



# FAMILY PHYSICIAN OPINIONS ON ELECTRONIC TOOLS AND CARDIOVASCULAR DISEASE PREVENTION GUIDELINE AVAILABILITY, USAGE AND ADHERENCE IN CROATIA

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**SUMMARY** – Family physicians are burdened with a great number of guidelines considering different conditions they treat. We analyzed opinions of family physicians on electronic tools which help managing chronic conditions and their influence on patient care by cardiovascular disease (CVD) prevention guideline availability, usage and adherence. A descriptive study was performed on a convenient sample of 417 (response rate 56.0%) Croatian family physicians. Data on physician characteristics and availability, usage and adherence to CVD prevention guidelines were analyzed. The  $\chi^2$ -test was used for comparisons. Significance was defined as  $p < 0.05$ . Family physicians who used additional electronic tools in Electronic Health Record software on more than 80% of their patients had CVD prevention guidelines more available ( $p < 0.01$ ) and used them more frequently ( $p < 0.01$ ). A group who used electronic tools on more than 80% of their patients had CVD prevention guidelines available to them frequently and used them on more than 60% of their patients, also strictly adhering to the guidelines ( $p < 0.01$ ). Physicians who used CVD prevention guidelines on more than 60% of their patients spent more time doing patient education ( $p = 0.036$ ). Using electronic tools helps Croatian family physicians in terms of availability, usage and adherence to the guidelines and quality improvement.

**Key words:** *Family practice; Electronic tools; Guidelines*

## Introduction

A widely accepted definition of clinical guidelines is: "... systematically developed descriptive tools or standardized specifications for care to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances"<sup>1</sup>. Clinical guidelines can improve the quality of clinical decisions, offer explicit recommendations for clinicians who are uncertain about how to proceed, overturn the beliefs of

physicians accustomed to outdated practices, improve the consistency of care, and provide recommendations that reassure practitioners about the appropriateness of their treatment policies<sup>2</sup>. Problem in today's medicine is that the number of guidelines is increasing, they are constantly being updated as new evidence comes to light, and the rate of preventive care utilization is lower when the number of guideline-recommended services is higher<sup>3</sup>. That is especially emphasized in primary care which deals with a whole range of conditions and consequently with a great number of guidelines in daily work. Apart from creating guidelines and making them available, significant problem represents improving adherence to guidelines by physicians. The most commonly used ways of promoting a new guideline

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such as financial interventions, distribution of educational materials, and big group educational meetings are of least interest to primary care physicians<sup>4</sup>. In Croatia, the vast majority of primary care physicians have a contract with the national insurance company, Croatian Health Insurance Fund (CHIF). One of the conditions in that contract is to have a computer, internet connection and certified Electronic Health Record (EHR) software. They differ in their capabilities and additional tools beside health record data input, such as automatic reminders, automatic guideline provision systems or automatic graphing. They should facilitate work by computing data from EHR and providing additional information, which should then help physician bring better clinical decisions. Different electronic tools were implemented and evaluated in various countries and healthcare systems. In New Zealand, electronic decision support systems showed an increase of cardiovascular disease (CVD) risk assessment, and in Finland electronic guidelines have been available in primary care since 1989<sup>5,6</sup>. There is great variability in the usage of guidelines for the prevention of CVD as there is significant variability in key parts of the health care of acute cardiac patients depending on the size of the hospital, but also the overall trend according to existing guidelines<sup>7</sup>. For example, we have very clear guidelines for stroke prevention in patients with atrial fibrillation but in one study, a total of 85.2% of patients who were on oral anticoagulation therapy at the time of hospital admission had INR outside the therapeutic range<sup>8</sup>. The question is whether the problem is lack of availability, usage or adherence to guidelines.

The aim of this study was to assess opinions of family physicians on electronic tools which help managing chronic conditions and their influence on patient care by guideline availability, usage and adherence.

## Subjects and Methods

The study was conducted on a convenient sample of 745 Croatian family physicians during a National Congress of Family Medicine. The questionnaire used was an English questionnaire originally developed by one of the authors (RS) to assess physician outpatient management of patients with CVD risk factors<sup>9</sup>. It consisted of 44 items (41 multiple choice questions and 3 free-text questions) divided into four sections: physician demographics, practice characteristics, management of CVD risk factors, and health policy.

The questionnaire was translated from English to Croatian and backwards using the standard procedure; the questionnaire was first translated into Croatian by two independent translators with medical knowledge. Back translation to English was performed by two independent translators familiar with both languages. Another person checked the two back translated versions to detect inconsistencies that were resolved by consensus. The back translated English version was then compared with the original English version to ensure that the meaning was preserved during the translation process<sup>10</sup>.

For the purpose of this study, data on physician characteristics (age, sex and practice status) and availability, usage and adherence to CVD prevention guidelines were analyzed.

Descriptive statistics of data was performed by using absolute numbers and relative frequencies, and  $\chi^2$ -test was used for comparisons. Significance was defined as  $p < 0.05$ . IBM SPSS software version 25 was used on data analysis.

Ethical approval for the study was received from the University of Zagreb School of Medicine Ethics Committee (reference number 380-59-10106-14-55/33).

## Results

Out of 745 invited participants, 484 answered the questionnaire. Questionnaires that were only partly filled in or were left blank were excluded from analysis, so the final sample consisted of 417 respondents (response rate 56.0%). Participant demographic characteristics are outlined in Table 1.

Table 1. Demographic characteristics of study participants

Characteristic	n	%
Gender:		
Male	55	13.2
Female	362	86.8
Age (years):		
<35	36	8.6
35-44	62	14.9
45-54	202	48.4
55-64	111	26.6
>65	6	1.4

The majority of respondents were holding a private practice in concession (n=289; 69.3%) opposed

to health center employees (n=119; 28.5%) and other (n=9; 2.2%). The group of physicians who reported that they used an electronic medical record with additional tools to help manage chronic problems in more than 80% of their patients had guidelines more avail-

able (p<0.01) and used guidelines more often (p<0.01) (Table 2).

We defined a group of physicians who reported that they had guidelines available in >60% of the time, that they used guidelines on more than 60% of their

Table 2. Comparison of electronic tool usage with availability, usage and adherence to guidelines

		National or professional practice guidelines are available to me in the office when I'm seeing my patients		I use guidelines for management of patients with CVD risk factors		I follow nationally written CVD risk factor guidelines strictly		Guidelines are available to me frequently, I use them in more than 60% of my patients, and I follow guidelines strictly	
		<60% of time	>60% of time	<60% of my patients	>60% of my patients	No	Yes	No	Yes
If/when I use an electronic medical record it includes tools to help manage chronic problems (for example, automatic graphing, automatic reminders, automatic provision of guidelines)	>80% of my patients	56 34.8%	147 57.4%	40 27.0%	163 60.6%	183 51.8%	31 48.4%	176 46.6%	27 69.2%
	<80% of my patients	105 65.2%	109 42.6%	108 73.0%	106 39.4%	170 48.2%	33 51.6%	202 53.4%	12 30.8%
Total		161	256	148	269	353	64	378	39
Total		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
p value		<0.01		<0.01		0.616		<0.01	

Table 3. Comparison of guideline usage with guideline availability and time spent for patient education

		National or professional practice guidelines are available to me in the office when I'm seeing my patients		On seeing patients for management of CVD risk factors, I spend the following percent of time doing patient education	
		<60% of time	>60% of time	<40% of time	>40% of time
I use guidelines for management of patients with CVD risk factors	>60% of my patients	81 50.3%	188 73.4%	210 62.1%	59 74.7%
	<60% of my patients	80 49.7%	68 26.6%	128 37.9%	20 25.3%
	Total	161	256	338	79
Total		100.0%	100.0%	100.0%	100.0%
p value		<0.01		0.036	

patients, and that they followed guidelines strictly on more than 60% of their patients. This group included 39 (9.4%) of the total number of participants, with 27 out of these 39 participants reporting that they used electronic tools in more than 80% of their patients (Table 2).

We also compared physician usage of guidelines for management of patients with CVD risk factors with practice guideline availability and time spent for patient education. More physicians who reported that they used guidelines in >60% of their patients with CVD risk factors also had practice guidelines available in >60% of the time in the office ( $p < 0.01$ ) and spent >40% of the time for patient education ( $p = 0.036$ ) (Table 3).

## Discussion

Our study results suggest that family physicians who use additional electronic tools in EHR software have guidelines more available and use them more frequently. Additionally, family physicians in this study who had guidelines available and used them, also adhered more to the guidelines. This finding is important knowing that just making guidelines available or even using them will not make physicians inevitably adhere to guidelines. Secondly, we presented difference between family physicians that use guidelines and have guidelines available just to point out that availability of the guidelines in the office is the prime prerequisite for using them. Thirdly, family physicians in this study who use guidelines for managing patients with CVD risk factors more frequently, also spend more time doing patient education. This could be explained by the recommendations in the CVD prevention guidelines that emphasize the need for education on healthy lifestyle, physical activity, stress management, and counseling on psychosocial risk factors<sup>11</sup>.

More specific research was done on the effect of electronic decision support systems based on clinical practice guidelines on managing diabetic patients. These systems are a specific kind of electronic tools that automatically compute data from EHR and suggest the next course of action in patient care in accordance to guidelines. Results of the study showed that guidelines were used twice more often when a decision support system was used<sup>12</sup>. In New Zealand, a fourfold increase in CVD risk assessment after electronic decision support system implementation was recorded<sup>5</sup>.

The results of our study showed that 39 (9.4%) family physicians reported that they had guidelines available frequently, used them on more than 60% of their patients, and followed guidelines strictly. Comparing these results with a research conducted in Slovenia, despite different research methodologies, 9.3% of hypertensive patients in Slovenia were completely managed according to the guidelines<sup>13</sup>. Adherence to guidelines is a special problem, even when availability and usage are high. Heneghan *et al.* studied adherence to hypertension guidelines and found that, while awareness was high, adherence was often less so<sup>14</sup>. Specific cause varied with each clinical action, but some of the reasons of not using guidelines were limitations in consulting time, lack of local resources, lack of attention to the logistics of implementation, and finally the volume of recommendations and guidelines, i.e., most family physicians did not have time to read and memorize full details of all guidance<sup>14</sup>. These problems could be solved with appropriate electronic tools. Guidelines should be presented automatically depending on the patient diagnosis and current treatment, avoiding the need to memorize full details of every guideline. That would solve a great deal of problems in logistics of implementation and provide more consultation time.

Consultation time is often stated as a barrier in electronic tool implementation and physicians fear spending some of that precious time dealing with software instead of the patient. Studies have shown that physicians are actually more compliant with the reminders on guidelines for secondary prevention of dyslipidemia when they experience greater patient load, when they were less acquainted with the patient, and when more time has passed since the last major cardiac event<sup>15</sup>. When guidelines and electronic tools are well incorporated in EHR, they actually save physician's time for unnecessary tasks and provide more time for the patient.

On the contrary, there are studies that showed opposite results such as that there was no effect of computerized evidence based guidelines on the management of asthma or angina in adults in primary care. The authors stated the results were probably due to the low levels of using software despite the system being optimized as far as technically possible<sup>16</sup>. Interesting results have been reported by Williams *et al.*, showing that when guidelines were made available online, there was a significant increase in adherence to stroke guidelines, but not to those on deep vein thrombosis and

upper gastrointestinal bleeding. They concluded that making guidelines available electronically would not raise adherence if these guidelines did not represent a consensus view<sup>17</sup>.

There were several limitations to our study. First of all, it was based on family physician self-assessment and therefore may not represent the actual performance of family physicians regarding CVD risk factor management. The respondents could under- or overestimate their answers because of various reasons and their self-perception could vary a great deal from their actual behavior. Finally, we did not specify which additional electronic tools family physicians used and we focused on CVD prevention guidelines only. Nevertheless, our results could represent a valuable argument for broadening research on the specific kinds of electronic tools and different guidelines, which could improve patient care.

Availability of EMR support tools regarding management of chronic diseases in family physician daily work enhances the possibility for guideline usage and adherence to guidelines. An unsatisfactory proportion of family physicians in Croatia had guidelines available, used and adhered to guidelines for CVD prevention. Additional work is needed to improve adherence to CVD prevention guidelines in primary care in Croatia, including implementation of EMR support tools that would make guidelines more available and more feasible to use in family physician clinical practice.

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## Sažetak

## STAVOVI OBITELJSKIH LIJEČNIKA O ELEKTRONIČKIM ALATIMA I DOSTUPNOSTI, UPORABI I PRIDRŽAVANJU SMJERNICA ZA PREVENCIJU KARDIOVASKULARNIH BOLESTI U HRVATSKOJ

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Obiteljski liječnici su u radu opterećeni velikim brojem smjernica za različite bolesti. Analizirali smo njihovo mišljenje o elektroničkim alatima koji im pomažu u skrbi za bolesnike s kroničnim bolestima i njihovom utjecaju na dostupnost, uporabu i pridržavanje smjernica za prevenciju kardiovaskularnih bolesti (KVB). Provedeno je opisno istraživanje na uzorku od 417 (stopa odgovora 56,0%) hrvatskih obiteljskih liječnika. Analizirani su podaci o značajkama liječnika, dostupnosti, upotrebi i pridržavanju smjernica za prevenciju KVB. Za usporedbe je primijenjen  $\chi^2$ -test. Statistička značajnost je definirana kao  $p < 0,05$ . Obiteljski liječnici koji su rabili dodatne elektroničke alate za više od 80% svojih bolesnika imali su dostupnije smjernice za prevenciju KVB ( $p < 0,01$ ) i više su ih upotrebljavali ( $p < 0,01$ ). Liječnici koji su istodobno rabili elektroničke alate na više od 80% svojih bolesnika često su imali na raspolaganju smjernice za prevenciju KVB i upotrebljavali su ih na više od 60% svojih bolesnika, a ujedno su se strogo pridržavali smjernica ( $p < 0,01$ ). Liječnici koji su rabili smjernice za prevenciju KVB na više od 60% svojih bolesnika proveli su i više vremena obrazujući svoje bolesnike ( $p = 0,036$ ). Primjena elektroničkih alata pomaže obiteljskim liječnicima u Hrvatskoj u pogledu dostupnosti, upotrebe i pridržavanja smjernica te unaprjeđenju kvalitete skrbi.

Ključne riječi: *Obiteljska medicina; Elektronički alati; Smjernice*