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## Role of Clinical Pharmacist in Smoking Cessation: A Prospective Interventional Study



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### ABSTRACT

**Context:** Cigarette smoking is a chronic condition that leads to significant morbidity and mortality. Tobacco use is one of the major risk factor for 6 out of 8 leading cause of death in the world. Around 1.1 billion people smoke all around the world and 182 million (16.6%) of them live in India. Also it is anticipated to increase the number of smokers more than 1.6 billion by 2025. **Objective:** To assess the impact of clinical pharmacist intervention in tobacco cessation program. **Materials and Methods:** A prospective interventional and survey based study was conducted in a multi-specialty hospital. Non co-operative and bedridden smokers were excluded from the study. Smokers were counseled regarding benefits of quitting tobacco use, harmful effects of tobacco, treatment for quitting and were reviewed. **Results:** 47.3% of smokers quit tobacco usage and 24.2% reduced use of tobacco. Among the quit smokers, 5.49% smokers used nicotine gum. **Discussion and Conclusion:** Offering smoking cessation counseling to all hospitalized smokers is effective and so smoking cessation clinic is necessary in all health care settings. This study shows statistically significant impact of patient counseling on smokers to quit tobacco use.



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## INTRODUCTION

Tobacco was introduced in India by the Portuguese 400 years ago. Since then tobacco consumption continued to rise in India. Cigarette smoking is a chronic condition that leads to significant morbidity and mortality. Smoking is the most preventable cause of death in our society (American Cancer Society- ACS). Around 1.1 billion people smoke all around the world and 182 million (16.6%) of them live in India. Also it is anticipated to increase the number of smokers more than 1.6 billion by 2025.

Researchers identified nicotine as the main addictive ingredient in tobacco. Nicotine is a potent para-sympathomimetic alkaloid found in the nightshade family of plants (Solanaceae) and a stimulant drug. Nicotine is quickly absorbed into the bloodstream and it takes just 8 seconds for nicotine to hit the brain. Nicotine is shaped like the natural brain chemical acetylcholine. Acetylcholine is one of many chemicals called neurotransmitters that carry messages between brain cells. Nicotine locks into acetylcholine receptors, rapidly causing changes in the brain and body. For instance, nicotine increases blood pressure, heart rate, and respiration (breathing).

Nicotine also attaches to acetylcholine receptors on neurons that release a neurotransmitter called dopamine. Dopamine is released normally when you experience something pleasurable like good food, your favorite activity, or the company of people you love. But smoking cigarettes causes neurons to release excess dopamine, which is responsible for the feelings of pleasure and energy. It causes the brain to release special chemicals that create feelings of pleasure and energy.

Within half an hour, effect fades away and the smoker is left feeling depressed and tired. This feeling is what causes smokers to light up the next cigarette. The cycle of stimulation and depression keeps repeating, which leads to addiction. Over time, the smoker develops a tolerance to nicotine and it takes more nicotine to get the same effect that the smoker used to get from smaller amounts. This leads to an increase in smoking.

Nicotine increases level of dopamine which is a key chemical behind the desire to consume drugs. Each cigarette contains about 10 milligrams of nicotine. But a smoker gets about 1 to 2 milligrams of the drug from each cigarette. Although it's a small amount, it is enough to make someone addicted.

Smoke contains tar, which has more than 7,000 chemicals, including tar, carbon monoxide, arsenic, benzene, cadmium, formaldehyde, ammonia and hydrogen cyanide etc., which causes various forms of cancer and other diseases. Many people neglect to accept the danger and continue smoking. Most smokers say that they find nothing more enjoyable and relaxing as smoking. Although some smokers are in denial about the risks associated with smoking, the majority of smokers continue literally addicted to nicotine. Smoking a cigarette a day might end up in having a risk of heart disease that is halfway between that of a smoker and a non-smoker. Smoking causes vascular stenosis, lung cancer and chronic obstructive pulmonary disease. Smoking is a risk factor in Alzheimer's disease.

Smoking continues to present a significant public health burden and is responsible for more than 4, 00,000 premature death each year. In developing countries such as India, where awareness level is low, the first step towards a tobacco free society includes anti-tobacco education and medical help for those who willing to help. Pharmacists are positioned to interact with smokers and encourage them to quit smoking.

According to the American Heart Association, nicotine addiction has historically been one of the hardest addictions to break, while the pharmacological and behavioral characteristics that determine nicotine addiction are similar to those determining addiction to heroin and cocaine i.e., tobacco dependence is a chronic condition that usually requires repeated intervention. Effective interventions exist that can produce long term cessation to double the rate achieved by smokers without treatment. Two approaches showed strong evidence of efficacy for smoking cessation: pharmacotherapy and patient counseling. Pharmacotherapy includes nicotine replacement therapy, Bupropion, Varenicline, etc. This study was taken up to create awareness and consequences of tobacco use and interventions of clinical pharmacist in motivating, preventing and monitoring of tobacco use.

## **MATERIALS AND METHODS**

### **Primary Objective:**

To assess the impact of clinical pharmacist intervention in tobacco cessation program.

**Secondary Objective:**

- To design and prepare patient information leaflets on tobacco cessation.
- To educate smokers to quit tobacco use.

**Study site:**

Multi-specialty hospital at Coimbatore

**Study design:**

Prospective interventional and survey based study

**Study period:**

6 months study

**Inclusion criteria:**

Tobacco users who were willing to participate in the study

**Exclusion criteria:**

Unwilling and bedridden smokers were excluded from study.

**Sources of data:**

- Patient demographic data
- History of tobacco use
- Questionnaires: Fagerstrom addiction scale for smokers

**Ethical Approval:**

Proposal was submitted and it was reviewed by ethics committee. Permission was granted to carry out the study.

**Data collection method:**

Patient demographic details are collected from the medical chart of the patient. Past medical history, past medication history and smoking status were collected directly from the patient and counselled them. After the counselling the post-class questionnaire were filled and by phoning method follow-up questionnaire were filled.

### **Statistical analysis:**

We analysed data using SPSS 16. Significance of data was analysed using Wilcoxon signed rank test.

## **RESULTS**

Out of 91 smokers, 43 (47.3%) quitted tobacco usage and 22 (24.2%) reduced use of tobacco. Among the quitted smokers, 5 smokers used nicotine gum.

A brochure was prepared with contents such as content of cigarettes, complications of tobacco use, risk of tobacco use during pregnancy, withdrawal symptoms, benefits of quitting and treatment methods to quit. A tobacco cessation rally was conducted on 'World No Tobacco Day' i.e., May 31 2014 and distributed leaflets, brochures during rally.

### **Based on Fragerstrom Addiction Scale for Smokers (Table 2)**

Among 91 smokers, 21 (23%) were having very low dependency, 35 (38.46%) were having medium dependency, 26 (28.57%) were having high dependency and 9 (9.89%) were having very high dependency.

### **Age wise distribution of smokers (Table 2)**

Out of 91 tobacco users, 3 (3.3%) smokers were found between the age group of 20 – 29 years. 14 (15.4%) smokers were in the age group of 30-39 years. 20 (22%) smokers were in the age group of 40-49 years. 30 (32.9%) were found between the age group of 50-59 years. 16 (17.6%) smokers were in the age group of 60-69 years. 8 (8.8%) smokers were in the age group of 70-79 years.

### **Education Level of smokers (Table 2)**

Among 91 smokers, 44 (48.4%) of smokers had high school level education. 13 (14.3%) of smokers had higher secondary education. 14 (15.4%) of smokers were diplomat. 11 (12.1%) of smokers were graduate. 9 (9.8%) smokers were illiterate.

**Duration of smoking (Table 2)**

Among 91 smokers, 12 (13.2%) of smokers were using tobacco for 0 to 9 years. 26 (28.7%) of smokers were using tobacco for 10 to 19 years. 22 (24.2%) of smokers were using tobacco for 20 to 29 years. 21 (23%) of smokers were using tobacco for 30 to 39 years. 9 (9.89%) of smokers were using tobacco for 40 to 49 years. 1 (1.1%) of smokers were using tobacco for 50 to 59 years.

**Complications in smokers (Table 2)**

- One complication : Smoker with any one disease like hypertension/ diabetes mellitus/ stroke/ myocardial infarction/ kidney disease/ COPD/ DVT/ Cancer/ Seizure/ jaw problem/ liver disease.
- Two complications: Smoker with any two diseases.
- Three complications: Smoker with any three diseases.
- No complication: Smoker without any diseases.

Among 91 smokers, 45 (49.4%) of smokers enrolled were having any one complication. 21 (23.1%) of smokers were having two complications. 13 (14.3%) of smokers were having three complications. 12 (13.2%) smokers were without any medical complication.

**Response after one month follow-up among study population**

Among 91 smokers, 43 (47.3%) of smokers found to be completely stopped the smoking. 22 smokers reduced tobacco use and 26 smokers didn't respond to our study.

<b>Dependence</b>	<b>Very low dependence (0 to 2)</b>	<b>Medium dependence (3 to 5)</b>	<b>High dependence (6 to 7)</b>	<b>Very high dependence (8 to 10)</b>
Number of Smokers	11	22	7	3
Percentage (%)	25.6	51.1	16.3	7

**Based on Fragerstrom Addiction Scale for quitted Smokers (Table 2)**

Among 43 smokers who quitted tobacco usage, 11 (25.6%) had very low dependence, 22 (51.1%) had medium dependence, 7 (16.3%) had high dependence and 3 (7%) had very high dependence.

**Age-wise distribution of quitted smokers (Table 2)**

In 43 quitted smokers, 3 (7%) smokers were in the age group of 20 – 29 years. 7 (16.3%) smokers were in the age group of 30-39 years. 7 (16.3%) smokers were in the age group of 40-49 years. 17 (39.5%) were found between the age group of 50-59 years. 4 (9.3%) smokers were in the age group of 60-69 years. 5 (11.6%) smokers were in the age group of 70-79 years.

**Education Level of quitted smokers (Table 2)**

In 43 quitted smokers, 20 (46.5%) of smokers had high school level education. 5 (11.6%) of smokers had higher secondary education. 6 (14%) of smokers were diplomat. 9 (20.9%) of smokers were graduate. 3 (7%) smokers were illiterate.

**Duration of smoking in quitted smokers (Table 2)**

In 43 quitted smokers, 8 (18.6%) of smokers were using tobacco for 0 to 9 years. 11 (25.6%) of smokers were using tobacco for 10 to 19 years. 8 (18.6%) of smokers were using tobacco for 20 to 29 years. 11 (25.6%) of smokers were using tobacco for 30 to 39 years. 4 (9.3%) of smokers were using tobacco for 40 to 49 years. 1 (2.3%) of smokers were using tobacco for 50 to 59 years.

**Tobacco use of quitted smokers (Table 2)**

Among 43 quitted smokers, 26 (60.5%) of the smokers enrolled in study were light smokers. 14 (32.5%) were moderate smokers. 3 (7%) were heavy smokers.

**Complications in quitted smokers (Table 2)**

Among 43 quitted smokers, 45 (49.4%) of enrolled smokers had any one complication. 21 (23.1%) of smokers had two complication. 13 (14.3%) of smokers had three complication. 12 (13.2%) smokers were without any medical complications.

**Table 2: Dependence of smokers in relation to variables in total and quitted smokers**

	Sub-Variables	Total smokers (n=91)				Quitted smokers (n=43)			
		0 to 2	3 to 5	6 to 7	8 to10	0 to 2	3 to 5	6 to 7	8 to10
Age in years	20-29	1	2	0	0	1	2	0	0
	30-39	5	4	5	0	3	3	1	0
	40-49	5	8	3	4	1	5	1	0
	50-59	8	11	10	1	5	7	4	1
	60-69	0	6	7	3	0	3	0	1
	70-79	2	4	1	1	1	2	1	1
Education qualification	High School	10	15	13	6	5	11	2	2
	Higher Secondary	2	5	4	2	1	4	0	0
	Diploma	5	6	3	0	3	2	1	0
	Graduate	3	4	3	1	2	4	3	0
	Illiterate	1	5	3	0	0	1	1	1
Number of Complications	One complication	10	21	10	4	6	11	4	2
	Two complication	4	8	8	1	1	5	2	1
	Three complication	5	4	2	2	3	4	0	0
	No complication	2	2	6	2	1	2	1	0
(yrs)	0—9	6	6	0	0	4	4	0	0
	10—19	8	7	10	1	3	6	2	0
	20—29	5	8	7	2	2	4	2	0

30—39	1	10	6	4	0	7	2	2
40—49	0	4	3	2	1	1	1	1
50—59	1	0	0	0	1	0	0	0

0-2: very low dependence; 3-5: low dependence; 6-7: medium dependence; 8-10: high dependence

### Statistical analysis

The data was statistically analysed using SPSS. To know the impact of patient counselling, we performed Wilcoxon signed rank test. Comparing the willingness, reason and motivation of study population to quit tobacco usage in pre and post questionnaire, the p-value was found to be 0.000 ( $P < 0.05$ ) which shows statistically significant impact of patient counselling on smokers to quit tobacco use.

Variables	Pre/post questionnaire	Mean	Standard deviation	P- value
Willingness to quit	Pre-questionnaire	1.9231	0.98014	0.000
	Post- questionnaire	1.4835	0.86104	
Reason to quit	Pre-questionnaire	1.2637	0.5548	0.000
	Pre-questionnaire	1.9560	0.90569	
Motivation to quit	Pre-questionnaire	1.5934	0.61424	0.000
	Pre-questionnaire	2.3297	0.53862	

### DISCUSSION

In our study, among the study population (N=91), 43 subjects (47.3%) quitted tobacco use and 22 (24.2%) reduced the use of tobacco after counselling for quitting tobacco.

Most smokers state that relaxation is the main outcome what they are looking for and there are also other reasons like habituation, stress, work nature and fantasy. As their habit grow, the fantasy transform to habituation and addiction.

Under tobacco control rules in India; they should implement smoke free polices that would be exemplary for implementation of a smoke free policy for other public places. Smoke-free polices in schools may help in reducing tobacco prevalence amongst its students.

Many smokers were unaware of the fact that with every puff, they inhale around 7000 various toxins which causes various forms of cancer and other diseases. Surely, it cannot be a pleasurable experience when one knows that with every puff, he is becoming more prone to many diseases.

However, smoking also results in wrinkles, dull complexion, bad breath, chapped lips among various other things. If beauty is a concern, then smoking is the last thing one should do. Smoking cessation includes 9 pharmacotherapies and 3 types of counselling (intra and extratreatment social support, skills building) conducted with 3 types of modalities (individual, group, and telephone). Smokers are being opportunistic in making decision to quit smoking.

Work nature is also a very big reason to be taken into consideration. Smokers indulged in profession with major physical activity faced a huge problem since their chances to quit smoking was very less in comparison to others. When smokers suddenly quit smoking, they often get strong cravings, especially when they had smoking associated situation (e.g. meeting a friend, on a coffee break, etc.).

The common withdrawal syndrome is characterized by physical and psychological effects like irritability, poor concentration, frustration or anger, restlessness, insomnia, depression, anxiety, problems getting along with friends and family, increased appetite, and craving for smoking. Many smokers who wish to quit the habit of smoking cannot be succeeding in their mission due to these withdrawal syndromes. Clinical pharmacist can play a major role in helping smokers to handle common withdrawal syndrome of tobacco use.

### **Limitations of the study**

The confirmation regarding quitting of tobacco use was subjective assessment based on the self-statement by the patients. It was not validated by performing tests such as urine cotinine or

carbon monoxide analysis of breath. Caution must be exercised in generalizing results because of the small, selective sample size and limited geographical region.

## **CONCLUSION**

From our study, we concluded that pharmacist intervention brought an impact on users to reduce and quit tobacco use. Non pharmacological therapeutic approaches that may improve smoking cessation outcomes include cognitive, behavioural and motivational therapies.

Offering smoking cessation counselling to all hospitalized smokers is effective as long as supportive contacts continue after discharge so, smoking cessation clinic is necessary in all health care settings. Smoking Cessation Clinic support group assess, educate, consult, counsel and provide medications to quit /reduce tobacco use. A personalized quit plan can be offered by tobacco cessation group for anyone who wants to quit/reduce their tobacco use.

Diseased participants were more conscious and the commitment to quit the habit was higher among them. This certainly indicates that pharmacist's counselling on smoking can be of greater help in reducing the habit, thus controlling related disease and death.

Also a clinical pharmacist can play a major role in helping smokers to handle common withdrawal syndrome and cravings of tobacco use. Along with patient counselling, social and family support is essential in tobacco quitting.

Along with the pharmacological and non-pharmacological strategies community wide health promotion (Rallies, brochures, etc.) using local mass media can have an influence by reaching not only smokers, but also their families and other adults who are in the community, with health behaviour messages.

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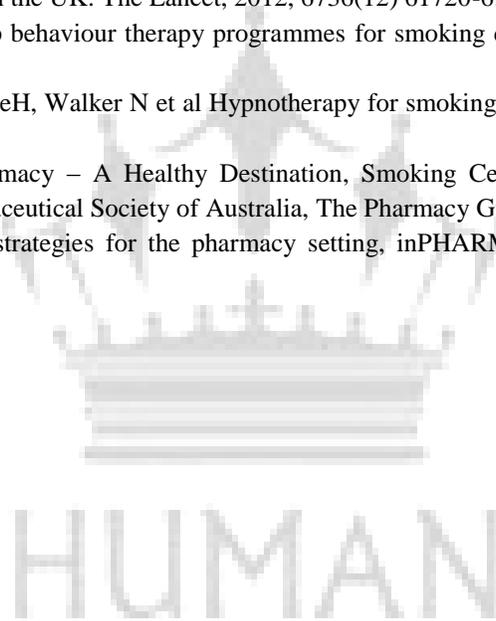
classmates, juniors, my most adoring and loving friends to their kind care, untiring help and a helping hand whenever needed.

## REFERENCES

1. Mahendrakumar BJ, Soumya M, Jagadish BD, Praveen K, Varun SC. A Study on Tobacco Cessation by Clinical Pharmacist. *Indian Journal of Pharmacy Practice*. 2013; 6(1): 36-40.
2. M. Rajanandh G, Ramasamy C, Nageswari AD, Ethirajan N. Role of clinical pharmacist in smoking cessation: A prospective randomized trial. *Archives of Pharmacy Practice*. 2012; 3(4): 254-260.
3. Surani NS, Pednekar MS, Sinha DN, Singh G, Warren CW, Asma S, Gupta PC, Singh PK. Tobacco use and cessation counseling in India data from the Global Health Professions Students Survey, 2005-09. *Indian Journal of Cancer*. 2012; 49 (4):425- 430.
4. Beth CB, Karen SH, Dr.P.H, James C, Amanda LG, Frederick RB. A tailored intervention to support pharmacy-based counseling for smoking cessation. *Nicotine and Tobacco Research*. 2010; 12(3): 217-225.
5. Terhi K, Kari L, Kirsi P, Patrick S, Marja A. Community pharmacists' involvement in smoking cessation: familiarity and implementation of the National smoking cessation guideline in Finland. *BMC Public Health*. 2010; 10: 444-454.
6. Ahmad AE, Abdorrahman C, Firoozeh M, Hossein S, Mohammad TB, Gholam RS. Smoking behavior, nicotine dependency, and motivation to cessation among smokers in the preparation stage of change. *Journal of Education and Health Promotion*. 2012; 1: 35-38.
7. Gauravi AM, Surendra SS, Pallavi AU, Parishi VM, Pallavi SR, Subhadra DG. Establishing a model workplace tobacco cessation program in India. *Indian Journal of Occupational and Environmental Medicine*. 2009; 13(2): 97-103.
8. Raymond N. Nonpharmacologic Therapy for Smoking Cessation: Characteristics and Efficacy of Current Approaches. *The American Journal of Medicine*. 2008; 121(4A): S11-S19.
9. Wai TH, Sally MD, Donna P, Trish C. Use and perceived helpfulness of smoking cessation methods: results from a population survey of recent quitters. *BMC Public Health*. 2011; 11: 592-601.
10. Christopher B, Colin H, Murray L, Hayden McR, Varsha P, Jonathan W, Natalie W. Electronic cigarettes for smoking cessation: a randomised controlled trial. *The Lancet*. 2013; 1-10.
11. Stevens S. S, Megan E. P, Michael C. F, Douglas E., Fraser, Danielle E, Sandra J., Japuntich, Bruce C., Comparative Effectiveness of Five Smoking Cessation Pharmacotherapies in Primary Care Clinics. *NIH Public Access* 2009 December; 169(22): 2148-2155
12. K Suchanek H, C M Fenlon, R L Corelli, A V Prokhorov, S A Schroeder. Tobacco sales in pharmacies: time to quit. 2006; 15(): 35-38.
13. Beth A. M, Ruth H. B, and Betty A. C., Effect of a tobacco cessation continuing professional education program on pharmacists' confidence, skills, and practice-change behaviors. *NIH Public Access* 2010; 50(1): 9-1
14. Marc C, Regina M van der Meer, Gerard M Schippers. Smoking Cessation Quitlines in Europe: Matching Services to Callers' Characteristics. *BMC Public Health* 2010; 10(770): 1471-2458.
15. Billie B, Christine P, Catherine D'Este, Robert Sanson-Fisher, Robert West, Afaf G, Mohammad S, Robert C. RCT of a client-centred, caseworker-delivered smoking cessation intervention for a socially disadvantaged population. *BMC Public Health* 2011; 11(70): 1471-2458.
16. Dzibur. A, Pepic Esad, Dzibur. A, Ilvana. H, Jamin. H, Nada. S. The impact of respiratory symptoms presence on quality of life of tobacco smokers. *Archives of Pharmacy Practice* 2012; 3(4).
17. June E. E, Wenyu Wang, Ying Zhang, Elisa T. Lee and Thomas K. Welty. Tobacco Use and Cardiovascular Disease among American Indians: The Strong Heart Study. *International Journal of Environmental Research and Public Health* 2010; 7(): 3816-3830.

18. JagdishKaur, Kuldeep S. Sachdeva, BhaveshModi, Dinesh C. Jain, Lakhbir S. ChauhanParesh Dave, Rana J. Singh, Nevin Wilson. Promoting tobacco cessation by integrating 'brief advice' in tuberculosis control programme. WHO South-East Asia Journal of Public Health 2013; 2(1): 2224-3151.
19. L Zhang, WF Wang and G Zhou. a cross-sectional study of smoking risk factors in junior high school students in henan, china. 2005; 36(6).
20. Lawrence CA, Shu-Hong Z, David BN, Nancy JA, Sean N, Melissa RP, Anne MJ. Benefits of Telephone Care Over Primary Care for Smoking Cessation. Arch Intern Med 2006; 166(): 536-542.
21. Nancy AR, Marcus RM, Lindsay FS. Smoking Cessation Interventions for Hospitalized Smokers. Arch Intern Med 2008; 168(18): 1950-1960.
22. Yu-Jin P, SungkyuL, Yun-HK, Kang-SL, Hyeon-WY, Myung-SK, Cheol-HK, Ok J. Effect on Smoking Quit Rate of Telling Smokers their Health Risk Appraisal in Terms of Health Age: A Randomized Control Trial. Asian Pacific Journal of Cancer Prevention 2014; 15(12): 4963-4968.
23. Bader P, McDonald P, Selby P. An algorithm for tailoring pharmacotherapy for smoking cessation: results from a Delphi panel of international experts. Tobacco Control 2009; 18(): 34-42.
24. David MT, Susan M, Linda B, Douglas E, Debbie S, Linsey G. Smoking prevalence and smoking cessation services for pregnant women in Scotland. BioMedCentral 2010; 5(1): 1-10.
25. American Cancer Society. Cancer Facts & Figures 2012. Atlanta, Ga. 2012.
26. American Cancer Society. Cancer Facts & Figures 2013. Atlanta, Ga. 2013. Centers for Disease Control and Prevention (CDC). Smoking Cessation and Interventions Fact Sheet Accessed at [www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/cessation/quitting/index.htm](http://www.cdc.gov/tobacco/data_statistics/fact_sheets/cessation/quitting/index.htm) on February 19, 2014
27. Fagerstrom KO, Hughes JR. Nicotine concentrations with concurrent use of cigarettes and nicotine replacement: a review. Nicotine Tob Res. 2002;4Suppl 2:573-579.
28. Henningfield JE, Fant RV, Buchhalter AR, Stitzer ML. Pharmacotherapy for nicotine dependence. CA Cancer J Clin. 2005;55:281-299..
29. The Health Consequences of Smoking: A Report of the Surgeon General, United States Department of Health and Human Services. Washington, DC, 27 May 2004.
30. International Statistical Classification of Diseases and Related Health Problems, 10th revision. Geneva, World Health Organization, 2003.
31. Fiore MC et al. Treating Tobacco Use and Dependence. Clinical Practice Guideline. Rockville, MD, US Department of Health and Human Services. Public Health Service, 2000. <http://www.cochrane.org/cochrane/revabstr/ab000214.htm>
32. Pharmacists Against Tobacco. Global Network of Pharmacists Against Tobacco. (<http://www.fip.org/pharmacistsagainsttobacco/20040915PATupdate.pdf>)
33. Fiore MC, Jaén CR, Baker TB, et al. Clinical Practice Guideline. Treating Tobacco Use and Dependence: 2008 Update. Rockville, MD: U.S. Department of Health and Human Services. Public Health Service. May 2008. [http://www.guideline.gov/summary/summary.aspx?ss=15&doc\\_id=12520&string](http://www.guideline.gov/summary/summary.aspx?ss=15&doc_id=12520&string). Accessed March 8 2014
34. Hall SM, Humfleet GL, Gorecki JA, et al. Older versus younger treatment-seeking smokers: Differences in smoking behavior, drug and alcohol. Use, and psychosocial and physical functioning. Nicotine & Tobacco Research 2008;10:463-470.
35. Lumley J, Chamberlain C, Dowswell T, et al. Interventions for promoting smoking cessation during pregnancy. Cochrane Database of Systematic Reviews 2009, Issue 3. Art. No.: CD001055. DOI: 10.1002/14651858.CD001055.pub3.
36. The Benefits of Quitting Smoking. Available at: <[www.med.upenn.edu/ttucr/pdf/benefits.pdf](http://www.med.upenn.edu/ttucr/pdf/benefits.pdf)>. Accessed April 11, 2010.
37. Taylor DH, Hasselblad V, Henley J, et al. Benefits of smoking cessation for longevity. Am J Public Health 2002;92:990-996.
38. Eisenberg MJ, Filion KB, Yavin D, et al. Pharmacotherapies for smoking cessation: a meta-analysis of randomized controlled trials. CMAJ 2008;179:135-144.

39. Stead LF, Perera R, Bullen C, et al. Nicotine replacement therapy for smoking cessation. Cochrane Database of Systematic Reviews 2008, Issue 1. Art. No.: CD000146.DOI: 10.1002/14651858.CD000146.pub3.
40. Zwar N, Bell J, Peters M, et al. Nicotine and nicotine replacement therapy – the facts. *Pharmacist* 2006;25:969-973.
41. Mitchell, B, et al., “Tobacco Use and Cessation: The Adverse Health Effects of Tobacco and Tobacco-Related Products,” *Primary Care: Clinics in Office Practice* 26(3):463-98, September 1999.
42. Barua, RS, et al., “Heavy and light cigarette smokers have similar dysfunction of endothelial vasoregulatory activity: an in vivo and in vitro correlation,” *Journal of the American College of Cardiology* 39(11):1758-63, June 5, 2002.
43. Tsuchiya, M, et al., “Smoking a single cigarette rapidly reduces combined concentrations of nitrate and nitrite and concentrations of antioxidants in plasma,” *Circulation* 105(10):1155-7, March 12, 2002.
44. Nicotine replacement therapy for smoking cessation. The Cochrane Library, Updated September 2012
45. Stead LF & Lancaster T. Does a combination of smoking cessation medication and behavioural support help smokers to stop? *Cochrane Review* Dec 2012
46. Pirie K, Peto R, Reeves G et al. The 21st century hazards of smoking and the benefits of stopping: a prospective study of one million women in the UK. *The Lancet*, 2012, 6736(12) 61720-6.
47. Stead LF, Lancaster T. Group behaviour therapy programmes for smoking cessation. (Review). The Cochrane Collaboration, 2009.
48. Barnes J, Dong CY, McRobbieH, Walker N et al Hypnotherapy for smoking cessation (Review). The Cochrane Collaboration, 2010. Issue 10.
49. Pedic F, Rutherford G. Pharmacy – A Healthy Destination, Smoking Cessation and Pharmacy. Pharmacia Australia Pty Limited, Pharmaceutical Society of Australia, The Pharmacy Guild of Australia, 2001.
50. Neto A. Smoking cessation strategies for the pharmacy setting, inPHARMation, Pharmaceutical Society of Australia, December 2002.



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