

# A survey of post-polypectomy colonoscopy surveillance knowledge among general practitioners.

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## Research article

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# Abstract

Background Screening has been shown to be effective in reducing CRC incidence and mortality. Adherence to the guidelines of surveillance after polypectomy is considered key. In most countries including Poland general practitioners (GPs) are responsible for referring patients for surveillance colonoscopy. The aim of the study was to examine the knowledge of post-polypectomy surveillance among GPs in Poland.

Methods We have designed five scenarios of post-polypectomy surveillance based on European guidelines adapted by the Polish Society of Gastroenterology. The scenarios described different risk groups based on the characteristics of the removed polyps requiring different time intervals of surveillance colonoscopy.

They were supplemented with basic demographic data of the surveyed GP. The questionnaire was carried out by surveyors during a national congress of GPs. Results A total of 340 questionnaires were filled by GPs. None of the surveyed doctors gave correct answers in all questions. The knowledge of post-polypectomy surveillance is very unsatisfactory (correct answers 1.2%-55.0%). One year surveillance interval was the most commonly chosen interval regardless risk groups based on the characteristics of the removed polyps. In 4 of 5 scenarios the surveillance overuse ranged 42.1%-98.5%. In a high risk group scenario surveillance was underused in 45.0%. Conclusions Post-polypectomy surveillance schemes are not known to GPs with a significant trend towards overuse. Strict adherence to guidelines should be pursued to include written recommendation on surveillance program in the final endoscopy report. Efforts should be made by public health policy makers to increase knowledge of surveillance schemes among GPs.

## Background

Colorectal cancer (CRC) is one of the major causes of morbidity and mortality in developed countries [1,2]. CRC screening has been shown to be effective in reducing CRC incidence and mortality [3,4]. Therefore population-based screening is widely recommended and used in many developed countries [5-7]. Due to widespread use of endoscopy screening for CRC, increasing number of people are diagnosed with precancerous polyps. These individuals are considered at increased risk of CRC, and therefore in need for surveillance strategies to prevent future CRC and death from CRC.

Several organizations and professional societies such as European Commission, European Society for Gastrointestinal Endoscopy, British Society of Gastroenterology, American Society for Gastrointestinal Endoscopy issued formal recommendations on colonoscopy surveillance following colorectal polyp removal [7-11]. The Polish Society of Gastroenterology (PSG) adapted the EU guidelines, translated them into Polish and initiated their adoption in Poland in the year 2011 [12]. Adherence to the recommendations is considered key to the efficacy and efficiency of surveillance [13]. Importantly, gastroenterologists', surgeons' or general practitioners' recommendations are the strongest predictor of patient adherence with post-polypectomy surveillance [14,15]. In consequence the European Society for Gastrointestinal Endoscopy recommends in its main recommendations that the endoscopist is responsible for providing a written recommendation for the post-polypectomy surveillance schedule (strong recommendation, low quality evidence) [9]. However, in most countries general practitioners are responsible for referring

patients for surveillance colonoscopy. It is therefore not uncommon that patients present colonoscopy results to their general practitioners expecting in-depth discussion of the results and further recommendations including colonoscopy surveillance schedule. They often decide about the surveillance schedule, using endoscopist's written recommendation as a suggestion rather than definite indication.

The aim of the study was to examine the knowledge of post-polypectomy surveillance schedules among general practitioners in Poland.

## Methods

To examine the knowledge of post-polypectomy surveillance schedules we have designed five scenarios of post-polypectomy surveillance based on European guidelines adapted by the Polish Society of Gastroenterology (English translation in Appendix 1) [12]. The questionnaire was printed and carried out by surveyors during a national congress of general practitioners. The surveys were offered to the participants at the registration area at the congress, prior to all education sessions. Participation was voluntary. The surveyors were attending the surveyed doctor at all times during filling of the questionnaire. The post-polypectomy surveillance scenarios were supplemented with basic demographic data such as age, sex and specialty of the surveyed medical doctor.

Percentages of correct answers were calculated for individual questions and of all questions correct. Under- and over-usage of surveillance for each clinical scenario were calculated. Under- and over-usage of surveillance were defined as proposed surveillance intervals that were longer or shorter than recommended in the guidelines, respectively. Considering multiplicity of post-polypectomy surveillance guidelines we also compared survey results to the intervals included in ESGE guidelines (published in English in 2013 and were not translated into Polish)[9].

Distribution of answers were also compared between specialty subgroups using Kruskal-Wallis rank test. Statistical analysis was performed using Statistica software (StatSoft Inc.). Statistical significance was considered for  $p < 0.05$ .

## Results

A total of 340 questionnaires were filled by general practitioners with following specialties: 201 (59.1%) family doctors, 37 (10.9%) family doctors in training and other specialty doctors 102 (30.0%). Considering 870 participants were registered for the congress the questionnaires were filled in by 39% of the registered participants. The sex distribution was: 239 females (70.3%) and 101 males (29.7%), what seems to represent the sex structure of the profession in Poland. Mean age of the surveyed doctors was 46.9 year (standard deviation 9.6 years). None of the surveyed doctors gave correct answers in all five scenarios. Detailed breakdown of individual scenarios of the questionnaire was presented in table 1. Stratification of

answers by specialty of the surveyed doctor was presented in table 2. No statistical difference was noted between the answer structure in different specialty subgroups.

Analysis of the answers given in the individual scenarios suggests general practitioners are aggressive in scheduling post-polypectomy surveillance, thus overusing it. In four out of five scenarios the most common answer was one year interval whereas only in one of these scenarios it was a correct answer. The difference between adenoma and hyperplastic polyps is not recognized based on the answers given in item four of the survey. Sensitivity analysis using ESGE guidelines retrieved similar results and in consequence severe overuse of surveillance colonoscopy [9].

## Discussion

To our knowledge it is the first published European study on knowledge of post-polypectomy surveillance among general practitioners. In a large group of general practitioners we have demonstrated that the knowledge of post-polypectomy surveillance is very unsatisfactory with percentages of correct answers ranging from 1.2%-55.0%. One year surveillance interval was the most commonly chosen answer in four of five scenarios (ranging 55.0%-87.4% of answers) and second most common in one scenario (42.1%).

Question one was designed to present an example of a high risk group of patients requiring 1 year surveillance. Adequate surveillance interval was not identified by 45% of the surveyed doctors, majority of whom chose 3 and 5 year surveillance interval. Question two was designed to present an example of an intermediate risk group of patients requiring 3 year surveillance. Similar percentage of surveyed doctors chose 1 and 3 years (42.1% and 44.7% respectively). This means that nearly half of the doctors would overuse surveillance, while over 13% would underuse it mainly with a 5 year surveillance interval. Question three was designed to present an example of a low risk group of patients requiring 10 year or no surveillance. A positive family history of CRC was intentionally included in the question although it does not influence the surveillance in the EU guidelines or current ESGE guidelines, however it was previously included in ESGE guidelines [8,9]. Severe overuse of the surveillance (98.8%) was intended by the surveyed doctors with majority answers choosing 1 year interval (72.7%). This fact was not acknowledged by the surveyed GPs. Question four was designed to present an example of a very low risk group of patients with hyperplastic polyps in the rectum not requiring surveillance at all. This was indicated by 1.5% of the surveyed doctors with remaining indicating severe overuse of surveillance (over half indicating 1 year interval). Question five was designed to present an example of a result of surveillance colonoscopy (intermediate risk findings) after a baseline colonoscopy (high risk findings). Appropriate 3 year interval was indicated by less than 10% of the surveyed doctors with majority (87.4%) indicating one year interval.

Post-polypectomy surveillance is of highest importance as it was suggested that patients who are not enrolled into a surveillance program after colonoscopic polypectomy might have increased risk of CRC [16-19]. However, it is estimated that 20-30% of endoscopic capacity is occupied by surveillance colonoscopies, approximately the same proportion as primary screening examinations [20-22]. It was also demonstrated the less than 25% of screenees receive appropriate surveillance and in 45% the surveillance is overused [18]. In a recent report from Austria adherence to surveillance guidelines among endoscopists

is very unsatisfactory [23]. With several European countries initiating population-based screening programs, the burden of surveillance can be expected to continue increasing, especially with improved adenoma detection related to the improvement in the awareness about quality of colonoscopy [2,24,25]. Although colonoscopy is generally considered as a relatively safe procedure, there exists a risk of major complications including bleeding, perforation and other periprocedural adverse events [26]. Surveillance should be only offered to patients with a substantial residual risk of CRC therefore balancing the potential risks.

Capacity of colonoscopy services is heavily dependent on correct indications and timings for post-polypectomy surveillance [27]. It seems that a large proportion of surveillance procedures are inappropriate in both selection of cases and timing of surveillance, representing both over- and underuse of surveillance [14,15,20,27-29]. In our study we demonstrate an intention of severe overuse of the surveillance with majority of answers indicating a 1 year interval after baseline and surveillance colonoscopy. The overuse of surveillance by GPs might originate from unrecognition of the risk of CRC related to the features of the polyps (ie. number, size, pathology, dysplasia) presented in the scenarios or simply unrecognition of the current guidelines. Considering that there is no trend observed towards postponing surveillance colonoscopy in cases of polyps from intermediate or low risk groups the latter seems more probable. Interestingly the most underuse was found in question one constituting for high risk lesions. In a study of Petruzzello and colleagues from 2012, 69% of post-polypectomy surveillance procedures were inappropriate regarding either timing or indication [20]. Overuse of surveillance results in unnecessary costs and longer waiting times. In one of the studies over 40% of patients with small adenomas had an inappropriately early surveillance examination [30]. Moreover, surveillance is still recommended to patients with clinically irrelevant hyperplastic lesions who do not need any endoscopic surveillance [14,15,20,29]. Underuse poses risk of missing precancerous lesions or early cancers with its medical and legal consequences. For these reasons, the endoscopist should be the professional who recommends the patient on the appropriate surveillance interval. Utilization of electronic reporting systems automatically incorporating surveillance recommendations has been proposed to improve adherence to guidelines [31].

Because of the fact that the final histology result is not available right after the colonoscopy, adequate delivery of the result involving both further recommendations on treatment (if necessary) or surveillance schedule is a resource consuming task. In several settings endoscopies are performed in high volume and high quality centers in distant locations from screenees inhabitation. This might be a discouraging form visiting the endoscopy center again for pathology result pick up. What is more patients might sometimes not be either aware or willing to do it. This is why ESGE recommends that the endoscopist updates and/or finalizes the endoscopy report after receiving the histology report; the updated colonoscopy report should include a written recommendation on the appropriate surveillance, taking into account all endoscopic, histological, and patient-related factors. Adherence to published surveillance guidelines should be monitored as part of a quality assurance program [32].

No statistically significant difference in the structure of answers in specialty subgroup analysis was found in any of the questions. However, highest percentages of correct answers in all the studied scenarios were achieved by family doctors in training. This finding suggests that knowledge of current guidelines is not only abandoned by fully trained family doctors, but also those under training. Therefore, it seems not enough stress is put on postgraduate education in this field.

The strength of this study is the fact that it was a questionnaire directly supervised by the surveyor. Therefore, use of supplementary materials such as internet printed resources was impossible. On the other hand, the potential bias of the study is the fact that the schedules of post-polypectomy surveillance schemes are not memorized by the GPs and they in such cases may refer to printed or internet resources in search for appropriate surveillance intervals. Additionally, there might be a selection bias due to the fact that the questionnaires were filled by most confident and educated general practitioners while those with less knowledge refused to fill it in. Therefore, the actual recognition of the guidelines might be worse than measured in our study.

## Conclusions

In conclusion, post-polypectomy surveillance schemes are not known to general practitioners with a significant trend towards overuse of surveillance. This causes unnecessary consumption of resources, exposes patients to relatively small, but still a risk related with colonoscopy with no proven benefit for the patient. Therefore, strict adherence to the ESGE guidelines should be pursued to include written recommendation on surveillance program in the final endoscopy report. Nevertheless, efforts should be made by public health policy makers to increase knowledge of post-polypectomy surveillance schemes among general practitioners.

## Abbreviations

CRC – colorectal cancer

GP – general practitioner

PSG – polish society of gastroenterology

EU – European Union

ESGE - European Society for Gastrointestinal Endoscopy

## Declarations

**ETHICS:** This study was waived from approval by The Independent Ethics Committee at the Medical University of Gdańsk. Consent for participating in the study was written and was a part of the survey questionnaire.

**CONSENT FOR PUBLICATION:** no needed

**AVAIABILITY OF DATA:** Data is available in public repository: <https://osf.io/8khav/>

**COMPETING INTERESTS:** The authors declare that they have no competing interests

**FUNDING:** Printing of the surveys was financed by departmental resources. Apart from that no funding was needed.

**CONTRIBUTIONS:**

JK designed the study, wrote the manuscript and accepted final version, KG designed the study, wrote the manuscript and accepted final version, PS designed the study, critically revised the manuscript and accepted final version, IM designed the study, critically revised the manuscript and accepted final version, PK designed the study, wrote the manuscript and accepted final version, JS designed the study, critically revised the manuscript and accepted final version, KA designed the study, critically revised the manuscript and accepted final version PW designed the study, wrote the manuscript and accepted final version, JR designed the study, critically revised the manuscript and accepted final version, MFK designed the study, critically revised the manuscript and accepted final version.

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## Tables

Table 1. Structure of a total of 340 answers to individual scenarios of the survey (number of answers and percentage of answers). Correct answers were shaded. Total overuse and underuse were calculated for all answers with time interval shorter or longer than recommended, respectively.

	S1		S2		S3		S4		S5	
1 year	187 55.0%		143 42.1%	overuse =42.1%	247 72.7%	overuse =98.8%	191 56.2%	overuse =98.5%	297 87.4%	overuse =87.4%
3 years	83 24.4%	underuse =45.0%	152 44.7%		73 21.5%		93 27.4%		31 9.1%	
5 years	62 18.2%		34 10.0%	underuse =13.2%	16 4.7%		38 11.2%		8 2.4%	underuse =3.5%
10 years	6 1.8%		9 2.7%	4 1.2%			13 3.8%		4 1.2%	
does not require surveillance	2 0.6%		2 0.6%	0			5 1.5%		0	

Percentages may not total to 100 because of rounding.

S 1 - five subcentimeter tubular adenomas with low grade dysplasia; high-risk group

S 2 - one subcentimeter tubulo-villous adenoma with low grade dysplasia; intermediate risk group

S 3 - two subcentimeter tubular adenomas with low grade dysplasia and family history of colorectal cancer; low-risk group

S 4 - three subcentimeter hyperplastic polyps; no risk group

S 5 - two villous adenomas with low grade dysplasia at first surveillance after removal of high-risk adenoma at baseline

Table 2. Structure of a total of 340 answers to individual scenarios of the survey in relation to the specialty of the surveyed GP (percentage of answers). Correct answers were shaded.

		Family doctors, N=201	Family doctors in training, N=37	Other specialties, N=102	p
S1	1 year	53.2%	67.6%	53.9%	p=0.195
	3 years	25.4%	21.6%	23.5%	
	5 years	19.4%	10.8%	18.6%	
	10 years	2.0%	0	2.0%	
	does not require surveillance	0	0	2.0%	
S2	1 year	46.8%	24.3%	39.2%	p=0.114
	3 years	40.8%	64.9%	45.1%	
	5 years	8.0%	10.8%	13.7%	
	10 years	4.5%	0	0	
	does not require surveillance	0	0	2.0%	
S3	1 year	69.2%	70.3%	80.4%	p=0.096
	3 years	24.9%	16.2%	16.7%	
	5 years	5.0%	10.8%	2.0%	
	10 years	1.0%	2.7%	1.0%	
	does not require surveillance	0	0	0	
S4	1 year	56.2%	67.6%	52.0%	p=0.111
	3 years	27.4%	27.0%	27.5%	
	5 years	12.9%	5.4%	9.8%	
	10 years	3.5%	0	5.9%	
	does not require surveillance	0	0	4.9%	
S5	1 year	89.1%	83.8%	85.3%	p=0.521
	3 years	8.0%	10.8%	10.8%	
	5 years	1.0%	5.4%	3.9%	
	10 years	2.0%	0	0	
	does not require surveillance	0	0	0	

S 1 - five subcentimeter tubular adenomas with low grade dysplasia; high-risk group

S 2 - one subcentimeter tubule-villous adenoma with low grade dysplasia; intermediate risk group

S 3 - two subcentimeter tubular adenomas with low grade dysplasia and family history of colorectal cancer; low-risk group

S 4 - three subcentimeter hyperplastic polyps; no risk group

S 5 - two villous adenomas with low grade dysplasia at first surveillance after removal of high-risk adenoma at baseline

## Supplementary Files

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