Self-Report in Screening for Tobacco Smoking

> **RECOMMENDATIONS**
>
> 1. **Among all adults, we recommend that healthcare providers screen for tobacco smoking** *(strong recommendation, low certainty evidence)*.
>
> 2. **Among all adolescents, we recommend that healthcare providers screen for tobacco smoking** *(strong recommendation, very low certainty evidence)*.

Considerations

The consensus panel considered the following when formulating this recommendation:

- Most agreed that tobacco smoking is a priority risk factor for screening.
- The majority of the panel members favored screening, although the quality of current evidence is low to very low.
- Underreporting may be inevitable, but those who would be screened as smokers are most likely true smokers.
- The panelists agreed that screening for tobacco smoking is cost-effective, particularly in the long run.
- The majority agreed that screening for tobacco smoking is equitable, acceptable, and feasible. Equity issues in health may also be reduced if the national insurance system will cover for therapy and medicines needed for smoking cessation.
- The question was raised regarding access of adolescents to tobacco even if it is illegal. It was clarified that adolescents have access to tobacco, as reflected in the national survey. Its rampant use warrants a strong recommendation to screen including adolescents.

Remarks

Both statements were settled as strong recommendations despite low to very low certainty evidence due to the burden of the risk factor as to both health and economic aspects.

3.6.1 Burden of disease

Non-communicable diseases, such as cardiovascular diseases, cancer, diabetes, and chronic respiratory disease, kill 41 million people each year, accounting for 71% of all deaths globally. Close to 80% of NCD deaths occur in low- and middle-income countries.(1) In the Philippines, NCDs account for more than 2/3 of all deaths and are the major cause of premature death and disability.(2) Economic costs from NCDs are significant, both from direct costs of treatment and indirect costs from productivity losses. It is estimated that as much as Php 756.5 billion is lost per year, with Php 680.8 billion from losses due to reduced productivity and loss of workforce.(2)

Smoking is a major risk factor for NCDs and, in 2019, caused more than 7 million deaths worldwide, or 20.2% of all deaths in males and 5.8% in females.(3) Despite the stronger push for tobacco control strategies, particularly the tobacco excise tax in recent years, the latest WHO data still show a high age-standardized prevalence of smoking among Filipinos aged 15 years and older at 24.3% overall (41.6% in males, 7.0% in females).(2) It is similar to the 2018 National Nutrition Survey data, which reports a prevalence of 20.7% (41.3% in males and 5.8% in females) for current smoking among adults age 20 years and older and 4.0% In children aged 10 to 19 years.(4) As of 2015, 14.5% of adolescents ages 13 to 15 years (20.5% and 9.1% of male and females, respectively) were current smokers.(5)

Despite diverse approaches to economic analysis, studies consistently show significant financial and health costs from smoking borne by individuals and societal costs to the broader community. Global health expenditure and productivity losses in 2012 were estimated to amount to as much as USD 1436 billion.(6) According to the Southeast Asia Tobacco Control Alliance (SEATCA) report, the Philippines spent Php 177 billion to treat just four of over 30 tobacco-related diseases, while tobacco excise tax collections for that year were inadequate to cover this deficit. (7)

3.6.2 Benefits and Harms of Screening Tests

Direct evidence
At present, there are no studies that report the effects of screening for tobacco smoking alone on mortality, morbidity (e.g., cardiovascular events, cancer) or smoking cessation in adults, or health outcomes, prevention of smoking, or smoking cessation in children and adolescents.

Indirect evidence
Since there were no studies that provide direct evidence on the effectiveness of screening for smoking, a review of the evidence for the effectiveness of smoking cessation interventions among adults and adolescents was undertaken.

This evidence summary is based primarily on the USPSTF evidence reviews, which were appraised to be comprehensive, updated, and methodologically rigorous. In making this evidence summary, aside from reviewing and extracting the evidence from the USPSTF reviews, relevant references were also retrieved and reviewed for clarification or to extract more data when necessary.

Smoking Cessation Interventions in Adults
The USPSTF evidence synthesis for tobacco cessation interventions in adults is an overview of 64 reviews: 32 primary reviews on smoking interventions for the general adult population, 21 on specific subpopulations, and 11 ancillary reviews.(8) Most of the primary studies were Cochrane systematic reviews or meta-analyses. The methods for the search, selection, and quality assessments of the included reviews are described in more detail in the USPSTF document.(8)

There is limited evidence on the effects of smoking cessation on morbidity and mortality. A systematic review on the combination of behavioral and pharmacologic interventions reported the results of a single study that investigated the effect of an intensive, physician-based behavioral intervention.(9) The study randomized 1,445 male smokers with high cardiorespiratory risk to either an intensive stop-smoking intervention that included physician advice, written materials, and one follow-up at the health center or no intervention. It reported reductions in all-cause mortality by 7% (95% CI -20 to +9%), fatal coronary artery disease by 13% (95% CI -33 to +13%), and lung cancer by 11% (95% CI -41 to +38%), however, none of these were statistically significant.(10)

Evidence for the effectiveness of smoking cessation interventions in increasing quit rates is more robust. Systematic reviews and meta-analyses show that behavioral and pharmacologic interventions, alone or in combination, effectively increase long-term (at least 6 months) smoking cessation in the general adult population compared to no intervention or usual care (Table 17). The trials included in these systematic reviews enrolled adult smokers who were identified primarily through self-report.

Table 17. Effectiveness of selected interventions: smoking cessation at 6 or more months

Author, year	Intervention	No. of studies	No. of participants	Risk Ratio (95% CI)	I^2	Quality (GRADE)
Stead 2016 (193)	Combined pharmacotherapy and behavioral support	52 RCTs	19,488	1.83 (1.69, 1.98)	36%	high
Pharmacotherapy						
Hartmann-Boyce 2018 (194)	Nicotine replacement therapy	133 RCTs	64,640	1.55 (1.49, 1.61)	39%	high
Howes 2020 (195)	Bupropion *vs.* placebo	46 RCTs	17,866	1.64 (1.52, 1.77)	15%	high
Cahill 2016 (196)	Varenicline *vs.* placebo	27 RCTs	12,625	2.24 (2.06, 2.43)	60%	high
Behavioral Interventions						
Stead 2013 (191)	Physician advice	26 RCTs	22,239	1.76 (1.58, 1.96)	40%	moderate
Lancaster 2017 (197)	Individual Counseling alone *vs.* minimal contact control	27 RCTs	11,000	1.57 (1.40, 1.77)	50%	high
Hill-Rice 2017 (198)	Nursing intervention	44 RCTs	20,881	1.29 (1.21, 1.38)	50%	moderate
Stead 2017 (199)	Group behavioral counseling *vs.* self-help program	13 RCTs	4,395	1.88 (1.52, 2.33)	0%	moderate
Whittaker 2019 (200)	Mobile-phone based interventions *vs.* minimal support	13	14,133	1.54 (1.19, 2.00)	71%	moderate
	Text messaging + other intervention *vs.* other intervention alone	4	997	1.59 (1.09, 2.33)	0%	moderate

Author, year	Intervention	No. of studies	No. of participants	Risk Ratio (95% CI)	I^2	Quality (GRADE)
Taylor 2017 (201)	Internet (interactive and tailored) *vs.* self-help or usual care	8	6,786	1.15 (1.01, 1.30)	58%	low
Notley 2019 (202)	Incentives vs. usual care or non-incentive based intervention	30	20,060	1.49 (1.28, 1.73)	33%	high
Ussher 2019 (203)	Exercise *vs.* no exercise	21	6,607	1.08 (0.96, 1.22)	0%	low
Alternative and Complementary Therapies						
White 2014 (204)	Acupuncture vs. sham acupuncture	9	1,892	1.10 (0.86, 1.40)	23%	moderate

A systematic review and meta-analysis that included 24 randomized controlled trials on 13,141 adult participants from 11 low- to middle-income countries (LMICs) also showed that brief advice, behavioral counseling, combination bupropion and counseling, and nicotine replacement therapy were effective in promoting abstinence from smoking for at least 6 months in these settings (Table 18).(11)

Table 18. Effectiveness of selected interventions in LMICs

Intervention	Control	# of studies	# of participants	Odds Ratio (95% CI)	I^2	Quality (GRADE)
Bupropion	Placebo vs.Usual Care	2	1397	1.52 (0.67, 3.41)	72%	low
Bupropion plus Counseling	Usual Care	2	1429	12.40 (4.71, 32.65)	71%	low
Nicotine Replacement Therapy	Brief Advice vs.Usual Care	4	1230	1.76 (1.30, 2.37)	13%	moderate
Counseling	Brief Advice vs. Usual Care	8	5735	6.87 (4.18, 11.29)	67%	moderate
Brief Advice	Standard Care	4	728	2.46 (1.56, 3.88)	0%	moderate

Smoking Prevention and Cessation Interventions in Children and Adolescents
The USPSTF evidence review included 25 trials that examined the effects of primary care interventions designed to prevent tobacco use and/or promote smoking cessation on smoking prevalence and quit rates among children and adolescents. The methods for the search, selection, quality assessments and summary of the evidence are described in detail in the USPSTF document.(12)

No studies reported on health outcomes (e.g., cardiovascular, respiratory, oral, and dental health, cancer, mortality). One observational study with a long-term follow-up of 16 years found that a brief 2 to 3-minute intervention, which included asking about smoking status and counseling, administered during routine dental visits did not reduce the likelihood of smoking in adulthood (OR 0.78, 95% CI 0.56 to 1.09).(13) The study had a high risk of bias because of significant attrition—only 39% of the original sample responded to the follow-up survey and were included in the analysis.

A meta-analysis of 13 randomized controlled trials (RCTs) that included a total of 21,700 participants found that behavioral interventions prevented the initiation of smoking at six months or longer (RR 0.82, 95% CI 0.73 to 0.92, I^2=15%).(12) On the other hand, a meta-analysis of 9 RCTs on behavioral interventions to promote smoking cessation (n=2,516) found quit rates among current smokers to be similar between intervention and control groups (RR 0.97, 95% CI 0.93 to 1.01, I^2=29%).(12) Smoking prevalence was similar between treatment and control groups in trials that examined behavioral interventions for the prevention and cessation of smoking among non-smokers and smokers (RR 0.93, 95% CI 0.86 to 1.01; I^2=24%).(12) There was significant clinical heterogeneity in the populations (i.e., definitions of non-smoker/current smoker); type (e.g., counseling, educational material), target (e.g., child or parent), mode of delivery (e.g., print, phone, face-to-face), duration and intensity of the interventions, and definitions of outcomes across the different trials included in these three meta-analyses.

3.6.3 Diagnostic Performance of Screening Tests

A systematic review of 67 studies compared self-reported smoking with direct measurement of cotinine levels from biological fluids.(14) There was substantial heterogeneity in the questions that comprised self-report, the biological samples and cut-offs used for the cotinine test, and study quality (several had significant missing data), precluding pooling of results. In most studies, self-reported smoking prevalence was lower than that from direct measurement by a range of 1% to 47%, possibly indicating underreporting of smoking status.

Most studies that compare self-reports with biochemically assessed smoking status consider self-reported smoking unreliable due to significant under-reporting. However, Tennekoon and Rosenman(15) argue that biochemical assessment, which is usually regarded as the reference standard, may not be a better indicator of smoking status than self-reports. Their comparison of self-reported smoking with biochemical assessment using econometric techniques did not clearly show that one is better than the other. They suggest that instead of switching to biochemical tests, the reliability of self-report may be improved by asking a broader question to include all types of tobacco use and not just cigarette smoking.

The overall quality of evidence for the effectiveness of screening for tobacco use among adults and adolescents is low at best due to the lack of studies that provide direct evidence for its effectiveness (indirectness), the presence of risk of bias in the studies that provide indirect evidence of benefit for some outcomes (e.g., selection bias), significant heterogeneity in the types of interventions across studies (inconsistency), and imprecision of estimates for some results.

3.6.4 Cost Implication

Numerous studies have looked at the costs of smoking and the cost-effectiveness of various smoking cessation interventions.(16-20) However, there are no cost-effectiveness studies

that estimate the costs or cost-effectiveness of screening for tobacco use alone separately from smoking cessation interventions, such as brief counseling and advice. Across countries at different levels of economic development, tobacco screening and smoking cessation programs were found to be cost-effective, resulting in significant cost savings and net gains to individuals, primary care providers, and society.(19)

3.6.5 Ethical, Social, and Health Systems Impact (Equity, Acceptability, and Feasibility)

In 2015, the Social Weather Station (SWS) conducted a national survey to monitor the impact of Republic Act 1035, the Sin Tax Law of 2012. Results showed more current smokers among the poor (Economic Class D and E) compared to higher socioeconomic strata (Classes A, B, C).(5) As such, the poor, who are the most vulnerable to the adverse health and economic consequences of smoking, may benefit the most from tobacco screening and smoking cessation interventions. Screening for smoking is already part of the Department of Health's PhilPEN program(21); however, aside from brief information or advice from the rural health unit personnel (including the barangay health worker), access to effective pharmacologic treatments such as nicotine replacement therapy and other more intensive behavioral interventions may be limited.(2)

Although parental influence is a major factor, in general, peer influence plays a more important role in adolescent smoking.(22) The likelihood of smoking initiation among non-smokers increases when they belong to a "smoking clique," whereas smokers that are part of a "non-smoking clique" are more likely to quit. Furthermore, adolescents who were not part of a clique or group (isolates) were 2 to 5 times more likely to be current or daily smokers than clique members. The highest smoking rates were found among isolates in low-income schools. In contrast, smoking rates were higher among the most popular students in high-income schools. (22)

3.6.6 Recommendations from Other Groups

The Philippine College of Chest Physicians strongly recommends that every healthcare provider should document cigarette smoking during history taking in all patient visits, including pediatric populations, regardless of the reason for the consult.(23)

The USPSTF recommends that clinicians ask all adults about tobacco use, advise them to stop using tobacco, and provide behavioral interventions and US Food and Drug Administration (FDA)-approved pharmacotherapy for the cessation to nonpregnant adults who use tobacco.(24)(A recommendation)

The USPSTF recommends that primary care clinicians provide interventions, including education or brief counseling, to prevent the initiation of tobacco use among school-aged children and adolescents.(24) (B recommendation)

The Canadian Task Force on Preventive Health Care recommends asking children and youth (age 5-18 yr) or their parents about tobacco use by the child or youth and offering brief

information and advice, as appropriate, during primary care visits, to prevent and treat tobacco smoking among children and youth.(25) (weak recommendation, low-quality evidence).

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