

# Brief Advice Offered by Anesthetic Personnel to Encourage Smoking Cessation in Ambulatory Gastrointestinal Endoscopic Patients in a Developing Country

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**Abstract-** This study was to assess the effectiveness of brief advice offered by anesthetic personnel in quitting self-reported smoking in smoker patients who underwent GIE procedures in a developing country. After completing a baseline questionnaire assessing sociopsychodemographics, tobacco dependence and quitting motivation, 114 smoker patients were randomized into two groups. Patients in Group A were encouraged smoking cessation, and the patients in Group B were not. After six-months of post advice, 12 patients (20.7%) in Group A and four patients (7.1%) in Group B quit smoking. The number of cigarettes smoked, Fagerström score for nicotine dependence, and the patients having a partner who smoked in the continued smoking group was significantly higher than in the quit smoking group. In conclusion, the brief advice by anesthetic personnel is a relatively effective and easy technique for smoking cessation in ambulatory GIE patients in a tertiary-care hospital in a developing country.

**Keywords-** Smoking Cessation; Brief Advice; Anesthetic Personnel; Developing Country

## I. INTRODUCTION

Smoking is associated with a range of diseases, causing a high level of morbidity and mortality and is one of the leading causes of preventable death. Many patients who smoke cigarettes require medical intervention and care by anesthesiologists, and smoking is of direct concerns to perioperative management<sup>[1, 2]</sup>. Many smokers give up smoking on their own, but materials giving advice and information may help them and increase the number who quit successfully. Brief advice to quit offered by a physician can produce abstinence rates of 5-10%, which would have a significant public health impact if it were provided routinely<sup>[3, 4]</sup>. However, clinicians often find brief advice unrewarding and are reluctant to intervene with those who are not thinking about change<sup>[5]</sup>. The effectiveness of brief advice appears to be diminishing.

Given the pressures of routine medical practice, it is not surprising that physicians do not take three to five minutes to counsel every smoking patient they see. Endoscopists and anesthesiologists may not fully appreciate the risks of smoking in the immediate perioperative period because of busy practicing. Additionally, the majority of ambulatory GIE procedure was the diagnostic procedure, and also had a short duration of endoscopy. Time spent

during the pre-preparation period is relatively short. They may not view interventions as being part of their responsibilities<sup>[6]</sup>. Tobacco counseling competes with other pressing clinical tasks, and physicians are often too busy to routinely and repeatedly counsel all patients who smoke. Finally, many clinicians may not be aware of how to refer patients for more intensive interventions by specialists. However, the most logical time for anesthesiologists to conduct a brief focused intervention is during a pre-assessment period.

Although a number of cessation aids are now available in developed countries, their applicability and affordability in the developing world is less clear. Additionally, our center has a lot of hospital population and the lack of smoking cessation resources<sup>[6-8]</sup>. In ambulatory surgical procedures, the pre-assessment and preparation part by physicians and anesthesiologists is essential. There is no data about whether one-time brief advice to quit smoking offered by anesthetic personnel can produce a greater abstinence rate. The aims of this study were to assess the effectiveness of brief advice by anesthetic personnel in reducing and/or quitting self-reported smoking in smoker patients who underwent GIE procedures, and to test the feasibility and effectiveness of an anesthesiologist advice approach designed to provide a pre-assessment part of ambulatory GIE patients in a developing country.

## II. MATERIALS AND METHODS SUBJECTS

This study was a prospective randomized study and was conducted from November 2005 to April 2006 at a tertiary care referral center, Siriraj Hospital, Bangkok, Thailand. Patients aged at least 18 years of age who presented for GIE procedure were eligible for the study. Exclusion criteria included in-hospital patients, pregnancy, non-cooperation, and refusal to participate in the study. Patients in the study were the patients who were referred from their family doctors or secondary hospitals and the patients who visited Siriraj Hospital directly. A total of 3,520 GIE procedures were performed for the study period. Of these, 2,498 GIE procedures were ambulatory cases. Of these ambulatory cases, there were 294 smoker patients. A total of 114 smoker patients were eligible and randomized into the study. The patients' characteristics including socio-

psychological factors, lifestyle factors, the baseline assessment of smoking related factors and the informed consent were obtained during the pre-procedure preparation period for GIE procedures at the endoscopy unit by anesthetic personnel.

#### A. Study Design

Smoker patients were randomized into two groups by using the sealed envelope. The identified card (A or B) was in the sealed envelope. In the randomization process, each patient had a chance to be in Group A or B in 1:1. Patients in Group A were encouraged smoking cessation and were advised pre-procedure preparation detail, and the patients in Group B were only advised pre-procedure preparation detail for GIE procedure. A brief advice offered by two anesthetic personnel (SA and SK) to encourage smoking cessation in a pre-assessment period. Smokers are defined as patients who continuously smoke until they are obtained the baseline patients' characteristics and the smoking related factors in the pre-procedure preparation phase. The informed consent was also obtained in the pre-procedure preparation period by two anesthetic personnel.

At six months after the brief advice, patients are also divided into the two groups (smoking cessation and smoking continuation groups). Successfully self-reported smoking cessation after a brief advice was the primary outcome measured. Success at quitting smoking was described as quitting for at least one month before until the sixth month post-intervention. The secondary objective was to compare and assess the factors which determine that the smoker patients could and could not quit smoking after a brief advice by anesthetic personnel.

#### B. Intervention for Smoking Cessation

A brief advice was based on inviting patients to be motivated and have confidence in their ability to quit smoking. The aim was to build motivation or confidence by encouraging the patients to quit smoking by themselves without pharmacological therapies. Brief advice consisted of the following statement: "Smoking is an extremely serious problem. Apart from facilitating development of colorectal cancer<sup>[9]</sup>, it can damage your health and get worse your gastrointestinal function in many other ways<sup>[10]</sup>. If you stop smoking, much benefit can be gained. We tell you that you must quit smoking before the GIE procedure and abstain permanently for the benefit of your health." The anesthetic personnel were well trained to provide this brief advice. All patients in Group A were truly received the same intervention. The anesthetic personnel were the anesthesiologist and the nurse in anesthesiology. There was no any information gathered on whether the patients had used any cessation aids such as nicotine replacement therapy, psychological support during the study period.

#### C. Smoking Cessation Assessment

A research assistant, blinded to both groups, contacted the patients by telephone and filled a follow-up questionnaire after six months. The smokers were categorized into two groups (smoking cessation group and

smoking continuation group) by using the successfully smoking cessation assessment. The patient's characteristics including the individual patient factor, the Fagerström score for nicotine dependence<sup>[11]</sup>, socio-psychological factors, life style factors and other factors in both groups were recorded.

#### D. Analysis

Results were expressed as mean $\pm$ SD or frequency (%), when appropriate. Comparisons between smoker with or without a brief advice groups as well as smoking cessation and smoking continuation groups were compared by using with Chi-square tests (for categorical variables), Chi-square tests for trend (for ordinal variables), and two-sample independent t-test (for continuous variables). The statistical software package SPSS for Window Version 11 (SPSS Inc., Chicago, IL) was used to analyze the data. All statistical comparisons were made at the two-sided 5% level of significance.

### III. RESULTS

Of the total 114 patients, 58 patients were categorized as Group A while 56 patients as Group B. Table I summarizes the clinical characteristics of the two groups. The mean ages in both groups were similar: 50.1 $\pm$ 12.7 (range: 25-76) years in Group A and 53.5 $\pm$ 14.2 (range: 27-88) years in Group B ( $p=0.163$ ). There were no differences in gender, weight, height, ASA physical status, socio-psychological factors and lifestyle factors between the two groups.

TABLE I PATIENTS' CHARACTERISTIC (MEAN, SD AND PERCENTAGE)

Patient factors	Group A (n=58)	Group B (n=56)	P value
Age (yr)	50.1 $\pm$ 12.7	53.5 $\pm$ 14.2	0.163
Gender:			0.538
Male	57 (98.3)	54 (96.4)	0.538
Female	1 (1.7)	2 (3.6)	
Weight (kg)	59.8 $\pm$ 10.9	60.5 $\pm$ 10.2	0.395
Height (cm)	165.2 $\pm$ 5.4	165.7 $\pm$ 6.5	0.107
ASA physical status			0.784
I	13 (22.4)	13 (23.2)	
II	28 (48.3)	26 (46.4)	
III	17 (29.3)	17 (30.4)	
Socio-psychological factors			
Education			0.795
Primary school (< 10 year)	32 (55.2)	30 (53.6)	
Grammar school	26 (44.8)	26 (46.4)	
Profession			0.399
No vocational training	14 (24.1)	16 (28.6)	
Vocational training	44 (75.9)	40 (71.4)	
Matrimonial status			0.168
Marriage	8 (13.8)	1 (1.8)	
Single	46 (79.3)	48 (85.7)	
Divorced	3 (5.2)	5 (8.9)	
Widow(er)	1 (1.7)	2 (3.6)	
Religion			1.000
Buddha	58 (100.0)	56 (100.0)	
Lifestyle factors			
Alcohol consumption			0.649
None	16 (27.6)	13 (23.2)	
< 34 drinks per week	23 (39.7)	20 (35.7)	
> 34 drinks per week	19 (32.7)	23 (41.1)	
Pack-years			0.798
< 50	6 (10.3)	5 (8.9)	

$\geq 50$	52 (89.7)	51 (91.1)	
<b>Partner smokes</b>	28 (48.3)	25 (44.6)	0.697
<b>Partner does not smoke</b>	30 (51.7)	31 (55.4)	0.697
<b>Level of exercise</b>			0.956
$\geq 4$ hr per week	21 (36.2)	20 (35.7)	
$< 4$ hr per week	37 (63.8)	36 (64.3)	
<b>Healthy eating habits</b>			0.728
No	35 (60.3)	32 (57.1)	
Yes	23 (39.7)	24 (42.9)	

Group A: Brief advice, Group B: No intervention

Smoking cessation rate and lifestyle factors at six months post intervention are shown in Table II. In group A, 46 patients (79.3%) continued smoking, 12 patients (20.7%) quit smoking. However, four patients (7.1%) in group B quit smoking ( $p=0.037$ ). The lifestyle factors at six months post intervention in both groups were similar as at the pre-intervention period.

TABLE II SMOKING CESSATION RATE AND LIFESTYLE FACTORS AT SIX MONTHS POST-INTERVENTION (N, PERCENTAGE)

	Group A (n=58)	Group B (n=56)	P value
<b>Smoking cessation rate</b>	12 (20.7)	4 (7.1)	0.037*
<b>Lifestyle factor</b>			
<b>Alcohol consumption</b>			
$< 18$ drinks per week	20 (34.5)	18 (32.1)	0.791
18-34 drinks per week	14 (24.1)	15 (26.8)	0.746
$> 34$ drinks per week	8 (13.8)	10 (17.9)	0.552
<b>Partner smokes</b>	36 (62.1)	37 (66.1)	0.656
<b>Partner does not smoke</b>	22 (37.9)	19 (33.9)	0.656
<b>Level of exercise</b>			
$\geq 4$ hr per week	12 (20.7)	12 (21.4)	0.923
$< 4$ hr per week	20 (34.5)	17 (30.4)	0.638
<b>Healthy eating habits</b>			
No	39 (67.2)	35 (62.5)	0.596
Yes	19 (32.8)	21 (37.5)	0.596

Group A: Brief advice, Group B: No intervention

\* Considered to be statistically significant.

Table III showed the characteristics of smoker patients and factors that they could quit smoking at six months post intervention. There were no significant differences in the characteristics of smoker patients, socio-psychological factors, lifestyle factors and other factors. However, intention to quit, family support and health status were the most other factors that they could quit smoking at six months post intervention.

TABLE III CHARACTERISTICS OF SMOKER PATIENTS AND FACTORS THAT THEY COULD QUIT SMOKING AT SIX MONTHS POST-INTERVENTION (N, PERCENTAGE)

	Group A (n=12)	Group B (n=4)	P value
<b>Patient factors</b>			
Age	54.3 $\pm$ 12.0	57.3 $\pm$ 2.8	0.500
Male	12 (100.0)	4 (100.0)	1.000
Female	0	0	
Weight (kg)	55.1 $\pm$ 7.6	59.9 $\pm$ 1.5	0.249
Height (cm)	162.8 $\pm$ 4.0	165.3 $\pm$ 2.9	0.399
ASA physical status			0.420
I-II	8 (66.7)	3 (75.0)	
III-IV	4 (33.3)	1 (25.0)	
<b>Organic disease status</b>			0.182
Active	8 (66.7)	4 (100.0)	
Inactive	4 (33.3)	0	
<b>Duration of smoking (yr)</b>			0.641
$< 10$	1 (8.3)	1 (25.0)	
10-20	5 (41.7)	1 (25.0)	

$> 20$	6 (50.0)	2 (50.0)	
<b>Number of cigarettes per day</b>	12.6 $\pm$ 5.5	7.5 $\pm$ 2.9	0.550
<b>Fagerström score</b>	5.2 $\pm$ 1.5	3.3 $\pm$ 0.5	0.302
<b>Socio-psychological factors</b>			
<b>Education</b>			0.248
Primary school ( $<10$ yr)	7 (58.3)	1 (25.0)	
Grammar school	5 (41.7)	3 (75.0)	
<b>Profession</b>			0.771
No vocational training	5 (41.7)	2 (50.0)	
Vocational training	7 (58.3)	2 (50.0)	
<b>Matrimonial status</b>			0.297
Marriage	10 (83.4)	3 (75.0)	
Single	0	1 (25.0)	
Divorced	1 (8.3)	0	
Widow (er)	1 (8.3)	0	
<b>Religion</b>			
Buddha	12 (100.0)	4 (100.0)	1.000
<b>Lifestyle factors</b>			
<b>Alcohol consumption</b>			0.641
18 drinks per week	5 (41.7)	1 (25.0)	
18-34 drinks per week	3 (25.0)	2 (50.0)	
34 drinks per week	4 (33.3)	1 (25.0)	
<b>Partner smokes</b>	4 (33.3)	1 (25.0)	0.755
<b>Partner does not smoke</b>	8 (66.7)	3 (75.0)	0.755
<b>Level of exercise</b>			0.670
$\geq 4$ hr per week	3 (25.0)	1 (25.0)	
$< 4$ hr per week	1 (8.3)	1 (25.0)	
None	8 (66.7)	2 (50.0)	
<b>Healthy eating habits</b>			0.551
No	5 (41.7)	1 (25.0)	
Yes	7 (58.3)	3 (75.0)	
<b>Other factors</b>			
Intention to quit	12 (100.0)	4 (100.0)	1.000
Family support	8 (66.7)	3 (75.0)	0.755
Health status	6 (50.0)	4 (100.0)	0.074

Group A: Brief advice, Group B: No intervention

Table IV showed the characteristics of smoker patients and factors that they could not quit smoking at six months post intervention. There were no significant differences in age, gender, weight, height, ASA physical status, organic disease status, duration of smoke, socio-psychological factors, alcohol consumption, level of exercise, and healthy eating habits between the smoking cessation and the smoking continuation groups. However, the number of cigarettes smoked and the Fagerström score for nicotine dependence in the smokers who continued smoking was statistically significantly higher than in the smokers who stopped smoking ( $p=0.022$  and  $0.004$ , respectively). Additionally, the patients having a partner who smoked, were also significantly higher than the patients having a partner who did not smoke ( $p<0.001$ ). No intention to quit was the other factor that was significantly different among of these two groups ( $p=0.047$ ).

TABLE IV CHARACTERISTICS OF SMOKER PATIENTS AND FACTORS THAT THEY COULD NOT QUIT SMOKING AT SIX MONTHS AFTER A BRIEF ADVICE (N, PERCENTAGE)

	Smoking cessation (n=12)	Smoking continuation (n=46)	P value
<b>Patient factors</b>			
Age	54.3 $\pm$ 12.0	49.0 $\pm$ 12.8	0.290
Male	12 (100.0)	45 (97.8)	0.606
Female	0	1 (2.2)	
Weight (kg)	55.1 $\pm$ 7.6	61.0 $\pm$ 11.3	0.321
Height (cm)	162.8 $\pm$ 4.0	165.9 $\pm$ 5.5	0.719
ASA physical status			0.876
I-II	8 (66.7)	33 (71.7)	

III-IV	4 (33.3)	13 (28.3)	
Organic disease status			0.064
Active	8 (66.7)	17 (37.0)	
Inactive	4 (33.3)	29 (63.0)	
Duration of smoke (yr)			0.359
< 10	1 (8.3)	2 (4.4)	
10-20	5 (41.7)	11 (23.9)	
> 20	6 (50.0)	33 (71.7)	
Number of cigarettes per day	8.3±3.9	18.5±14.7	0.022*
Fagerström score	4.3±1.3	6.1±1.3	0.004*
<b>Socio-psychological factors</b>			
Education			0.703
Primary school (<10 yr)	7 (58.3)	24 (52.2)	
Grammar school	5 (41.7)	22 (47.8)	
Profession			0.460
No vocational training	5 (41.7)	14 (30.4)	
Vocational training	7 (58.3)	32 (69.6)	
Matrimonial status			0.123
Marriage	10 (83.4)	36 (78.2)	
Single	0	8 (17.4)	
Divorced	1 (8.3)	1 (2.2)	
Widow (er)	1 (8.3)	1 (2.2)	
Religion			
Buddha	12 (100.0)	46 (100.0)	1.000
<b>Lifestyle factors</b>			
Alcohol consumption			0.385
None	5 (41.7)	11 (23.9)	
< 34 drinks per week	3 (25.0)	20 (43.5)	
34 drinks per week	4 (33.3)	15 (32.6)	
Partner smokes	4 (33.3)	39 (84.8)	<0.001*
Partner does not smoke	8 (66.7)	7 (15.2)	<0.001*
Level of exercise			0.093
≥ 4 hr per week	3 (25.0)	9 (19.6)	
< 4 hr per week	1 (8.3)	19 (41.3)	
None	8 (66.7)	18 (39.1)	
Healthy eating habits			0.181
No	5 (41.7)	29 (63.0)	
Yes	7 (58.3)	17 (37.0)	
<b>Other factors</b>			
Stress	6 (50.0)	16 (34.8)	0.333
Partner dependency	1 (8.3)	4 (8.7)	0.968
Hungriness	2 (16.7)	9 (19.5)	0.820
Habitude	3 (25.0)	5 (10.9)	0.206
No intention to quit	0	12 (26.1)	0.047*

\* Considered to be statistically significant.

#### IV. DISCUSSION

This study has shown that brief advice provided during the pre-assessment preparation of ambulatory GIE patients by busy anesthetic personnel to quit smoking is an effective intervention in the setting of a developing country. The result of the study is confirmed that physicians including anesthetic personnel can help the smoker patients to quit smoking. The successfully smoking cessation rate after a brief advice is relatively high. There are four possible hypotheses. First, smoker patients are more likely to accept brief advice given by anesthetic personnel than their physicians. Ambulatory smoker patients need to obey the anesthetic personnel for pre-anesthetic preparation. Second, smoker patients are afraid of higher post-anesthetic complications if they do not accept the pre-procedure preparation. Additionally, smoker patients who underwent anesthesia and/or sedation for GIE procedures needed to be

prepared themselves and NPO before the procedure. Third, the higher overall success rate may be attributable to methodological and attentive application of brief advice. We particularly selected only smoker patients who had gastrointestinal abnormalities and needed to undergo the GIE for diagnosis and therapeutic intervention procedures. Fourth, the well educated smokers who known that smoking was a factor of gastrointestinal diseases, trended to quit smoking by themselves because of their health problems.

Many contributing factors to stop smoking are relatively clarified. The smoker patients who are undergoing an intervention procedure present really suitable opportunities for anesthesiologists motivating their patients<sup>[12]</sup>. It is also one intervention that can be effectively provided by a variety of health professionals<sup>[13]</sup>.

The present study also shows some factors about the smoker patients who could and could not quit smoking after receiving brief advice by an anesthesiologist. Our data are similar as that of the previous studies<sup>[1, 12, 14, 15]</sup>. Factors associated with successful smoking cessation had been reported<sup>[15, 16]</sup>. These included age, sex, social status, housing condition, spouse/cohabitant's smoking behavior, daily consumption of tobacco, and willingness to make repeated pharmacotherapy-assisted quit attempts. In our study, the factors associated with continued smoking in smoker patients were the number of cigarettes per day, Fagerström score for nicotine dependence and no intention to quit. However, the duration of smoking, education status, level of exercise, partner dependency, and habitude in this study were not significantly different between the smoking cessation and the smoking continuation groups.

Almost all anesthesiologists reported asking their patients whether they smoked cigarettes<sup>[12]</sup>. This is similar to the reported practices of primary care physicians. However, the frequency of counseling is less in their practices when compared with primary care physicians<sup>[17]</sup>. As we have the opportunity to assist the patients' quit attempt, the intervention should comprise of helping the patient with a quit plan, providing practical counseling and helping the patient obtain extra-treatment. The most logical time for anesthesiologists to conduct a brief focused intervention is during a visit to the preoperative clinic<sup>[12, 14, 18]</sup>.

This practice, although considered routine in Western countries, is still being adopted in Thailand. Methodology, data, and results from a developing country such as ours will help underscore the importance of the brief advice for the smoker population and raise awareness about the pre-procedural assessment.

The three most commonly cited approaches to making requests or giving advice about smoking are the US Public Health Service's (USPHS)<sup>[13]</sup>, motivational interventional interviewing<sup>[19]</sup> and Stage of Change<sup>[20]</sup> models. The "5 A's" for smoking cessation intervention are: ask about tobacco use, advice to quit, assess willingness to make attempt to quit, assist with treatments, and arrange follow up<sup>[13]</sup>. The "5 R's" for motivating the smoker to quit are: relevant information on, risks of smoking, rewards of stopping, roadblocks to quitting, and repeating this advice<sup>[13]</sup>.

Previous research has identified numerous barriers to staff delivery of cessation advice [21, 22]. In our view, anesthetic personnel may not fully appreciate the risks of smoking in the immediate perioperative period. Additionally, they may not believe that they have time to intervene. Few have had training in providing such interventions [23]. The provisions of smoking cessation care, particularly multiple component interventions, are established as being cost effective when compared to other medical services [24].

For patients who are not prepared to quit smoking in the near future, the anesthesiologist can identify and address barriers to a cessation attempt, in addition to describing the implications of tobacco use on anesthesia. Consequently, for patients who have no interest in quitting, the focus of the intervention should be on helping them progress to the next stage of change [25].

The hospitals in developing countries, including our 2500-bed hospital, have no telephone quit lines. Consequently, they also have few smoking cessation units. The majority of smoking cessation rate depends on the patients' themselves. However, the patients in these countries are from low socioeconomic and education levels. Siriraj hospital is a busy tertiary care hospital that gets referrals from all over the country of Thailand. Patients usually travel long distances to the hospital for endoscopy. Most patients have limited financial resources. A technique that has a high quitting rate, like the routinely use of the brief advice by an anesthetic personnel for smoking cessation is preferred to avoid losing the patient, better manage limited resources, both of the patient and the hospital, and to improve patients' compliance, tolerability, and satisfaction. This study shows that a brief advice for smoking cessation by a busy anesthetic personnel is an effective and easy technique for routinely adding to pre-procedural assessment in ambulatory GIE patients. We strongly believe and recommend that other physicians also need to advise their patients to quit smoking.

This present study has some limitations. First, there is a variety of indication of GIE procedures and pre-procedural problems. Second, the population is relatively small, especially in the female population. We are not certain whether this study has a sufficiently large sample to reliably analyze the predictors of smoking cessation. Further study and a large sample population need to be conducted in the next study. Third, smoking status six months after an advice was not verified by measurement of carbon monoxide in the exhaled gas. Moreover, the aim of our study was not primarily designed to investigate predictors of successful smoking cessation. Fourth, this study did not compare the brief advice method with other methods because this was not the aim of the study. Fifth, the authors follow up the participants only one time after six month post intervention, which might not be enough to decide that smoker patients quit smoking because some patients might relapse and go back to smoking. Finally, there is a possibility that this study consisted of motivated individuals who were more amenable to smoking cessation than smokers in general. Willingness to stop smoking because of their health problems and being stressed by anxiety over the

forthcoming anesthesia and endoscopy procedures were the main reasons for a high smoking cessation rate.

## V. CONCLUSIONS

This study demonstrates that a brief advice intervention by an anesthesiologist for smoking cessation could be successfully instigated to encourage the smokers to quit smoking as a routine preparation for ambulatory GIE patients in a tertiary care teaching hospital in a developing country. We hope that our result will help model the development of pre-anesthetic preparation for medical procedures in the community and provincial hospitals in Thailand and other developing countries.

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## DISCLOSURE

The authors report no conflicts of interest in this work.

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