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Cost-effectiveness analysis of clinical smoking cessation interventions in Thailand

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ABSTRACT

Aims Clinical smoking cessation interventions have been found typically to be highly cost-effective in many high-income countries. There is a need to extend this to low- and middle-income countries and undertake comparative analyses. This study aimed to estimate the incremental cost-effectiveness ratio of a range of clinical smoking cessation interventions available in Thailand. **Methods** Using a Markov model, cost-effectiveness, in terms of cost per quality-adjusted life years (QALY) gained, from a range of interventions was estimated from a societal perspective for males and females aged 40 years who smoke at least 10 cigarettes per day. Interventions considered were: counselling in hospital, phone counselling (Quitline) and counselling plus nicotine gum, nicotine patch, bupropion, nortriptyline or varenicline. An annual discounting rate of 3% was used. Probabilistic sensitivity analyses were conducted and a cost-effectiveness acceptability curve (CEAC) plotted. Comparisons between interventions were conducted involving application of a 'decision rule' process. **Results** Counselling with varenicline and counselling with nortriptyline were found to be cost-effective. Hospital counselling only, nicotine patch and bupropion were dominated by Quitline, nortriptyline and varenicline, respectively, according to the decision rule. When compared with unassisted cessation, probabilistic sensitivity analysis revealed that all interventions have very high probabilities (95%) of being cost-saving except for nicotine replacement therapy (NRT) patch (74%). **Conclusion** In middle-income countries such as Thailand, nortriptyline and varenicline appear to provide cost-effective clinical options for supporting smokers to quit.

Keywords Bupropion, cost-effectiveness, cost–utility, counselling, nicotine replacement therapy, nicotine gum, nicotine patch, nortriptyline, smoking cessation, varenicline.

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INTRODUCTION

Smoking has been widely recognized as the greatest preventable cause of death, killing 6 million people globally each year [1]. Furthermore, the morbidity associated with smoking-related diseases places more burden on the health system, resulting in more than 56 million DALYs lost in 2004 and ranking fifth among all 24 risk factors in the World Health Organization (WHO)'s *Global Health Risks* report [2]. In Thailand, the burden of diseases from smoking is also high, ranking first (17% of total DALYs lost) and sixth (4.1% of total DALYs lost) in men and women, respectively [3]. Currently, there are approximately 9.5 million regular Thai smokers, half of whom are heavy smokers who smoke 10 or more cigarettes per day [4].

The number of smokers has been dropping steadily since 1991 [4]. However, there are concerns regarding the high proportion of male smokers and the increasing number of new smokers which has exceeded the number of successful 'quitters' [5]. According to the WHO guidance on tobacco control or the WHO Framework Convention on Tobacco Control (FCTC), smoking cessation has been included in Article 14 as one of the priorities for tackling tobacco dependence and it recommends all member countries to identify effective smoking cessation treatments and to incorporate them into national tobacco control programmes [6]. However, in the past, smoking cessation services were not widely accessible in Thailand due to the limited number of smoking cessation clinics [7] and the fact that pharmacological interventions were not reimbursable [8]. There is some literature