

EFFECTIVE PROTECTION FROM EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE IN POLAND: THE WORLD HEALTH ORGANIZATION PERSPECTIVE

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Abstract

Tobacco is the single greatest preventable cause of death in the world today, killing approximately half of the people who use it. Several strategies have been proved to reduce tobacco use. However, more than 50 years after the health effects of smoking were scientifically proven, and more than 20 years after evidence confirmed the hazards from exposure to second-hand smoke, few countries have implemented effective and recognized strategies to control the tobacco epidemic. This paper summarizes the World Health Organization recommendations for effective protection from exposure to environmental tobacco smoke along with the existing tobacco control programs and legislation in force in Poland.

Key words:

Environmental tobacco smoke exposure, Legislation, World Health Organization

INTRODUCTION

According to the World Health Organization (WHO) data, tobacco use causes 1 in 10 deaths among adults worldwide, which makes up more than 5 million people every year [1]. By 2030, unless urgent action is taken, tobacco-related annual death toll will rise to more than eight million. Data for the year 2000 indicate that in Poland, tobacco smoking caused approximately 69 000 deaths, of which ca. 43 000 were premature deaths of individuals aged 35–69 years [2].

Smokers are not the only group facing tobacco-related hazards. Involuntary exposure to environmental tobacco smoke (ETS) also has serious, and often fatal, health consequences.

Involuntary smoking refers to exposure to secondhand tobacco smoke, which is a mixture of exhaled mainstream smoke and sidestream smoke released from the smoldering cigarette or other smoking device (cigar, pipe, bidis, etc.) and diluted with ambient air [3]. ETS is an air pollutant made up of a complex mixture of around 4000 various chemicals including 50 carcinogens, such as benzene, 1,3-butadiene, benzo[*a*]pyrene, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone, and many others [4]. It has been estimated that the total number of smoke constituents may actually be 10–20 times the number of those identified, meaning that tobacco smoke may contain as many as 100 000 different chemicals. Nicotine is one of the ETS components. Ambient nicotine concentrations

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in smokers' homes and in workplaces where smoking is permitted typically range from 2 to 10 $\mu\text{g}/\text{m}^3$ [5]. Furthermore, tobacco smoke includes large quantities of carbon monoxide, a gas that inhibits the capacity of the blood to carry oxygen to different body tissues including vital organs, such as the heart and brain. It also contains a number of other substances that contribute to heart diseases and stroke [6]. The concentrations of respirable particles may be substantially elevated in closed spaces where ETS exposure occurs. The composition of tobacco smoke inhaled involuntarily varies in quantity and depends on the intensity of smoking as well as on the composition of cigarettes or other smoking devices.

Exposure assessment can be carried out by measuring relevant ETS indicators in the air, by using exposure biomarkers as well as through epidemiological studies employing questionnaire surveys [3]. The marker compounds that are widely used for assessing the presence and concentration of ETS in indoor air are vapour-phase nicotine and respirable suspended particle (RSP) mass. Airborne nicotine and 3-ethenylpyridine are specific to tobacco combustion, while respirable suspended particles are present in large quantities, but are not unique to ETS [3]. Nicotine exposure is also measured by testing the saliva, urine, blood or hair for the presence of cotinine. Cotinine is a bioproduct of nicotine metabolism, and tobacco is the only source of this biomarker [6].

It is important to notice that no level of ETS exposure is safe. Scientific evidence has established that this exposure is associated with several adverse health effects, including lung cancer and heart disease in adults, and asthma exacerbation, lower respiratory tract infections, ear infections, and other diseases in infants and children. ETS exposure increases the risk of lung cancer by 20% in women and 30% in men [3]. Moreover, it is linked with an increased risk of coronary heart disease [3]. It has been shown that passive smoking increases the risk of acute cardiovascular event by 25–30% [3]. It has also been estimated that in the European Union, ETS exposure is associated with about 50 000 to 100 000 deaths, and 200 000 to 400 000 nonfatal cardiovascular events [4].

Environmental tobacco smoke exposure in the Polish population

According to the most recent report on "The current status of the tobacco epidemic in Poland", 29% of non-smoking women and 20% of men smoke involuntarily at home, and 19% of adults are exposed to tobacco smoke in the workplace (24% of men and 14% of women) [2]. The most frequently indicated sites of ETS exposure were bars and pubs (32%), discothèques and music clubs (25%), cafés (22%) and restaurants (17%). Less frequently indicated were health care units, cultural venues (2%), schools (8%), and shopping centers (5%). Moreover, current data indicate that 48% of parents do smoke in the presence of their children, and 27% in the presence of pregnant women.

The existing international legislation provides regulatory measures and relevant tools for protection from ETS exposure.

This paper summarizes the WHO recommendations for effective protection from exposure to environmental tobacco smoke, along with the existing tobacco control programs and legal regulations in Poland.

Regulations on tobacco control and smoking cessation activities in Poland

The Polish "Act on the Protection of Health against the Consequences of the Use of Tobacco and Tobacco Products" and the "Act on Excise Duty Tax", with executive provisions promulgated by relevant ministers, are compliant with the provisions of the WHO Framework Convention for Tobacco Control, signed by Poland in 2006, and with the relevant EU Directives [7–9].

At the time of its introduction (1995), the Tobacco Control Act passed in Poland was among the most comprehensive regulations of its kind in Europe. The regulations specified in the Act, which include measures for a total ban on tobacco advertising, promotion and sponsorship, and at least a 30% area of health warnings on cigarette packs, are generally respected in Poland.

The Polish law also regulates the obligation of the government to implement actions leading to a reduction of tobacco consumption. There have already been two

such programs. The National Health Program (NHP) for 2007–2015 calls for a reduction in the rate of tobacco smoking. The tasks associated with the reduction of ETS exposure in NHP are dedicated mostly to the protection of children from ETS exposure as well as ensure that workplaces are free from tobacco smoke. The other action is the “Program for Reducing Health Consequences of Tobacco Smoking in Poland”, which also addresses the problem of ETS exposure. The Chief Sanitary Inspectorate is preparing yet another program for the period of 2009–2013. Task 8 of this program is focused on eliminating exposure to cigarette smoke in public places, selected protected areas and workplaces.

The smoking ban in healthcare settings, educational buildings as well as public facilities is, quoting after the Act, a key tool to reduce ETS exposure, although the exception of areas designated for the smokers has not fully protected the general population from involuntary exposure.

According to the Tobacco Act, the Ministers of Defense, Interior and Administration, and Justice are to determine the rules of consuming tobacco products in their respective facilities. The Act also makes it possible for the local councils to establish, by way of a resolution, additional smoke-free areas to those indicated in the legislation (such as bus stops, parks, beaches, etc.).

Despite numerous cases of violation of the statutory norms, substantial improvement in the protection of non-smokers and in workplace smoking reduction have been achieved. Limiting smoking in public places, including bars or restaurants, proved to be an effective tool.

The survey conducted in February 2008 on a randomly selected sample of 1137 Polish adults indicated a general approval for a total ban of tobacco smoking in public facilities [10]. Moreover, 92% of the population accepted the total ban on tobacco smoking in theaters and cinemas, as well as in public transport. More than 70% accepted smoking ban at bus stops, railway stations and airports. The same percentage of people thought that smoking should be banned at workplaces and restaurants, more than 60% accepted the ban at bars, pubs and

coffee shops, and more than 40% in the streets. Among those who have never smoked cigarettes, those who have quit smoking and those who smoke occasionally, the percentage of people who think that smoking should be banned in restaurants amounted to 82%, 77% and 62% respectively. It should be noted that half of the smokers also accept that restriction. The same pattern was observed with respect to the smoking ban in pubs, bars and cafes but the percentages were slightly lower (never-smokers 77%, quitters 67%, occasional smokers 54%, active smokers 39%). More than 50% of respondents thought that introducing the total ban to restaurants, bars and pubs would make most of the occasional smokers give up the habit. However, about 80% expected that the active smokers would start smoking in the streets.

A recent Euro barometer opinion poll launched by the European Commission in March 2009 shows that 73% of EU citizens on average approve introducing smoke free restrictions in offices and other workplaces. As for the restaurants, 63% would definitely accept the smoking ban (in Poland, 47% of the population would be strongly in favor, and 28% partially in favor of the ban). As much as 65% of EU citizens approve the smoking ban in bars, compared to a 66% approval rate in Poland.

Taking into consideration the public expectations as well as the actions taken in other countries in the latter half of 2008, the Polish Parliament has intensified work on amending the Act on the Protection of Health against the Consequences of the Consumption of Tobacco and Tobacco Products. It aims mainly at creating a more restrictive environment to fight the tobacco epidemic and includes the following activities: elimination of the possibility of tobacco smoking in designated facilities (smoking rooms) on such premises as the schools and healthcare units; introduction of a complete ban on tobacco smoking in eating establishments, with an option of making available separate facilities for smoking (smoking rooms); introduction of a complete ban on tobacco smoking in all other public venues, e.g. at public transport stops/stations. The legislation is also designed to develop a more precise regulation on advertising and promoting tobacco products, in order to prevent the

illicit marketing practices. As most parties are in favor of this legislation, some of them also tend to agree that it may even be more restrictive. The current progress as of September 2009 indicates that it might be possible to establish a new law by the spring of 2010.

In parallel to the Polish regulations, the public awareness campaigns and smoking cessation programs were implemented to persuade young people not to smoke, to protect non-smokers from second-hand smoke, and to support smokers in quitting the habit. Since 1997, the tobacco control activities in Poland have been conducted along the lines set forth by the National Tobacco Control Strategy and Action Plan. Under this Action Plan, monitoring and evaluation of tobacco-attributable incidence and mortality, trends and patterns in tobacco use, public attitudes towards smoking and tobacco control policy, and its enforcement at the national and community levels are considered to be the major tasks of the strategy which is a part of the WHO European Strategy for Tobacco Control and the National Health Program for the coming years.

According to the International Classification of Diseases and Related Health Problems, 10th Revision, nicotine addiction is classified under Chapter V "Mental and Behavioral Disorders" F17 "Mental and behavioral disorders due to use of tobacco" [11]. Many tobacco users need support to quit smoking due to the high addictivity of tobacco products. Article 14, paragraph 2(d) of the WHO FCTC states that "each Party shall endeavour to collaborate with other Parties to facilitate accessibility and affordability for the treatment of tobacco dependence including pharmaceutical products pursuant to Article 22. Such products and their constituents may include medicines, products used to administer medicines and diagnostics when appropriate" [9]. To date, over 160 WHO Member States are bound by international law to implement the measures specified in Article 14 of the WHO FCTC. In other words, increased access to tobacco dependence treatment is mandated by the force of international legislation.

The health care systems in particular Member States take the primary responsibility for the treatment of tobacco addiction. Three types of treatment should be included in any

smoking prevention activities: 1) tobacco cessation advice incorporated into primary health care services; 2) easily accessible and toll-free telephone help lines known as 'quitlines' and 3) access to low-cost pharmacological therapy. The treatment methods vary with respect to their cost effectiveness ratio, and may not have a similar impact on individual tobacco users. The treatment should be adapted to local conditions and cultures and tailored to individual preferences and needs. Cessation counseling is most effective when it includes clear, strong and personalized advice from health care practitioners as a part of general medical care. Physician advice can be especially powerful when it is related to the issues of special interest to the patient. Warnings from health care professionals about the risks from tobacco use are usually well received as this professional group is generally well respected. The quitting rates also increase when the counseling is delivered by a variety of health care workers. Well-staffed quitlines should be accessible to a country's entire population through toll-free numbers and waivers of access charge for mobile phone users. Telephone quitlines are inexpensive to operate, easily accessible, confidential and can be staffed for long hours. They can help introduce users to tobacco dependence treatment such as counseling or nicotine replacement therapy. In addition to medical advice and quitlines, effective treatment can also include pharmacological treatment such as nicotine replacement therapy (NRT) in the form of patches, gum and nasal sprays, and prescription medicines such as bupropion or varenicline. NRT is usually available over-the-counter, whereas for other medications, a doctor's prescription is required. Pharmacological therapy is generally more expensive and considered to be less cost effective than the physician advice or quitlines, but it has been shown to double or triple the quitting rates. The retail cost of a course of treatment with NRT may be less than the cost of smoking over that same time period. NRT and other medications can be covered or reimbursed by public health services to reduce out-of-pocket expenses for the smokers trying to quit. Pharmacological treatment of nicotine addiction should ideally be used in conjunction with advice and counseling, although it is also effective when provided separately.

In Poland, the Chief Sanitary Inspectorate is a coordinating body for the implementation of the National Program to Reduce the Burden of Tobacco Use. One of the objectives of the National Program is to increase the percentage of young people who quit smoking and to decrease the percentage of daily tobacco smokers who are over 20 years of age. In order to achieve these objectives, some actions are being proposed, like smoking prevention and tobacco addiction treatment in health care centers. These include a brief advice from the primary physicians and nurses, the treatment for tobacco dependence offered through “cessation centers”, as well as anti-smoking education and cessation training. Some of these centers are funded by local governments. The activities for tobacco control, prevention of tobacco-related diseases and treatment of dependencies are carried out under the contract with the National Health Fund (NHF) [2]. NHF secures the funds for cessation by contracting health care professionals who provide them (It has been found that not all available funds are being contracted). Support is also offered in addiction management at the addiction treatment and mental health centers. The total expenditure on the treatment provided by anti-smoking clinics exceeded 86 000 PLN (21 000 EUR) in 2005, through almost 50 000 PLN (13 000 EUR) in 2006 to over 50 000 PLN (13 500 EUR) in 2007 [2].

The rules for contracting health programs were established in 2008. The basic stages of the prophylactic activities have been designated to primary health care physicians. Every provider who meets the mandatory criteria of the National Health Fund can carry out such a program.

Over the years, the contracting of services for the prevention of tobacco-related diseases has increased at various levels. Expenditure on the basic activities which reached the level of 9000 PLN (2250 EUR) in 2005 increased to the level exceeding 2 300 000 PLN (575 000 EUR) in 2006. The health programs provided care to over 6000 individuals in 2005 and over 58 000 individuals in 2006. Expenditure on the specialist activities amounted to 230 000 PLN (57 500 EUR) in 2005, approximated 600 000 PLN (150 000 EUR) in 2006 and exceeded 560 000 PLN (140 000 EUR) in 2007 [2].

It is also known that the funds provided by NHF do not cover the total expenses related to that service. This could be one of the reasons why the numbers quoted above are not very high. In April 2009, the College of General Practitioners released a report on the number of patients who received counseling on smoking cessation from the family doctors since the onset of contracting the service. The report showed that 20 000 patients in total had been provided with anti-smoking counseling [2].

Another way to help the smokers who want to quit is a telephone quitline service. The Maria Skłodowska-Curie Memorial Cancer Centre and Institute of Oncology is the body responsible for implementing this task. No public data are available regarding the number of calls or the effectiveness of the service.

These smokers support tools seem not to be enough for around 9 million smokers in Poland in terms of the population coverage.

WHO policies for protection

from exposure to environmental tobacco smoke

In 2003, the World Health Assembly unanimously adopted the WHO Framework Convention on Tobacco Control (FCTC) in order to initiate action at the global and country level against the tobacco epidemic [9]. According to Article 8 of the WHO FCTC, “each Party shall adopt and implement in areas of existing national jurisdiction as determined by national law and actively promote at other jurisdictional levels the adoption and implementation of effective legislative, executive, administrative and/or other measures, providing for protection from exposure to tobacco smoke in indoor workplaces, public transport, indoor public places and, as appropriate, other public places”.

To expand the combat against the tobacco epidemic, WHO has introduced the MPOWER package of six proven policies [1]. These policies are focused on active and passive smokers and intended to reduce the ETS exposure. The objectives can be reached in two ways: firstly, by protecting non-smokers from ETS exposure, and secondly, by decreasing the number of smokers and consequently the number of people exposed to ETS.

The six MPOWER policies include: 1) monitoring of tobacco use and prevention policies; 2) protection of people from tobacco smoke by ban of smoking in public places, including bars and restaurants; 3) offering help to quit tobacco use with different available tools; 4) warning about the dangers of tobacco; 5) enforcement of bans on tobacco advertising, promotion and sponsorship, and 6) raising taxes on tobacco.

MPOWER policies are designed to support governments and institutions in fighting tobacco epidemic. The achievement of the tobacco control goals will require coordination among many governmental agencies, academic institutions, professional associations and civil society organizations at the country level, as well as a coordinated support of international cooperation and development agencies. The document was meant to serve as a tool for all the institutions mentioned above and help them, at the national or local level, to develop actions to combat this epidemic. It is intended to assist in the planning, building and evaluating national and international partnerships, while facilitating access to financial resources for tobacco control activities. MPOWER is also a part of the WHO Action Plan for the Prevention and Control of Non-communicable Diseases. The aim of the WHO recommendations to protect the public from ETS exposure is to deliver to the WHO Member States the science on ETS exposure, and point out the benefits of anti-smoking regulations on the one hand, and to guide the decisions-makers in developing and implementing such policies on the other [12]. These recommendations indicate that for the protection of public health from ETS exposure, the legislation that mandates smoke-free environments is essential. In contrast to voluntary policies and/or agreements, the smoke-free laws are binding, they establish enforcement mechanisms, impose penalties for infringement and level the playing field for business. The law should be simple, clear and enforceable, and should require all indoor workplaces, public places and public transportation to be 100% smoke-free at all times. The separation of smokers from non-smokers within the same airspace does not eliminate or even reduce non-smokers' exposure to ETS. The level of ETS exposure depends on the local airflow patterns, dilution

volume, distance between smokers and non-smokers, and the amount of smoking. Heating, ventilating, and air conditioning systems usually re-circulate air and do not remove toxins. The designated smoking rooms — smoking areas separated by physical barriers and with separate ventilation systems — also do not eliminate the ETS exposure inside a smoking room or in adjacent areas. Such rooms can be difficult and costly to implement and they can be a source of high ETS exposure to employees in bars or restaurants where they are established. One should note that the exposure to tobacco smoke outdoors can be significant, especially when the smoking room are adjacent to indoor areas and where there are open doors and windows or intake vents.

The smoke-free law should clearly indicate who is responsible for enforcement and ensuring compliance with the legislation. It is essential to involve the civil society in the activities for developing effective legislation as well as responding to the tobacco industry's opposition. Effective action also requires education, consultation, implementation and enforcement as well as the monitoring of the success of implementation and public support for the law, and the assessment of the health and economic impacts. The 100% smoke-free environments implemented by others also bear a positive impact on making homes smoke-free and, as a result, protecting children and other family members from ETS exposure. It is also worth noting that a 100% smoke-free environment is related to a decrease in smoking initiation. The elimination of ETS exposure from workplaces and public facilities is also related to the economic benefits including lower medical costs, increased productivity, reduced hiring costs, and lower building maintenance costs. It also brings about a reduced liability of the employer for the health effects of workers' exposure to ETS. Some costs associated with the implementation and enforcement of the smoke-free laws can be high at the beginning but will decrease over time.

WHO recommends a step-by-step process as the most effective method of creating smoke-free environments [1]. To begin with, governments should develop educational campaigns for the public and business communities on the hazards of secondhand smoke. Once a widespread support

for smoke-free spaces is obtained, legislation should be drafted and submitted for public comment. The legislation has to be comprehensive and include clear penalties for violation as well as effective enforcement policies. After enactment of the law, the governmental support should be maintained through aggressive and uniform enforcement to achieve high levels of compliance [9].

DISCUSSION

Examples from Ireland, New York, New Zealand, Norway and Italy demonstrate the potential for a significant reduction of ETS exposure. According to the data provided by the International Union against Tuberculosis and Lung Disease which covers 106 countries (50% of the world's population), the smoking ban is being introduced in hospitals and health care facilities worldwide. In the territories covering 71% of the world's population, the smoking ban has been introduced at educational facilities in 97 countries, at universities in 66 countries, indoor offices in 59 countries, at bars, pubs and restaurants in 18 countries, and at restaurants located at governmental facilities in 21 countries [13]. Analyses conducted in Ireland indicated that the compliance with the legislation is very high (more than 90%). Moreover, they revealed that owing to the implementation of the smoke-free law, the level of PM_{2.5} had been reduced by 88%, PM₁₀ by 53% and the level of CO by 45% [14].

The results from a 32-country comparative study on indoor air quality show that the fine particle concentrations at bars, restaurants and other locations where smoking is permitted are typically far greater than the levels which are considered harmful to human health, according to the WHO and US Environmental Protection Agency reports. This finding was observed regardless of the geographic location of the facilities under study [15]. By contrast, indoor particle concentrations in the countries that have implemented smoke-free regulations are 87% lower on average than in the countries that have no regulations of this kind.

In California, Ireland, Norway and Scotland, within a few months following the implementation of smoke-free laws,

bar and restaurant workers reported reductions in negative respiratory symptoms and an improved lung function. Furthermore, the salivary concentration of cotinine decreased by 69% (from median 1.6 ng/ml to 0.5 ng/ml) and of nicotine by 83% (from median 35.5 mg/m³ to 5.95 mg/m³) after the smoking ban had been introduced [16]. Also the self-reported respiratory symptoms among bar workers decreased significantly within one year following the implementation of smoke-free laws [17]. A reduction in hospitalization rates for myocardial infarction among people aged less than 60 years has been noted in one Italian region after introduction of the smoking ban [18]. The same results were seen in Montana where, during the six months after the law was implemented, the number of admissions fell significantly, from an average of 40 admissions during the same months in the years before to a total of 24 admissions during the six months when the law was in effect [19].

At the same time, it is worth noting that smoke-free regulations have had a neutral impact on the tobacco industry and in many cases a positive impact on SMEs (like restaurants and bars). The potential health improvement resulting from the smoke-free policy could have a major economic implication. The UK Government estimated the long-term net benefits of comprehensive smoke-free legislation at £1714–2116 billion annually [20]. In Scotland, Wales and Northern Ireland, the net benefits have been calculated, respectively at £4387 and £2096 billion over a 30 year period, and £1101 billion over a 20 year period. The smoke-free policy has also a beneficial effect on reducing smoking rates. The analysis of the impact of this policy on smoking consumption indicated a 29% reduction rate [21].

The data from the Ministries of Health in England, Scotland, Norway and France indicate that the level of compliance with the new smoke-free legislation exceeds 95%, depending on the country. According to public opinion surveys, smoke-free legislation is very popular wherever it is enacted. After New Zealand had passed the smoke-free laws in 2004, 69% of its citizens declared their support to the right of people to work in smoke-free environments [22]. In California, 75% of the

population approve the smoke-free workplace laws that cover restaurants and bars, which were enacted by the US Senate in 1998 [23].

CONCLUSIONS AND RECOMMENDATIONS

Below are the key WHO recommendations — consistent with the guidelines set forth in Article 8 of the FCTC — that are based on the lessons learned by the several countries that have successfully implemented the laws requiring indoor workplaces and public places to be 100% smoke-free [24]. The recommendations are as follows:

1. Legislation that mandates completely smoke-free environments — not voluntary policies — is necessary to protect public health.
2. Legislation should be simple, clear, enforceable, and comprehensive.
3. Action should be taken at any and all jurisdictional level(s) where effective legislation can be achieved.
4. Anticipating and responding to the tobacco industry's opposition, often mobilized through third parties, is crucial.
5. Involving civil society is central to achieving effective legislation.
6. Education and consultation with stakeholders are necessary to ensure smooth implementation.
7. An implementation and enforcement plan, together with an infrastructure for enforcement, including high-profile prosecutions to impose fines or closing of businesses of repeat violators, are critical for successful implementation.
8. Monitoring of implementation and compliance is essential, as is the assessment of the impact of smoke-free environments; ideally, experiences should also be documented and the results made available to other jurisdictions to support their efforts to successfully introduce and implement effective legislation.
9. Physically separating smokers from non-smokers (for example by establishing designated smoking rooms) or providing ventilation of smoking areas does not eliminate the health risk resulting from exposure to secondhand tobacco smoke.
10. The high level of public approval for a more restricted protection from ETS exposure provides a good opportunity for introducing respective regulations in Poland. A comprehensive law ensuring 100% smoke-free public places is crucial for the protection of people from environmental tobacco smoke exposure and, therefore, all efforts should be made to implement the smoke-free regulations in Poland. Educational campaigns and antismoking interventions may help increase public awareness on the hazards of smoking and ETS exposure, and increase the percentage of people who quit smoking and those who do not acquire the habit, while at the same time enhance the protection against ETS exposure. In view of the high percentage of children exposed to ETS both during the prenatal and postnatal life (mostly at home), all possible efforts should be undertaken to protect this particularly vulnerable group from such exposure.

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