป่วยที่มีอาการหรือโรคในระบบทางเดินหายใจจำนวน 1,513 ราย โดยมีการติดเชื้อของระบบทางเดินหายใจส่วนต้นมากที่สุด (26.04 %) รองมาเป็นโรคหืด ทางเดินหายใจอักเสบ โรคทางเดินหายใจอุดกั้นและอื่น ๆ ยาที่ถูกสั่งใช้ในโรคติดเชื้อในระบบทางเดินหายใจส่วนต้นเป็นยาที่ใช้เพื่อบรรเทาอาการต่าง ๆ ที่เกิดขึ้นได้แก่ยาลดไข้ ยาบรรเทาอาการคัดจมูก ยาลดน้ำมูก ยาขับเสมหะ ยาละลายเสมหะ และยาที่ใช้รักษาต้นเหตุที่ทำให้เกิดโรค ได้แก่ยาปฏิชีวนะ amoxycillin เป็นยาปฏิชีวนะที่นิยมใช้ในการรักษาโรคติดเชื้อของระบบทางเดินหายใจส่วนต้นมากที่สุด

ยาขยายหลอดลมที่ใช้ในการรักษาโรคหืดและทางเดินหายใจอุดกั้น ได้แก่ aminophylline และ β 2 adrenergic agonist drugs ในรูปของยารับประทานและยาพ่น สำหรับผู้ป่วยโรคภูมิแพ้ มีการสั่งใช้ยาด้านฮิสตามีน ทั้งในรูปของยาเดี่ยว และยาผสม ซึ่งโดยมากมักจะรวมกับยาบรรเทาอาการคัดจมูก และยาด้านฮิสตามีนแบบแก้ยังคงเป็นที่นิยมใช้อยู่มาก ดังนั้นประสิทธิภาพในการรักษา อาการข้างเคียง ราคา และความคุ้มค่าเป็นปัจจัยที่ผลต่อการสั่งใช้ยาของแพทย์ ส่วนของค่าใช้จ่ายด้านยาในการรักษาโรคที่สูงที่สุดในระบบทางเดินหายใจ คือ โรคหืด (เฉลี่ย 196.75 บาท)

Respiratory diseases have become one of the most common health problems affecting people who live in large cities like Bangkok where traffic jams and heavy industry are major sources of air pollution. It has been shown that in 1989 respiratory diseases and symptoms were the third most common complaints at the Out-Patient Clinic of Chulalongkorn Hospital (15.74 %).⁽¹⁾ Many factors that influence the rescribing pattern of practitioners, including advanced technology in medical practice, the pharmaceutical development of new respiratory drugs and the excessive items of respiratory drugs in the hospital formulary. All these factors also affect expenditures of drugs and health which seem to increase every year. Moreover, iatrogenic illnesses, including the toxic side effects, drug interaction, have become an increasingly important part of medical treatment in every country.⁽²⁾ In view of these factors, we considered appropriate to carry out a study of respiratory drugs prescribing at Chulalongkorn Hospital.

Objective

The aim of this study is to identify the pattern of respiratory drugs prescribing at the Out-Patient Clinic of Chulalongkorn Hospital during the year 1989 - 1990.

Materials and Methods

1. All prescriptions and the corresponding OPD

cards of patients suffering from respiratory diseases were collected at the Out - Patient Clinic (Room No. 9). Chulalongkorn Hospital from February 1989 to January 1990.

2. The study period was 52 weeks; the prescriptions were collected once a week starting from Monday during the first week of the study , Tuesday during the second week and so on until the 52nd week.
3. Records of the respiratory drugs prescribed were kept; these included all prescription names, the amounts of drugs given and the cost of each drug.
4. All the data obtained were analysed using a specially designed computer program.

Results

The total number of patients with respiratory symptoms or diseases who visited the Out-Patient Clinic of Chulalongkorn Hospital during the study period was 1,513. The respiratory disease most commonly found was upper respiratory tract infection (26.04 %). Others were asthma (10.44 %), bronchitis (6.21 %) chronic obstructive pulmonary diseases (COPD) (6.01 %), chronic cough (5.95 %), acute pharyngitis (3.97 %), allergic rhinitis (3.97 %) and acute tonsillitis (2.12 %), respectively (Table 1). Pulmonary tuberculosis was excluded from this study, but it was present in other infectious disease.

Table 1. Number of medical diagnosis, items of drug prescribing and the average items of drugs prescribed in each respiratory diseases.

Ranking	Code	Diseases of Symptoms	No. diagnosis	%	Total No. of	Average
					drug items	
1	4659	URI	394	34.71	1,066	2.71
2	4969	Asthma	158	13.92	354	2.24
3	4660	Bronchitis	94	8.28	213	2.27
4	496.	COPD	91	8.02	177	1.95
5	7862	Chronic cough	90	7.93	148	1.64
6	462.	Acute pharyngitis	60	5.29	153	2.55
7	4779	Allergic rhinitis	60	5.29	108	1.80
8	463	Acute tonsillitis	32	2.82	78	2.44
9	-	Miscellaneous (24 diseases or symptoms)	156	13.74	328	1.76
Total			1,135	100.00	2,625	2.42

URI = Upper respiratory tract infection

COPD = Chronic obstructive pulmonary disease

Table 2 demonstrated the range of common drugs employed to treat each respiratory symptom and disease, as well as the amount and frequency of the drugs prescribed. The cost of the drugs for treating each respiratory disease was shown in table 3.

Table 2. The five most prescribing drugs and the frequency of drug prescribing in each respiratory disease.

Disease or Symptom		Total No. of Drug prescribing	Drug			% of total No. of Drug prescribing
Code	Description		Code	Name	No. of prescribing	
4659	URI	1,066	2112	Paracetamol	281	26.36
			2904	Chlorpheniramine	198	18.57
			3832	Amoxicillin	165	15.48
			3814	Penicillin V	52	4.88
			1802	Actifed	46	4.32
4939	Asthma	354	1700	Aminophylline	95	26.84
			1724	Salbutamol systemic	54	15.25
			5906	Prednisolone	35	9.89
			1721	Bricanyl	29	8.19
			1714	Salbutamol inhaler	22	6.21
4660	Bronchitis	213	3832	Amoxicillin	27	12.68
			2112	Paracetamol	25	11.74
			.138	Mixture tussis	19	8.92
			1814	Bromhexine	17	7.98
			3832	Amoxicillin	14	6.57
496	COPD	177	1700	Aminophylline	73	41.24
			.138	Mixture tussis	10	5.65
			.009	Ammon carb mixture	9	5.08
			1724	Salbutamol	8	4.52
			1814	Bromhexine	8	4.52
			3832	Amoxicillin	7	3.95
			7862	Chronic cough	148	.138
			1817	Bromhexine	14	9.46
			1835	Dextromethorphan mixture	8	5.41
			2112	Paracetamol	8	5.41
			.009	Ammon carb mixture	7	4.73
			.025	Brown mixture	7	4.73
			1800	Dextromethorphan	6	4.05
			1802	Consinut capsule	6	4.05
462	Acute Pharyngitis	153	2112	Paracetamol	37	24.18
			3832	Amoxicillin	19	12.42
			3814	Penicillin V	19	12.42
			2904	Chlorpheniramine	9	5.83
			.009	Ammon carb mixture	7	4.58
			.138	Tussis mixture	6	3.92

COPD = Chronic obstructive pulmonary disease

URI = Upper respiratory infection

Disease or Symptom Code	Description	Total No. of		Drug		% of total No. of Drug prescribing
		Drug prescribing	Code	Name	No. of prescribing	
4779	Allergic rhinitis (vasomotor)	108	1802	Actifed	37	34.26
			2112	Paracetamol	16	14.81
			2904	Chlorpheniramine	14	12.96
			1806	Chlortab	8	7.41
			1814	Bromhexine	3	2.78
			2911	Mebhydrolin	3	2.78
			2912	Astemizole	3	2.78
463	Acute tonsillitis	78	2112	Paracetamol	17	21.79
			3832	Amoxycillin	13	16.66
			3814	Penicillin V	8	10.26
			1806	Chlortab	6	7.69
			3831	Ampicillin	6	7.69
			.138	Tussis mixture	3	3.85
			1807	Piriton expectorant	3	3.85
			1839	Romilar	3	3.85

Table 3. The cost of drug treatment in respiratory diseases and the average cost of each respiratory diseases.

Code	Disease or Symptom	No. of patient expended at cost										Average cost per disease	
		<50	50-99	100-149	150-199	200-249	250-299	300-349	350-399	400-449	450-499		>499
4659	URI	116	131	80	39	13	5	1	2	1	4	2	98.24
4939	Asthma	20	39	22	19	17	10	10	3	6	2	10	196.75
4660	Bronchitis	11	45	16	15	2	1	-	1	1	-	2	110.47
496	COPD	16	20	17	13	5	6	1	3	3	1	6	182.51
7862	Chronic cough	43	17	18	5	2	-	3	-	-	-	2	92.49
462	Acute Pharyngitis	18	22	11	4	2	1	-	-	1	-	1	106.32
4779	Allergic rhinitis	14	20	7	9	4	3	-	-	1	1	1	125.17
463	Acute tonsillitis	10	13	7	2	-	-	-	-	-	-	1	75.63

Discussion

Drugs prescribing for the treatment of upper respiratory tract infections (including acute pharyngitis and tonsillitis) and common respiratory diseases observed in the Out-Patient Clinic of Chulalongkorn Hospital, comprised those used for relieving respiratory symptoms (antihistamines, nasal decongestants, antitussives and mucolytics), and those used for eliminations the causative infections (antibiotics). It was found that paracetamol was prescribed most frequently (26.63 %) followed by chlorpheniramine (18.57 %).

It is well recognized that streptococcal species are common causative agents in upper respiratory tract infection. Therefore, the antibiotics of choice should be ones with a high antibacterial activity, narrow spectrum (low impact on bacterial ecology) and appropriate cost.⁽²⁾ One drug which fulfilled the above -mentioned criteria is penicillin V. However, this study found that penicillin V was prescribed in only 4.88 % of URI cases, whereas broad-spectrum penicillin, i.e. amoxicillin, was prescribed almost three times more frequently than penicillin V (15.48 %). The more frequent prescription of amoxicillin may be due to its greater ease of absorption and non-interference with food.

The bronchodilator most extensively prescribed in the treatment of asthma and COPD was aminophylline (26.84 % and 41.24 %, respectively). Both oral and inhaler forms of B₂-adrenergic drugs were employed in asthmatic patients (29.65 %). Prednisolone tablets were also prescribed in severe cases. Aminophylline decreases the breakdown of intracellular cyclic AMP by inhibition of phosphodiesterase. The result is an increase in cellular cyclic AMP concentration, with similar effects to those of B₂-adrenergic agonist.⁽³⁾

Aminophylline was prescribed extensively even though its therapeutic ratio is low (10 -20 micrograms/ml). Since a low dosage was generally employed, there was no evidence of drug toxicity. Moreover, the drug produced a high bronchodilator effect and its price is not as high as other bronchodilators. Cost - effectiveness is an important factor to be considered in the rational use of drugs especially in developing countries where resources are limited.

In allergic rhinitis patients, classic H₁-receptor blocking drugs in single - drug and combination form were prescribed (57.41 %). A combination of chlorpheniramine and nasal decongestant was commonly used (41.67 %) (see table 2). Chlorpheniramine alone was also prescribed (12.96 %) as was mebhydrolin (2.78 %). A new H₁-receptor - blocking drug, astemizole, was also prescribed (2.78 %). Antihistamines block the effects of histamine on H₁-receptors, particularly the effects of increased capillary permeability, vasodilation and itch-

ing.⁽⁴⁾ The adverse effects of classic H₁-receptor antagonist are related mainly to their direct effect on (a) the brain, causing sedation, and on (b) the muscarinic receptor, causing blurred vision, dry mouth etc.⁽⁴⁾ New H₁-receptor blocking drugs are claimed to bind preferentially to peripheral rather than central H₁-receptors;⁽⁵⁾ therefore, side effects due to central nervous system and other receptor involvement hardly occurred.

New H₁-receptor blocking drugs were prescribed once or twice daily because they have a long half - life. However, utilization of the expensive new H₁-blocking drugs was limited to patients whose socio-economic status is high. Several double-blind comparisons with older agents (such as chlorpheniramine) indicated that therapeutic efficacy was about equal,⁽⁶⁾ but the price of the older agents is much lower than the new class of drugs.

Regarding to cost of drug treatment in respiratory disease, our study revealed that the treatment of asthmatic patients involved highest cost for drugs (average 196.75 baht). COPD and allergic rhinitis were the second and third most costly (182.51 and 125.17 baht respectively). Duration of treatment of the above - mentioned chronic diseases was quite long, which is one of the factors that increases the cost of drug treatment.

Conclusion

Drugs prescribing in respiratory diseases was mainly for relieving respiratory symptoms. Factors that influenced prescribing patterns included the efficacy of the drugs, adverse drug reactions, costs - effectiveness, all of which have effects on the rational prescribing of drugs.

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