

Smoke-free hospitals in Poland – a cross-sectional survey

Jarosław J. Fedorowski^{1,2}, Mateusz Jankowski³, Beata Buchelt⁴, Stanisław Maksymowicz⁵, Mark Parascandola⁶

¹Department of Cardiology, Faculty of Medicine, College of Medicine, University of Warmia and Masuria, Olsztyn, Poland

²Polish Hospital Federation, Warsaw, Poland

³School of Public Health, Centre of Postgraduate Medical Education, Warsaw, Poland

⁴Department of Human Capital Management, Cracow University of Economics, Krakow, Poland

⁵Department of Psychology and Social Sciences in Medicine, Faculty of Medicine, College of Medicine, University of Warmia and Masuria, Olsztyn, Poland

⁶National Cancer Institute, Bethesda, MD, USA

Corresponding author:

Mateusz Jankowski
School of Public Health
Centre of Postgraduate
Medical Education
Warsaw, Poland
E-mail:
mjankowski@cmkp.edu.pl

Submitted: 24 October 2019; **Accepted:** 3 January 2020

Online publication: 11 June 2020

Arch Med Sci 2023; 19 (6): 1795–1801

DOI: <https://doi.org/10.5114/aoms.2020.96289>

Copyright © 2020 Termedia & Banach

Abstract

Introduction: In 2010, the government of Poland passed an amended smoke-free law that strengthened existing tobacco control policies and banned smoking in hospitals. The aims of our study are: to determine the state of smoke-free practices in Polish hospitals, and to identify challenges facing hospitals implementing smoke-free practices.

Material and methods: In 2018, a cross-sectional survey was conducted on a representative sample of 100 hospitals operating in Poland. The research tool was the ENSH-Global Self-Audit Questionnaire. The questionnaire included 48 items related to the various aspects of smoke-free policy implementation in the hospital.

Results: Among the surveyed hospitals, public entities were the dominant group (79%). The mean score for all analyzed standards was 78.55 points (out of 144 maximum available), with no differences ($p = 0.4$) between public and private entities. All hospitals surveyed displayed signage with information about prohibited tobacco products and tobacco-free campus boundaries. Hospital staff (95%) and service users (98%) reported a basic level of understanding of the hospital's tobacco-free policy and the available tobacco cessation services. However, tobacco-free policies, in line with the ENSH-Global Standards, were implemented in 61% of surveyed hospitals. More than half of the hospitals (64%) do not currently assess tobacco use or provide tobacco dependence treatment services.

Conclusions: Overall, smoke-free policies in hospitals operating in Poland are compliant with the National Tobacco Control Act and provide a smoke-free environment for service users and staff. However, continued monitoring and evaluation of tobacco control activities are necessary to promote the importance of smoke-free environments.

Key words: Poland, tobacco control, smoking prevention, smoke-free hospital, health policies.

Introduction

Over the past three decades, Poland has made substantial progress in reducing tobacco use [1–3]. Between 1982 and 2019 the prevalence of daily tobacco smoking decreased from 62% to 24.4% among men and

from 32% to 18% among women [1]. According to the Chief Sanitary Inspectorate, in 2019, 21.0% of Poles aged 15 and over were current daily smokers and 1.3% were occasional tobacco smokers [1]. Despite the substantial decrease in tobacco use in Poland, still, more than 70,000 people die each year from smoking-related diseases [2, 3] and lung cancer remains the leading cause of cancer death among both men and women [4].

In 1995, the Polish Parliament introduced a comprehensive tobacco control law to reduce the burden of tobacco-related illness and protect non-smokers and children from secondhand smoke. Smoke-free policy in Poland imposed restrictions on the sale, advertising, and promotion of tobacco products (including prohibiting the sale of tobacco products in healthcare facilities), mandated health warnings on tobacco product packages, and restricted smoking in certain types of public spaces, including healthcare facilities, schools and indoor workplaces [5]. However, the Act still allowed for designated smoking spaces and also specifically provided for a physician to give a patient under his or her care an exemption from the restriction on smoking in healthcare settings [5]. The Act was amended multiple times over subsequent years [6–8]. A substantial revision in November 2010 extended and clarified the requirements for smokefree spaces [7]. The amendment stated that the prohibition on smoking in healthcare facilities extended to all premises where healthcare services are provided, excluded healthcare facilities from the list of establishments where designated smoking rooms were allowed, and removed the provision allowing a doctor to give a patient an exemption from the smoking prohibition. Thus, the 2010 revision mandated a complete ban on smoking in all healthcare facilities [7]. A further July 2016 amendment to the Act extends the smoking ban to electronic cigarettes and novel tobacco products [6, 8]. At the same time, the 2016 amendment allows that the owner or manager of healthcare facility may designate a smoking room “in 24-hour psychiatric wards, excluding wards with enhanced and maximum security conditions” [8].

Smoking behavior and norms among health professionals and in the healthcare setting have played an important role historically in leading population level changes in tobacco use [9, 10]. For example, in the U.S., early findings about the health effects of smoking in the 1950s led to a rapid drop in smoking prevalence among physicians and increase in physician advice to patients to quit smoking, which, in turn, was followed by a shift in Americans’ attitudes towards smoking [9]. Additionally, a systematic review of available evidence supports the conclusion that institutional smoke-free policies in hospitals and universities do reduce smoking rates [11]. Thus, healthcare

entities, especially hospitals, have an important role in setting an example through implementation of smoke-free policies [12, 13]. Key elements of a comprehensive hospital smoke-free policy include: (1) providing a smoke-free environment for patients, visitors and staff, (2) reducing tobacco consumption among the staff and (3) providing tobacco cessation services for patients [12–15]. Since 2000, the Global Network for Tobacco Free Healthcare Services (ENSH-Global) (primarily as the European Network of Smoke-free Hospitals) has developed guidelines and supportive instruments to promote a smoke-free environment in hospitals across the globe [16]. Data from Spain [17] and Ireland [18] indicate that the tools developed by ENSH-Global can be an effective method of evaluating tobacco control policies in hospitals. Currently, there is a lack of data on the smoke-free policies implemented in hospitals operating in Poland. The aims of this study were: (1) to determine the state of smoke-free practices in hospitals operating in Poland, as well as (2) to identify challenges facing hospitals implementing smoke-free practices.

Material and methods

A cross-sectional survey was conducted between September and November 2018 in a representative sample of 100 hospitals operating in Poland. The study group was randomly selected from 210 hospitals that are members of the Polish Hospital Federation, which is the most representative hospital organization in Poland. The Federation is a nationwide organization of hospitals regardless of their ownership structure, size or operating model, and represents 75,000 hospital beds and over 140,000 hospital employees across Poland [19]. Additionally, ten hospitals were selected for qualitative interviews with a member of the hospital management staff in order to enhance interpretation of the survey results and to gather more detailed information about challenges in implementing smoke-free policies.

The survey instrument was adapted from the ENSH-Global Self-Audit Questionnaire (version 10/01/2016), developed by the Global Network for Tobacco Free Healthcare Services. The questionnaire has been previously piloted in smoke-free hospital surveys in France, Finland, Ireland and Italy [20]. ENSH-Global Self-Audit Questionnaire enables hospitals to monitor and review their progress towards achievement of a smoke-free environment [21]. The questionnaire was adapted and translated into Polish using standard procedures including back-translation.

The questionnaire included 48 items covering various aspects of smoke-free policy implementation in hospitals (Supplementary material – Appen-

dix 1). The questions were sorted into 8 standards: governance and commitment (10 items), communication (3 items), education and training (4 items), identification, diagnosis and tobacco cessation support (10 items), tobacco-free environment (7 items), healthy workplace (5 items), community engagement (4 items) and monitoring and evaluation (5 items). Each of 48 items was scored with a 4-point response scale: 0 = no/not implemented, 1 = less than half implemented, 2 = more than half implemented and 3 = yes/fully implemented. The maximum score of the questionnaire was 144 points, as the sum of its 8 standards. The questionnaire was addressed to the managing director or a designated board member and completed through a phone interview conducted by a member of the study team. The response rate was 100%.

Statistical analysis

The data were analyzed with Statistica 12 Software (StatSoft, USA). Normality of distribution of continuous variables was assessed by the Shapiro-Wilk test. The distribution of categorical variables was shown by proportions. The degree of implementation of the smoke-free practices in the hospitals was analyzed by means of the score obtained in each standard of the ENSH-Global Self-Audit Questionnaire. Based on the ownership structure, the hospitals were classified into private or public healthcare entities. Differences in the distribution of quantitative variables were evaluated based on the results of the Student's *t*-test or non-parametric test (Mann-Whitney *U* test). Statistical inference was based on the criterion $p < 0.05$.

Results

Among the surveyed hospitals, 65% were public non-profit entities, 14% were incorporated with a majority public sector share, and 21% were private corporations (Table I). Categorized by type: 4% were university hospitals, 23% provincial/regional hospitals, 45% county hospitals, 11% municipal hospitals, and 17% other facilities. The staff size in the surveyed hospitals ranged from 25 to 5,000 employees. The respondent group was composed of general directors (18%), mid-level managers (5%), specialists (quality, occupational health and safety or epidemiology) (51%), quality representatives (12%), and other employees responsible for implementation of legal regulations (14%). The mean score for all analyzed standards was 78.55 points (out of 144 maximum available), with no statistically significant ($p = 0.4$) difference between public and private entities (Table II).

Table I. Hospitals' characteristics ($n = 100$)

Parameter	Percentage
Ownership structure:	
Public	79
Private	21
Type of hospital:	
University hospital	4
Provincial hospital	23
County/regional hospital	45
Municipal hospital	11
Other type of hospital	17
Number of staff:	
≤ 300	38
> 300 to 600	33
> 600	29

More than half of the surveyed hospitals (61%) have fully implemented a tobacco-free policy in line with the ENSH-Global Standards. Among the 8 analyzed standards, the best implemented standards were standard 1 (governance and commitment), standard 2 (communication) and standard 5 (tobacco-free environment). In the majority of surveyed hospitals (87%), a senior manager is responsible for the implementation of the tobacco-free policy, and more than half of the hospitals (60%) set up a dedicated implementation team responsible for the development and implementation of the hospital's tobacco-free policy. In almost all of the surveyed entities, hospital staff (95%), service users (98%) and the community, including specific target groups (95%), were informed, at least at a basic level, about the hospital's tobacco-free policy and the available tobacco cessation services.

Signage identifying prohibited products and the tobacco-free campus boundaries were present in all of the surveyed hospitals. The vast majority of hospitals make informational materials available on the health effects of smoking (87%), provide brief advice on how to quit smoking (70%), and provide access to tobacco cessation services (81%) and pharmacological support (64%). In 85% of surveyed hospitals medical staff were trained in providing brief advice to motivate tobacco users to quit, and in 77% of hospitals the key medical staff were trained in motivational tobacco cessation techniques. Almost all hospitals reported a total ban on the sale of tobacco products and associated devices (including e-cigarettes) (96%) and a ban on the acceptance of tobacco industry sponsorship and funding (92%). A total ban on tobacco use (including buildings, grounds and transport systems) was achieved in 97 out of 100 surveyed hospitals.

Table II. Scoring for individual ENSH Standards depending on the ownership structure of the hospital

Parameter	Maximum available score	Mean \pm SD, (min.–max.)	P-value
Overall (n = 100):	144	78.55 \pm 32.88 (21–144)	
Public (n = 79)	144	80.09 \pm 33.99 (21–144)	0.4
Private (n = 21)	144	72.76 \pm 28.31 (27–127)	
Governance and commitment:	30	19.05 \pm 6.17 (0–30)	
Public	30	19.09 \pm 6.38 (0–30)	0.9
Private	30	18.90 \pm 5.44 (6–28)	
Communication:	9	7.5 \pm 2.44 (0–9)	
Public	9	7.37 \pm 2.54 (0–9)	0.3
Private	9	8.00 \pm 2.00 (3–9)	
Education and training:	12	7.31 \pm 4.50 (0–12)	
Public	12	7.47 \pm 4.49 (0–12)	0.5
Private	12	6.71 \pm 4.58 (0–12)	
Identification, diagnosis and tobacco cessation support:	30	12.88 \pm 9.47 (0–30)	
Public	30	13.54 \pm 9.73 (0–30)	0.2
Private	30	10.38 \pm 8.11 (2–27)	
Tobacco-free environment:	21	16.16 \pm 3.06 (8–21)	
Public	21	16.37 \pm 3.21 (8–21)	0.1
Private	21	15.38 \pm 2.29 (13–21)	
Healthy workplace:	15	7.94 \pm 5.40 (0–15)	
Public	15	8.30 \pm 5.49 (0–15)	0.2
Private	15	6.57 \pm 4.93 (1–15)	
Community engagement:	12	3.69 \pm 4.29 (0–12)	
Public	12	3.77 \pm 4.36 (0–12)	0.8
Private	12	3.38 \pm 4.09 (0–12)	
Monitoring and evaluation:	15	4.02 \pm 5.03 (0–15)	
Public	15	4.18 \pm 5.09 (0–15)	0.5
Private	15	3.43 \pm 4.86 (0–15)	

SD – standard deviation, p – results of Mann-Whitney U test.

The lowest degree of implementation of smoke-free hospital practices was observed for standard 4 (identification, diagnosis and tobacco cessation support), standard 7 (community engagement) and standard 8 (monitoring and evaluation). More than half of hospitals (64%) did not routinely identify tobacco use or refer tobacco users for treatment, and 54% of surveyed hospitals did not document active or passive smoking status in the patient's medical records. About half (53%) of hospitals have disciplinary procedures in place for non-compliance with the tobacco-free policies by staff. Only 25% of hospitals had a system in place to record policy breaches and other incidents, and 22% of hospitals had a procedure to monitor secondhand smoke exposure in the facility. Only 21% of the surveyed hospitals actively promoted and disseminated their tobacco-free activities. Detailed results for each of the analyzed standards are presented as Supplementary Tables SI–SVIII.

In the qualitative interviews, hospital staff provided additional information about the challenges in implementing smoke-free policies in Polish hospitals. Hospital staff interviewed noted that, despite having a written institutional policy, hospitals lacked any specific documentation about how the policy should be implemented or who is responsible for enforcing it. Additionally, they identified specific barriers, including a lack of sanctions or consequences for violating the policy, disregard of the policy by some staff and visitors, and the lack of support for treating nicotine dependence.

Discussion

To the authors' best knowledge, this is the first available study addressing smoke-free practices in hospitals operating in Poland. Overall, we observed a high level of commitment by hospitals for maintaining a tobacco-free environment. In most of the surveyed entities, staff, service users

and visitors were generally informed about the institution's tobacco control policy. Nevertheless, the majority of hospitals surveyed do not conduct periodic monitoring and evaluation of the smoke-free policy. The identification and treatment of patients who use tobacco products remain a significant challenge for many hospitals.

According to the National Tobacco Control Act in Poland [8], smoking in the buildings and on premises of healthcare facilities is completely prohibited (except in designated places in 24-hour psychiatric wards) and the owner or manager of the hospital should place in a visible location appropriate text and graphic signs informing staff and visitors about the smoking ban. In our study, all surveyed hospitals reported the presence of signage identifying prohibited products and the tobacco-free campus boundaries. Similar results were observed in a report of the Chief Sanitary Inspectorate, which is responsible for the enforcement and audit of the implementation of the smoke-free policy in Poland. In 2016, among 49,040 audited healthcare entities in Poland (most of which were not hospitals), only three failed to meet smoke-free hospital requirements resulting from the National Tobacco Control Act [22]. The lack of significant differences in the implementation of smoke-free policy between public and private entities may be due to the fact that the National Tobacco Control Act applies to all medical facilities, regardless of the ownership structure.

Our findings show some similarities with findings in other European countries using the same ENSH-Global Self-Audit Questionnaire. Martinez *et al.* [17] performed two cross-sectional surveys in 32 hospitals of Catalonia, Spain, to evaluate tobacco control policies before (2005) and after (2007) the implementation of a national smoke-free workplace policy. After implementation of the policy, a significant increase (36.5%) in the implementation score of tobacco control policies was observed in hospitals. The highest score was seen for “environment” and “tobacco control” standards, while the “health promotion” and “identification and cessation support” standards saw only limited implementation [17]. Additionally, another study from Spain surveying hospital middle managers found that although they were aware of and supported hospital smokefree policies, they had a limited role in enforcing the policy and did not make use of enforcement mechanisms such as fines [23]. These findings are similar to what was observed in our study, which showed broad awareness of hospital smoking restrictions and success in their implementation but a lack of support for tobacco cessation and health promotion activities and lack of formal compliance mechanisms. In a study by McArdle and Kabir [18] performed in healthcare facilities in Ireland, the

surveyed entities had a systematic procedure in place to identify and document the tobacco use status of patients, though the study sample was small (only 3 healthcare facilities). In our study, systematic procedures to document the tobacco use status of patients are still lacking in Poland. Nevertheless, we observed high compliance with education and training standards among the clinical staff of the surveyed hospitals. Similarly, in a study from Ireland, 81% of nursing staff and 92% of medical staff received training in smoking cessation techniques [18]. In a study from Catalonia, Spain, cessation programs were mostly observed in central referral hospitals and high technology hospitals [17].

There is no safe level of exposure to second-hand smoke [24]. According to the World Health Organization policy recommendations, all indoor public places and workplaces should be 100% smoke-free [6, 24]. Exposure to secondhand smoke harms children and adults. Hospitalized patients, due to their health status, should be particularly protected from secondhand smoke. National smoke-free policies should address healthcare facilities as a priority in providing a smoke-free environment. In the U.S., hospitals were undergoing the first industry-wide ban on smoking in the workplace and set an example for other industries on how to eliminate exposure to secondhand smoke [25]. Moreover, several studies showed that hospital-initiated smoking cessation intervention effectively improves quit outcomes and may lead to a subsequent decrease in healthcare usage [26–28].

In 2017, over 7.1 million deaths and loss of 182 million disability-adjusted life-years (DALYs) were attributable to tobacco use [29]. Smoking is the most preventable cause of cardiovascular disease – the leading cause of death worldwide [29–31]. Therefore, smoking cessation should be a priority for cardiovascular high-risk patients [30, 31]. During hospitalization for illness, smokers are more likely to be receptive to health messages to quit and motivated to change their behavior [28]. Thus, providing a smoke-free environment and access to smoking cessation services in the healthcare facility can be a crucial factor in contributing to smoking cessation among patients [32]. However, smoking cessation services are often unavailable during hospitalization. Although various forms of pharmacotherapies for smoking cessation (including nicotine replacement therapy, varenicline, and bupropion) are available over the counter, they are not covered by health insurance in Poland. Moreover, a study conducted in 2018 among 423 physicians in Poland showed that only two-thirds of physicians assessed the smoking status of their patients and 37.6% of physicians regularly offered minimal interven-

tion on smoking cessation to smoking patients [10]. Providing smoking cessation counseling and medication for hospitalized smokers may increase smoking cessation rates [26–28]. Moreover, identification of the patients' smoking status should be a standard procedure when admitted to the hospital. Organizational activities are needed to improve access to smoking cessation services for hospitalized smokers, especially those with cardiovascular or respiratory diseases [33, 34].

Tobacco smoking in the hospital setting is not only an issue for smokers, but also creates administrative challenges for healthcare facility managers. Smoking in hospital buildings, especially in social rooms or bathrooms, causes damage to hospital infrastructure, increases cleaning costs and presents a fire hazard, especially among patients who smoke in hospital beds [35]. An effective smoke-free policy should also address occupational health and safety issues.

Our study has some limitations which should be acknowledged. First, the results on the presence of smoke in hospitals and compliance with the policy were based on staff reporting and were not verified by measurements of environmental tobacco smoke, such as through the use of passive nicotine monitors or measurements of concentration of particulate matter (PM_{2.5}). Secondly, compliance with smoke-free policy was defined based on self-reported data provided by managing directors or designated board members, so we cannot exclude the possibility of recall bias. Additionally, we did not measure the prevalence of tobacco use among patients and the hospital staff. Nevertheless, this is the first and largest study assessing the state of smoke-free practices in hospitals operating in Poland. The results of our study have significant public health implications and point to the areas of hospital tobacco control policies that warrant increased attention.

In conclusion, smoke-free policies in hospitals operating in Poland are compliant with the National Tobacco Control Act and provide a smoke-free environment for service users and staff. However, ongoing monitoring, evaluation and proactive implementation of tobacco control are necessary to support effective and ongoing implementation of these policies and to increase access to cessation services. To achieve a smoke-free country, tobacco-free hospitals should become leaders in national tobacco control strategies and policies.

Acknowledgments

The study was funded under a contract from the National Cancer Institute (Bethesda, USA).

The authors would like to thank the members of the Polish Hospital Federation for their collaboration and support during the data collection.

Conflict of interest

The authors declare no conflict of interest.

References

1. Pinkas J, Kaleta D, Zgliczyński WS, et al. The prevalence of tobacco and e-cigarette use in Poland: a 2019 nationwide cross-sectional survey. *Int J Environ Res Public Health* 2019; 16: E4820.
2. Jassem J, Przewoźniak K, Zatoński W. Tobacco control in Poland—successes and challenges. *Transl Lung Cancer Res* 2014; 3: 280-5.
3. The Tobacco Atlas. Available at: <https://tobaccoatlas.org/country/poland/> [Accessed: 04.10.2019].
4. Wojciechowska U, Czaderny K, Ciuba A, Olasek P, Didkowska J. Cancer in Poland in 2016. Available at: http://onkologia.org.pl/wp-content/uploads/Nowotwory_2016.pdf [Accessed: 25.09.2019].
5. Parliament of the Republic of Poland. Act of November 9, 1995 on Protection of Health against the Consequences of the Use of Tobacco and Tobacco Products in Poland *Journal of Laws*, No. 10, Item 55, 1996. Available at: <http://prawo.sejm.gov.pl/isap.nsf/download.xsp/WDU19960100055/O/D19960055.pdf> [Accessed: 04.10.2019].
6. Pinkas J, Szymański J, Poznański D, Wierzbica W. Smoke-free policy in Poland on the example of the implementation into national law of the European Parliament and Council Directive 2014/40 /EU of 3 April 2014 on the approximation of laws, regulations and administrative provisions of the Member States concerning the production, presentation and sale of tobacco and related products, and repealing Directive 2001/37/WE. *Ann Agric Environ Med* 2016; 23: 395-8.
7. Parliament of the Republic of Poland. Act of April 7, 2010 amending the Act on Protection of Health against the Consequences of the Use of Tobacco and Tobacco Products in Poland [Polish]. *Journal of Laws*, No. 81, Item 529, 2010. Available at: <http://www.infor.pl/akt-prawny/DZU.2010.081.0000529,ustawa-o-zmianie-ustawy-o-ochronie-zdrowia-przed-nastepstwami-uzywania-tytoniu-i-wyrobow-tytoniowych-oraz-ustawy-o-panstwowej-inspekcji-sanitarnej.html> [Accessed: 04.10.2019].
8. Parliament of the Republic of Poland. Act of July 22, 2016 amending the Act on Protection of Health against the Consequences of the Use of Tobacco and Tobacco Products in Poland [Polish]. *Journal of Laws*, Item 1331, 2016. Available at: <http://prawo.sejm.gov.pl/isap.nsf/DocDetails.xsp?id=WDU20160001331> [Accessed: 04.10.2019].
9. The Health Consequences of Smoking-50 Years of Progress: A Report of the Surgeon General. Atlanta (GA): US Centers for Disease Control and Prevention; 2014.
10. Jankowski M, Kaleta D, Zgliczyński WS, et al. Cigarette and E-cigarette use and smoking cessation practices among physicians in Poland. *Int J Environ Res Public Health* 2019; 16: 3595.
11. Frazer K, McHugh J, Callinan JE, Kelleher C. Impact of institutional smoking bans on reducing harms and secondhand smoke exposure. *Cochrane Database Syst Rev* 2016; 5: CD011856.
12. McKee M, Gilmore A, Novotny TE. Smoke-free hospitals and the role of smoking cessation services. *BMJ* 2003; 326: 941-2.
13. Neubeck L. Smoke-free hospitals and the role of smoking cessation services. *Br J Nurs* 2006; 15: 248-51.

14. García M, Méndez E, Martínez C, Peris M, Fernández E. Implementing and complying with the Smoke-free Hospitals Project in Catalonia, Spain. *Eur J Cancer Prev* 2006; 15: 446-52.
15. Rigotti NA, Arnsten JH, McKool KM, Wood-Reid KM, Pasternak RC, Singer DE. Smoking by patients in a smoke-free hospital: prevalence, predictors, and implications. *Prev Med* 2000; 31: 159-66.
16. The Global Network for Tobacco Free Healthcare Services. Available at: <https://www.tobaccofreehealthcare.org/about-us/about-the-global-network>[Accessed:06.10.2019].
17. Martínez C, Fu M, Martínez-Sánchez JM, et al. Tobacco control policies in hospitals before and after the implementation of a national smoking ban in Catalonia, Spain. *BMC Public Health* 2009; 9: 160.
18. McArdle D, Kabir Z. Implementing a tobacco-free hospital campus in Ireland: lessons learned. *Ir J Med Sci* 2018; 187: 287-96.
19. Polish Hospital Federation. Available at: <http://www.pfsz.org/> [Accessed: 06.10.2019].
20. Ouranou A. Self-audit process and results from preliminary experiences of the ENSH members. *Eur Network Smoke-free Hosp Newslett* 2003; 8: 4-5.
21. Global Network for Tobacco Free Healthcare Services Self-Audit. Available at: <https://www.tobaccofreehealthcare.org/self-audit/self-audit-overview> [Accessed: 06.02.2019].
22. Chief Sanitary Inspectorate. Report on the program of limiting the health consequences of tobacco use in Poland in 2016 [Polish]. Available at: <http://orka.sejm.gov.pl/Druki8ka.nsf/0/4EFA94D95F4B341C12581EE00365945/%-24File/2091.pdf> [Accessed: 06.10.2019].
23. Martínez C, Ballbè M, Vilardell M, Fu M, Fernández E. The role of middle managers in tobacco control after a national smoke-free hospital campus ban. *BMC Health Serv Res* 2016; 16: 517.
24. IARC Working Group on the Evaluation of Carcinogenic Risks to Humans. IARC Monogr Eval Carcinog Risks Hum 2004; 83: 1-1438.
25. Longo DR, Feldman MM, Kruse RL, Brownson RC, Petroski GF, Hewett JE. Implementing smoking bans in American hospitals: results of a national survey. *Tob Control* 1998; 7: 47-55.
26. Fung PR, Snape-Jenkinson SL, Godfrey MT, et al. Effectiveness of hospital-based smoking cessation. *Chest* 2005; 128: 216-23.
27. Mullen KA, Manuel DG, Hawken SJ, et al. Effectiveness of a hospital-initiated smoking cessation programme: 2-year health and healthcare outcomes. *Tob Control* 2017; 26: 293-9.
28. Rigotti NA, Clair C, Munafò MR, Stead LF. Interventions for smoking cessation in hospitalised patients. *Cochrane Database Syst Rev* 2012; 5: CD001837.
29. GBD 2017 Risk Factor Collaborators. Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *Lancet* 2018; 392: 1923-94.
30. Ursoniu S, Mikhailidis DP, Serban MC, et al. The effect of statins on cardiovascular outcomes by smoking status: a systematic review and meta-analysis of randomized controlled trials. *Pharmacol Res* 2017; 122: 105-17.
31. Booth JN 3rd, Colantonio LD, Howard G, et al. Healthy lifestyle factors and incident heart disease and mortality in candidates for primary prevention with statin therapy. *Int J Cardiol* 2016; 207: 196-202.
32. Nimann P, Kreiner S, Gregersen P, Goldstein H. Smoking habits and attitudes to smoking 2001 among hospital staff at a Danish hospital: comparison with a similar study 1999. *Prev Med* 2005; 41: 321-7.
33. Bembenek JP, Karlinski M, Kurkowska-Jastrzebska I, Czlonkowska A. Changes in pre-hospital management of vascular risk factors among patients admitted due to recurrent stroke in Poland from 1995 to 2013. *Arch Med Sci* 2016; 12: 754-9.
34. Jankowski P, Czarnecka D, Badacz L, et al. Practice setting and secondary prevention of coronary artery disease. *Arch Med Sci* 2018; 14: 979-87.
35. Schultz AS, Bottorff JL, Johnson JL. An ethnographic study of tobacco control in hospital settings. *Tob Control* 2006; 15: 317-22.