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**IMPACT OF PHYSICIANS' AGE ON THE CLINICAL  
MANAGEMENT OF GLOBAL CARDIOVASCULAR RISK:  
Analysis of the results of the Evaluation of Final Feasible  
Effect of Control Training and Ultra Sensitisation  
(EFFECTUS) Educational Program.**

Giuliano Tocci, Andrea Ferrucci, Pietro Guida, Angelo Avogaro, Marco Comaschi,  
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**Original Research Article****IMPACT OF PHYSICIANS' AGE ON THE CLINICAL MANAGEMENT OF  
GLOBAL CARDIOVASCULAR RISK:****Analysis of the results of the Evaluation of Final Feasible Effect of Control Training and  
Ultra Sensitisation (EFFECTUS) Educational Program.**

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**Key Words:** cardiovascular risk management, cardiovascular risk factors, ageing, population survey, hypertension, hypercholesterolemia, diabetes.

**Short Title:** Physicians' age and attitudes for global cardiovascular risk management.

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## ABSTRACT

**Aim.** To evaluate the potential impact of physicians' age on global cardiovascular (CV) risk management in the population of the Evaluation of Final Feasible Effect of Ultra Control Training and Sensitization (EFFECTUS) study.

**Methods.** Involved physicians were stratified into three age groups ( $\leq 45$ , 46-55 and  $> 55$  years), and asked to provide clinical data covering the first 10 adult outpatients, consecutively seen in May 2006.

**Results.** Overall 1,078 physicians, among which 219 (20%) were aged  $\leq 45$ , 658 (61%) between 46-55 and 201 (19%)  $> 55$  years, collected data of 9,904 outpatients (46.5% females, aged  $67 \pm 9$  years), who were distributed into three corresponding groups: 2,010 (20%), 6,111 (62%) and 1,783 (18%), respectively. A higher prevalence of myocardial infarction and stroke was recorded by younger physicians rather than those aged  $> 46$  years. Older physicians frequently recommended life-style changes, whereas a higher number of antihypertensive, antiplatelet, glucose and lipid-lowering prescriptions was prescribed by physicians aged  $\leq 45$  years.

**Conclusions.** This analysis of the EFFECTUS study indicates a higher prevalence of vascular diseases among outpatients followed by younger physicians, who prescribed a higher number of CV drugs than older ones. These latter ones have more attitude for prescribing favourable life-style changes than younger physicians.

**Abstract Word Count:** 200.

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### What's known?

- Ageing represents a well-known risk factor for cardiovascular diseases and metabolic disorders in both Western and Developing Countries. Older individuals have, in fact, higher susceptibility to experience major cardiovascular events and non-cardiovascular mortality.
- Age has been included in some, but not in all algorithms and risk calculators for individual cardiovascular risk assessment.
- While physicians recognize the importance of patients' age as a major driver for cardiovascular risk, yet few evidence are available regarding the potential impact of physicians' age on clinical attitudes and preferences for the clinical management of patients at cardiovascular risk.

### What's new?

- We evaluate the potential impact of physicians' age on global cardiovascular risk management in the population of the Evaluation of Final Feasible Effect of Ultra Control Training and Sensitization (EFFECTUS) study, a multicenter, observational survey performed in Italy, by stratifying involved physicians into three age groups ( $\leq 45$ , 46-55 and  $> 55$  years).
- We observe a significantly higher prevalence of cardiovascular risk factors and clinical conditions among younger specialised physicians rather than in older physicians, the majority of which were general practitioners.
- This distribution was paralleled by a significantly larger use of cardiovascular drugs (antiplatelet, glucose and lipid-lowering agents), in younger than in older physicians, in which a lower rate of control of major cardiovascular risk factors (e.g. hypertension, dyslipidemia, diabetes) was achieved.

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## INTRODUCTION

Aging of general population has been advocated as one of the leading cause of the progressive increased prevalence of cardiovascular (CV) morbidity and mortality, mostly in Western Countries. Older individuals have, in fact, higher and longer interactions with major CV risk factors, including smoking, hypertension, obesity, dyslipidemia, and diabetes mellitus, and more frequently have associated non-CV clinical conditions, thus leading to a substantially higher burden of CV disease than younger subjects. On the basis of these assumptions, current international guidelines for the clinical management CV diseases highlighted the importance of age for a proper global CV risk stratification and, mostly, for individual risk projection over the years in any apparently asymptomatic (healthy) subjects. As a matter of fact, however, while patients' age represents a well-recognized CV risk factor, few evidence are available regarding the potential impact of physicians' age on clinical attitudes and preferences for the clinical management of global CV risk in a setting of "real practice".

The Evaluation of Final Feasible Effect of Ultra Control Training and Sensitization (EFFECTUS) program is a multicenter, observational study, designed to raise awareness on global CV risk management and control among physicians operating in the daily clinical practice in Italy [1]. In this population, we have recently demonstrated a relatively high prevalence of major CV risk factors, irrespective of the clinical settings (cardiologists, diabetologists and general practitioners) [1] and national areas in which patients were followed. In further analyses, we were also able to demonstrate that a more intensive clinical data recording was paralled with a better adherence to guidelines [2], and that the use of electronic rather than conventional support may translate into better management of outpatients at CV risk by Italian physicians in their daily clinical practice [3]. Overall these data, which were collected in a relatively elderly outpatient population (average age  $67\pm 9$  years) by a relatively middle-aged cohort of physicians (average age  $50\pm 7$  years), have provided a closer and updated glimpse on the current attitudes and preferences for the clinical

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3 management of individual global CV risk and may suggest a potential way to improve control of  
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5 major CV risk factors in the daily clinical practice in Italy.  
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8 In the present analysis, we aimed to examine the potential influence of physicians' age on strategies  
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10 for the clinical management of global CV risk by evaluating the potential differences and  
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12 discrepancies among physicians involved in the EFFECTUS program and stratified according to  
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14 their age into three groups ( $\leq 45$  years, 46-55 years and  $> 55$  years).  
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## METHODS

### Methodology of the Study.

The methodology of the study has been previously described [1]. Briefly, EFFECTUS is an educational program, which was planned in two separate phases, being the first one designed to evaluate prevalence of major CV risk factors and the second one to establish the potential influence of an educational intervention on global CV risk management among physicians operating in the clinical practice in Italy.

The study conformed to the Declaration of Helsinki and its subsequent modifications, and was authorized by the reference Ethical Committee. The confidentiality of the data was strictly protected. Written consent to participate to the educational program was obtained by all involved physicians and confidentiality on demographic and clinical data of all patients was carefully preserved.

### Physicians' recruitment.

Physicians' recruitment was accomplished in May 2006. Participants involved in the program were randomly selected, in order to have a representative sample of the physicians in Italy, from a community of medical doctors, who shared some specific features: 1) experience in data collection and clinical case report compilation; 2) a routine practice of at least 60 patients per week, on average; 3) free on-line access to remote central database. Physicians were invited to participate to an educational training program, aimed at evaluating the efficacy of a clinical problem-oriented learning approach for improving individual global CV risk management in their routine clinical practice. Thus, involved physicians were blind to the final purposes of the survey. Acceptance of this initial invitation placed physicians under no obligation, and physicians were entitled to drop out of the survey at any stage.

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3 Written invitations were forwarded in a sizable number to ensure the study population sample was a  
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5 sufficient representative and to achieve this target within a period of approximately 3-4 weeks. For  
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7 this purpose, each of the 20-24 regional referral centres invited 60 physicians per region (35 general  
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9 practitioners, 10 diabetologists and 15 cardiologists) to participate to this survey, for a total of 1.400  
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11 individual physicians, selected on the basis of the above-mentioned clinical habits and personal  
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13 characteristics. Then, approximately 1.250 invitations were issued and physicians were asked to fill  
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15 questionnaires featuring their characteristics and practice (age, gender, geographic location,  
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17 professional expertise or speciality, use of electronic or conventional clinical database) and to reply  
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19 anonymously to the administrative site of their regional referral centres.  
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25 The planned sample size of the survey participants included about 1.200 physicians, in order to  
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27 achieve an adequate representation of all Italian regions, as well as to limit excessive heterogeneity  
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29 in age, gender, geographic location, professional expertise and practice size. The predefined  
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31 minimum percentage of responses to achieve in order to declare the representative sample size was  
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33 arbitrarily fixed to 80% of the total sample. Overall, the survey generated a population sample of  
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35 1.078 physicians (89.8% of the planned sample size) and reflected approximately an outpatient  
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37 practice of about 11.000 patients per week. Physicians who completed the program did not receive  
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39 any compensation for their participation.  
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44 Following their acceptance, involved physicians were asked to provide clinical data extracted from  
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46 their clinical records from the first 10 consecutive adult Caucasian outpatients aged more than 50  
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48 years, whatever the reason they referred to their own attending physicians. At each study site, data  
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50 collection was accomplished during one week during May 2006. The entire data collection was  
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52 completed by participants on-site and then delivered to the data collection centre by on-line access  
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54 to remote database or by National mail delivery service.  
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58 Physicians involved in this program were stratified in three groups, according to the purpose of the  
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60 present analysis, including physicians aged  $\leq 45$  years, between 46-55 years and  $> 55$  years.

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### Data Collection.

Medical history and lifestyle habits were assessed by means of a standardized questionnaire. Body mass index (BMI) was expressed as weight in kilograms divided by surface in squared metres. Obesity was defined in the presence of a BMI  $\geq 30$  kg/m<sup>2</sup> [4]. Normal values of clinic and metabolic parameters were carefully assessed. In particular, systolic and diastolic BP control was defined as BP  $\leq 140/90$  mmHg [5], total cholesterol  $\leq 190$  mg/dl [6], HDL cholesterol  $\geq 40$  mg/dl in men and  $50 \geq$  mg/dl in women [7], triglycerides  $\leq 150$  mg/dl [7], and fasting glucose levels  $\leq 126$  mg/dl [8].

Diagnostic criteria proposed by international guidelines were applied in those patients having hypertension [5], hypercholesterolemia [6], low levels of high-density lipoprotein (HDL) cholesterol levels [7], diabetes [8], and in those having previous history of coronary artery disease [9] or cerebrovascular disease [10].

### Statistical Analysis.

Continuous variables were expressed as mean  $\pm$  standard deviation and discrete variables as number and percentages. Physician's data were compared by using Analysis of Variance (continuous variables) or Pearson's chi-square test (categorical variables). Patient's data were analysed using a mixed model with age-group as fixed effect ( $\leq 45$  years as reference category) and physicians fitted as random, so that possible differences in data across physicians could be considered. Data were entered into a database (Microsoft Access for Windows, Microsoft Corp, Redmond, Wash) and statistical analyses were performed with R (R Development Core Team, R Foundation for Statistical Computing, Vienna, Austria). Because of the large sample size, the comparisons were considered relevant for p value  $< 0.001$ .

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## RESULTS

The EFFECTUS program involved 1.078 physicians, among which 219 (20%) were aged  $\leq 45$  years, 658 (61%) between 46-55 years and 201 (19%)  $>55$  years. They collected data of 9.904 outpatients (46.5% females, aged  $67 \pm 9$  years), who were distributed into three corresponding groups: 2,010 (20%), 6,111 (62%) and 1,783 (18%), respectively. General characteristics of physicians and patients involved in the EFFECTUS program are reported in **Table 1**.

A significant proportion of physicians aged more than 46 years were male, whereas a quite balanced gender distribution was reported in the younger group of physicians ( $P < 0.001$  for trend).

In addition, a significantly higher proportion of older physicians were general practitioners than young physicians, who were more frequently cardiologists and diabetologists ( $P < 0.001$  for trend).

Overall, different age groups of involved physicians were equally distributed throughout different geographical areas of our Country ( $P = 0.026$ ), and this balanced distribution allow us to reduce the potential impact of local influences on clinical practice, an issue that has been recently addressed in other analysis of this database (Volpe M, et al. *Nutr Metab Cardiovasc Dis* 2010; in press).

Patients' age distributions were substantially uniform among different physicians' age groups, whereas a significantly higher proportion of male subjects were followed by physicians aged more than 55 years as compared to other groups of physicians ( $P = 0.001$ ). In addition, patients followed by older physicians tended to have more frequently obesity ( $P = 0.038$ ) and smoking habit ( $P = 0.006$ ) than those followed by physicians aged  $< 55$  years, without any significant difference regarding BMI or waist circumference among different subgroups. On the contrary, a progressively, although not significant, increase in the practice of physical activity was reported in patients followed by younger towards those followed by older physicians.

In the overall population sample, arterial hypertension represented the most common CV risk factor, followed by dyslipidemia and diabetes mellitus, and this distribution was not affected by physicians' age stratification (**Figure 1**). Prevalence of different major CV risk factors was not

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3 statistically different among three age groups, although hypertension tended to be more prevalent in  
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5 those subjects followed by younger physicians than in those followed by physicians aged more than  
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7 46 years ( $P=0.07$ ). At the same time, ischemic heart disease, mostly myocardial infarction  
8  
9 ( $P=0.003$ ), and cerebrovascular disease, mostly stroke ( $P=0.008$ ) and TIA ( $P=0.031$ ), were more  
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11 prevalent in outpatients followed by younger physicians than in those followed by physicians aged  
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13 more than 46 years.  
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17 Both systolic and diastolic blood pressure levels were higher in outpatients followed by older  
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19 physicians as compared to those recorded by physicians aged  $<60$  years ( $P=0.06$  and  $P=0.002$ ,  
20  
21 respectively). It should be also noted that systolic blood pressure levels were on average in the high-  
22  
23 normal range, while diastolic blood pressure levels were always below the normal values,  
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25 irrespective of physicians' age. On the contrary, both fasting glucose and HbA1c levels were higher  
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27 in those patients followed by younger physicians than in those followed by physicians aged  $>46$   
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29 years ( $P=0.003$  and  $P=0.06$ , respectively). A progressive increase in total cholesterol levels  
30  
31 (paralleled by a trend toward increase in LDL cholesterol levels) was observed in patients followed  
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33 by younger towards those followed by older physicians ( $P=0.001$  for trend), whereas no significant  
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35 difference was found among three age groups with regard to HDL cholesterol and triglyceride  
36  
37 levels. Of note, with the exception of LDL cholesterol levels, all these metabolic parameters were in  
38  
39 the normal or in the upper normal thresholds. Also, no significant differences were found with  
40  
41 regard to serum creatinine levels, which were, indeed, in the high-normal thresholds.  
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48 **Figure 2** illustrates prevalence of patients showing normal values of major CV risk factors,  
49  
50 including blood pressure, total and HDL cholesterol, triglycerides and fasting glucose levels. Blood  
51  
52 pressure control was substantially higher among patients followed by younger physicians as  
53  
54 compared to that reported by physicians aged more than 46 years, irrespective of the relatively  
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56 higher prevalence of hypertension in the former than in the latter group. At the same time, control  
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58 rate of total and LDL cholesterol was significantly higher in outpatients followed by younger  
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60 physicians as compared to that achieved by older physicians, whereas no significant differences

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3 were found regarding control of HDL cholesterol and triglycerides among three age groups. On the  
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6 contrary, glucose control was significantly higher in those patients followed by older physicians as  
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8 compared to that obtained in those outpatients followed by physicians aged less than 55 years.

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10 Among markers of organ damage detection and evaluation (**Electronic Table 1, on-line available**),  
11  
12 carotid ultrasonography and dosage of microalbuminuria were more prescribed by physicians aged  
13  
14 <55 years than by those aged >55 years (P=0.019 and P=0.005, respectively), who prescribed for  
15  
16 global CV risk stratification exercise stress testing and abdominal ultrasonography (P<0.001) in a  
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18 higher proportion of their patients than younger physicians. With regard to EKG, echocardiogram  
19  
20 and *fundus oculi*, no significant differences were found among different age groups of physicians.  
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25 As shown in **Table 2**, favourable life-style changes, including smoking cessation, diet and physical  
26  
27 activity, were more frequently prescribed by physicians aged >46 years than those aged ≤45 years,  
28  
29 most likely as a consequence of the higher prevalence of obesity and smoking habits in outpatients  
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31 followed by the former than in those followed by the latter group of physicians. A higher number of  
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33 prescriptions of CV drugs, mostly including ACE Inhibitors (P=0.006) and beta-blockers  
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35 (P=0.016), were reported by younger physicians than by those aged >46 years, probably due to the  
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37 higher prevalence of hypertension and associated clinical conditions (previous myocardial  
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39 infarction and stroke or TIA) among outpatients followed by younger physicians as compared to  
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41 those followed by older physicians. No significant differences were found regarding the other  
42  
43 classes of antihypertensive drugs among three age groups. Antidiabetic drugs, mostly including  
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45 insulin (P=0.005), were more prescribed by physicians aged ≤45 years than by those aged >46  
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47 years. At the same time, lipid-lowering agents, mostly statins (P=0.09), and antiplatelet agents,  
48  
49 mostly aspirin (P=0.006), were more prescribed by physicians aged ≤45 years than by those aged  
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51 >46 years, most likely due to the higher prevalence of associated clinical conditions (mostly  
52  
53 previous myocardial infarction and stroke or TIA) reported in those patients followed by younger  
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55 than in those followed by older physicians. Prescriptions of anticoagulant, antiarrhythmic and other  
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57 lipid-lowering agents did not significantly differ among age groups.  
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3 Finally, physicians aged >45 years paid more attention on recording clinical data on major CV risk  
4 factors, including blood pressure, fasting glucose, cholesterol and triglycerides levels than  
5 physicians aged ≤45 years. In addition, information on these CV risk factors were significantly  
6 more frequently recorded by older physicians than by younger physicians, who provided more  
7 updated information on organ damage detection than the other groups of physicians.  
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## DISCUSSION

The EFFECTUS program was aimed at providing information on prevalence of major CV risk factors and physicians' attitudes on global CV risk management in a large population sample of daily clinical practice of general practitioners, cardiologists and diabetologists in Italy. The present study reports data collected in the cross-sectional phase of this program, based on clinical information derived from the overall population sample of 9.904 subjects observed by 1.078 physicians, a large and age- and gender-representative sample of the Italian outpatient population.

In this analysis, we highlighted some important differences not only in the distribution and detection of major CV risk factors, but mostly in the clinical management and therapeutic approaches adopted by younger (aged  $\leq 45$  years) as compared to that by older (aged  $> 46$  years) physicians. Among the large number of data made available by this analysis, some specific aspects deserve discussion.

First of all, in our population sample a significantly higher proportion of general practitioners were aged  $> 46$  years, while specialized physicians, such as cardiologists and diabetologists, were aged  $\leq 45$  years. This distribution may at least, in part, account for the higher prevalence of major CV risk factors and associated clinical conditions observed among those outpatients followed by younger specialised physicians (i.e. patients at higher CV risk profile due to the presence of hypertension, myocardial infarction, stroke, TIA and other comorbidities) as compared to patients followed by older general practitioners.

Secondly, our findings confirmed that arterial hypertension was the most frequent CV risk factor in the clinical practice of Italian physicians, thus highlighting the importance of early detecting and effectively treating high blood pressure levels, irrespective of age, medical degree [1], national area, and attitude for electronic support by physicians in our Country [3]. Of note, while hypertension represents the most frequent CV risk factor, it was also underdiagnosed and undertreated, and this seems to be largely independent by the age of referring physicians. As a consequence, about 55% of

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3 the outpatients showed above normal blood pressure levels, which leads to a further increase in the  
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5 risk of developing major CV events, mostly in elderly hypertensive patients.  
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8 Also, the relatively low control rate of major CV risk factors, mostly hypertension, observed in  
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10 patients followed by different groups of physicians seems to be at least, in part, independent by the  
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12 use of diagnostic examinations or detection of markers of organ damage. In our analysis, in fact, no  
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14 significant difference was found with regard to the use of advanced diagnostic examinations, mostly  
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16 echocardiogram, exercise stress testing and Doppler ultrasonography, among the three age groups.  
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18 Of note, although not significant, a higher number of grade I diagnostic examinations (EKG and  
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20 dosage of microalbuminuria) was prescribed by younger than by older physicians. In this latter  
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22 regard, this trend may be of relevance for future guidelines for the clinical management of CV  
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24 diseases, mostly hypertension, diabetes mellitus and CV disease prevention, since the latest sets of  
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26 these guidelines strongly recommended the use of simple, largely available, and less expensive  
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28 tools for global CV risk stratification in any individuals at CV risk.  
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34 The differences observed in CV drug prescriptions among the three groups, mostly ACE Inhibitors,  
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36 beta-blockers, glucose and lipid-lowering agents (i.e. statins), may be related to the higher  
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38 prevalence of associated clinical conditions (history of myocardial infarction, stroke and TIA)  
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40 among patients followed by younger specialized physicians rather than in those followed by older  
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42 physicians, who were more frequently general practitioners, as above mentioned. It should be  
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44 highlighted, however, that even in this case the larger use of CV drugs by younger physicians was  
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46 not paralleled by a significantly better control of major CV risk factors, mostly high blood pressure  
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48 and glucose levels, as compared to that obtained by older physicians, with the exception of total  
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50 cholesterol and triglycerides levels, thus suggesting that other aspects should be taken into account  
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52 in the clinical management of CV disease, beyond the number of prescriptions and dosages of drug  
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54 molecules.  
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59 Finally, aging has demonstrated to provide a favourable impact in increasing physicians' accuracy  
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in recording patients' clinical data. In the present analysis, older physicians tended to provide a

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3 significantly higher proportion of clinical data availability and a significantly higher rate of data  
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5 registration of above all major CV risk factors, markers of organ damage and associated clinical  
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7 conditions as compared to that reported by younger physicians (data not shown). Even in this case,  
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9 this aspect may have potential impact on future recommendations for CV disease prevention, since  
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11 previous analysis of this database has shown a close relationship between high level of accuracy for  
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13 clinical data collection and better CV outcomes [2].  
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### 20 **Potential Limitations**

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22 The present study is based on a cross-sectional, descriptive survey and, as such, it can only identify  
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24 associations, but it cannot provide insights on causation. In view of the relatively large sample size  
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26 of our study, even the possibility of sampling bias has to be considered, although proven methods  
27  
28 were applied to avoid this. The large sample size and different distribution of involved physicians  
29  
30 may also mean that the views expressed by respondents may not be fully representative of opinions  
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32 of the wider physician community in our Country. In most cases, dependence on physician self-  
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34 reporting throughout standardized questionnaires, rather than more objective measures such as BP  
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36 measurements or lipid or glucose quantifications, may also create potential biases. Our analysis  
37  
38 cannot provide information about whether physicians' practices were located in rural or urban areas.  
39  
40 Since access to medical health care in rural areas may be more difficult than in urban areas, this  
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42 aspect should be acknowledged when considering the higher prevalence of major CV risk factors  
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44 and associated clinical conditions in Southern than in Northern areas of our Country. At the same  
45  
46 time, we cannot provide data on the socio-economic position of individual patients. Finally,  
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48 prevalence and characteristics of metabolic syndrome and other glucose or lipid abnormalities have  
49  
50 not addressed in the present report, due to the decision of making further analyses on these clinical  
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52 conditions.  
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## CONCLUSION

In this predefined analysis of the EFFECTUS educational program, we were able to demonstrated a significantly higher prevalence of major CV risk factors and associated clinical conditions among younger specialised physicians rather than in older physicians, the majority of which were general practitioners. This distribution of CV risk factors and diseases was paralled by a significantly larger use of CV drugs, mostly antiplatelet, glucose and lipid-lowering agents, in younger than in older physicians, in which a lower rate of control of major CV risk factors was achieved as compared to that reported in outpatients followed by physicians aged  $\leq 45$  years.

Despite arterial hypertension represents the most frequent CV risk factor and the relatively high global CV risk profile observed in this population sample, only 45% of the patients showed normal blood pressure values and no more than 50% of them received antihypertensive drug classes, irrespective of the age of referring physicians, thus confirming the undertreatment of hypertension as a key element for the global burden of CV diseases in Western Countries, including Italy.

A potential explanation of this discrepancy may be the relatively low rate of data collection and registration observed in younger than in older physicians, thus suggesting a potential way to improve global CV risk management in the daily clinical practice. On the basis of these considerations, specific training and educational programs for specialized physicians should be carefully considered, in order to improve quality of care, reduce doctor's inertia and ameliorate the clinical management of CV diseases in Italy.

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3 **Acknowledgement:** Authors wish to thank the 1.078 Italian physicians for their contribution to this  
4  
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12 **Disclosures:** Authors have been supported by a grant funding from Merck Sharp & Dohme, Italy.  
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19 Dohme, Italy, for data collection and analysis.  
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24 **Endorsement:** The present study was endorsed by the Italian Society of Cardiovascular Prevention  
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26 (SIPREC).  
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## FIGURE LEGEND AND TABLES

### Figure 1.

Prevalence of major cardiovascular risk factors in the overall population and in subgroups of patients stratified according to physicians' age.

In Figure: \* $p < 0.001$  as compared to physicians aged  $\leq 45$  years.

### Figure 2.

Percentage of patients achieving recommended targets of major cardiovascular risk factors, including blood pressure (less than 140/90 mmHg), total cholesterol (less than 190 mg/dl), HDL cholesterol (more than 40 mg/dl in males and more than 50 mg/dl in females), triglyceride (less than 150 mg/dl) and glucose (fasting glucose less than 126 mg/dl) levels in the overall population and in subgroups of patients stratified according to physicians' age.

In Figure: \* $p < 0.001$  as compared to physicians aged  $\leq 45$  years.

Figure Legend: BP, blood pressure; TOT-C, total cholesterol; HDL-C, high density lipoprotein cholesterol; TG, triglycerides.

### Table 1.

General characteristics of involved physicians, and prevalence and absolute levels of major cardiovascular risk factors and associated clinical conditions in the overall population and in subgroups of patients stratified according to physicians' age.

Data are expressed as mean $\pm$ SD, if needed.

In Table: \* $p < 0.001$  as compared to physicians aged  $\leq 45$  years.

Table Legend: BMI, body mass index; BP, blood pressure; CV, cardiovascular; HbA1c, glycated haemoglobin; HDL, high density lipoprotein; LDL, low density lipoprotein. TIA, transient ischaemic attack.

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6 **Table 2.**  
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8 Life-style recommendations and use of different pharmacologic strategies in the overall population  
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10 and in subgroups of patients stratified according to physicians' age.  
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12 In Table: \* $p < 0.001$  as compared to physicians aged  $\leq 45$  years.  
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14 Table Legend: ACE, angiotensin-converting enzyme; ARBs, Angiotensin II receptor blockers.  
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20 **Electronic Table 1 (on-line available).**  
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22 Availability of diagnostic tests in the overall population and in subgroups of patients stratified  
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24 according to physicians' age.  
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26 In Table: \* $p < 0.001$  as compared to physicians aged  $\leq 45$  years; @, when available.  
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Table 1

	Overall	Physicians' Age (years)			P value
		≤45	46-55	>55	
<b>Physicians' characteristics</b>					
Physicians, n (%)	1,078 (100)	219 (20)	658 (61)	201 (19)	
Male, n (%)	788 (73)	123 (56)	481 (73)*	184 (92)*†	<0.001
Age (years)	50±7	41±4	51±3	59±3	-
<i>Physicians</i>					<0.001
General Practitioners, n (%)	841 (78)	117 (53)	563 (86)*	161 (80)*	
Cardiologists, n (%)	140 (13)	67 (31)	48 (7)*	25 (12)*	
Diabetologists, n (%)	97 (9)	35 (16)	47 (7)*	15 (7)	
<i>Macro-areas</i>					0.026
Northern Physicians, n (%)	340 (31)	85 (39)	200 (30)	55 (27)	
Centre Physicians, n (%)	385 (36)	66 (30)	251 (38)	68 (34)	
Southern Physicians, n (%)	353 (33)	68 (31)	207 (31)	78 (39)	
<b>Patients' characteristics</b>					
Patients, n (%)	9,904 (100)	2,010 (20)	6,111 (62)	1,783 (18)	
Male, n (%)	5,300 (54)	1,082 (54)	3,198 (52)	1,020 (57)	0.001
Age (years)	67±9	67±9	67±9	66±9	0.011
BMI (kg/m <sup>2</sup> )	28±5	28±5	28±5	28±5	0.81
Waist Circumference (cm)	99±16	97±16	99±16	99±14	0.56
Obesity, n (%)	2,504 (25)	538 (27)	1,464 (24)	502 (28)	0.038
Physical Activity, n (%)	2,922 (30)	549 (27)	1,824 (30)	549 (31)	0.38
Family History of CV disease, n (%)	2,884 (29)	583 (29)	1,724 (28)	577 (32)	0.22
Smoking, n (%)	3,324 (34)	716 (36)	1,948 (32)	660 (37)	0.006
Hypertension, n (%)	7,436 (75)	1,558 (78)	4,528 (74)	1,350 (76)	0.07
Systolic BP levels (mmHg)	138±15	138±16	138±14	139±16	0.06
Diastolic BP levels (mmHg)	82±8	81±9	81±8	83±9	0.002
Dyslipidemia, n (%)	5,873 (59)	1,234 (61)	3,561 (58)	1,078 (60)	0.20
Total Cholesterol (mg/dl)	212±40	208±42	212±39	216±40	0.001
HDL Cholesterol (mg/dl)	52±14	52±14	53±14	51±13	0.017
LDL Cholesterol (mg/dl)	131±37	128±36	130±36	136±39	0.020
Triglycerides (mg/dl)	155±74	153±76	154±74	160±73	0.25
Diabetes Mellitus, n (%)	3,681 (37)	818 (41)	2,224 (36)	639 (36)	0.12
Fasting glucose (mg/dl)	121±41	127±46	120±40	119±38	0.003
HbA1c, n (%)	7.07±1.44	7.23±1.47	7.06±1.39	6.93±1.54	0.06
Ischemic Heart Disease, n (%)	2,633 (27)	583 (29)	1,539 (25)	511 (29)	0.050
- Previous MI, n (%)	1,218 (12)	307 (15)	700 (11)	211 (12)	0.003
- Angina, n (%)	767 (8)	175 (9)	449 (7)	143 (8)	0.39
- Coronary Revascularization, n (%)	882 (9)	195 (10)	513 (8)	174 (10)	0.27
Ischemic Cerebral Disease, n (%)	1,102 (11)	270 (13)	635 (10)	197 (11)	0.013
- Stroke, n (%)	262 (3)	76 (4)	132 (2)	54 (3)	0.008
- TIA, n (%)	444 (4)	113 (6)	262 (4)	69 (4)	0.031
Carotid Artery Disease, n (%)	420 (4)	93 (5)	242 (4)	85 (5)	0.38
Peripheral Artery Disease, n (%)	1,247 (13)	267 (13)	768 (13)	212 (12)	0.52
Serum Creatinine (mg/dl)	1.05±0.35	1.06±0.37	1.04±0.32	1.06±0.4	0.28

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**Table 2.**

	Overall (N=9.904)	Physicians' Age (years)			P value
		≤45 (n=2010)	46-55 (n=6111)	>55 (n=1783)	
Life Style recommendations					
Smoking cessation, n (%)	3,962 (40)	741 (37)	2,434 (40)	787 (44)	0.15
Diet, n (%)	7,091 (72)	1,412 (70)	4,427 (72)	1,252 (70)	0.46
Physical Activity, n (%)	6,528 (66)	1,271 (63)	4,115 (67)	1,142 (64)	0.19
Antihypertensive drugs, n (%)					
ACE Inhibitors, n (%)	4,825 (49)	1,061 (53)	2,883 (47)	881 (49)	0.006
Beta-Blockers, n (%)	2,138 (22)	493 (25)	1,298 (21)	347 (19)	0.016
ARBs, n (%)	2,186 (22)	437 (22)	1,318 (22)	431 (24)	0.18
Calcium-Antagonists, n (%)	2,335 (24)	490 (24)	1,419 (23)	426 (24)	0.72
Diuretics, n (%)	3,192 (32)	677 (34)	1,931 (32)	584 (33)	0.46
Digoxin, n (%)	378 (4)	97 (5)	216 (4)	65 (4)	0.09
Nitrates, n (%)	1,195 (12)	279 (14)	724 (12)	192 (11)	0.12
Antidiabetic Drugs, n (%)					
- Glitazones, n (%)	238 (2)	60 (3)	141 (2)	37 (2)	0.48
- Insulin, n (%)	799 (8)	212 (11)	448 (7)	139 (8)	0.005
- Metformin, n (%)	1,928 (19)	418 (21)	1,182 (19)	328 (18)	0.38
- Secretagoghes, n (%)	551 (6)	148 (7)	337 (6)	66 (4)	0.17
- Others, n (%)	323 (3)	58 (3)	214 (4)	51 (3)	0.30
Lipid lowering agents, n (%)					
- Fibrates, n (%)	166 (2)	37 (2)	106 (2)	23 (1)	0.62
- Cholesterol Absorption Inhibitors, n (%)	64 (1)	15 (1)	31 (1)	18 (1)	0.62
- Omega 3, n (%)	847 (9)	185 (9)	475 (8)	187 (10)	0.013
- Statins, n (%)	3,892 (39)	849 (42)	2,330 (38)	713 (40)	0.09
Antiarrhythmic drugs, n (%)					
Antiarrhythmic drugs, n (%)	443 (4)	94 (5)	264 (4)	85 (5)	0.86
Anticoagulant agents, n (%)					
Anticoagulant agents, n (%)	446 (5)	105 (5)	258 (4)	83 (5)	0.45
Antiplatelet agents, n (%)					
Antiplatelet agents, n (%)	4,333 (44)	973 (48)	2,591 (42)	769 (43)	0.013
- Aspirin, n (%)	3,461 (35)	797 (40)	2,071 (34)	593 (33)	0.006
- Clopidogrel, n (%)	260 (3)	69 (3)	137 (2)	54 (3)	0.16
- Ticlopidine, n (%)	733 (7)	165 (8)	435 (7)	133 (7)	0.38
Other Drugs, n (%)					
Other Drugs, n (%)	1,728 (17)	377 (19)	1,119 (18)	232 (13)	0.005

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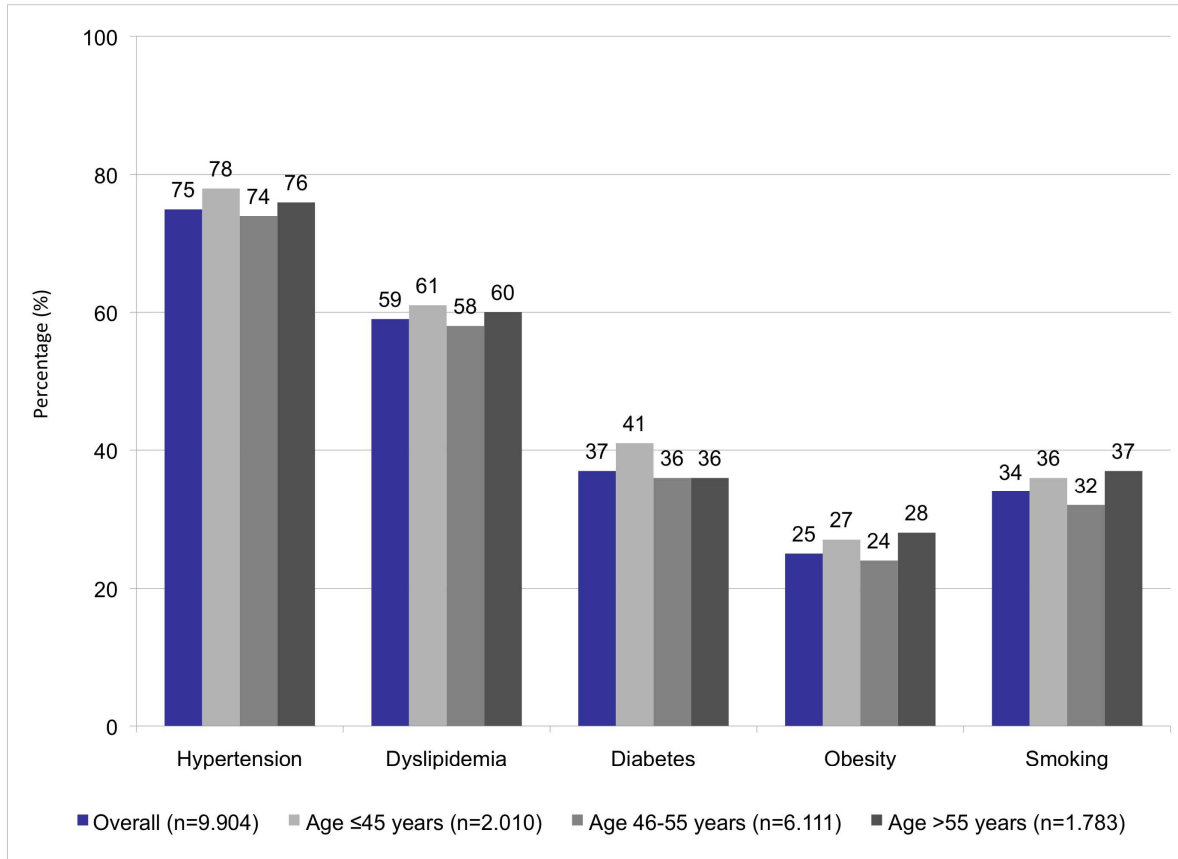
**Electronic Table 1 (on-line available)**

	Overall	Physicians' Age (years)			P value
		≤45	46-55	>55	
	(N=9.904)	(n=2010)	(n=6111)	(n=1783)	
Electrocardiogram, n (%)	7992 (81)	1671 (83)	4888 (80)	1433 (80)	0.12
Echocardiogram, n (%)	4868 (49)	987 (49)	2971 (49)	910 (51)	0.77
Carotid Ultrasonography, n (%)	3761 (38)	814 (40)	2341 (38)	606 (34)	0.019
Microalbuminuria, n (%) @	877 (22)	193 (26)	539 (22)	145 (18)	0.005
Fundus Oculi, n (%)	3820 (39)	733 (36)	2412 (39)	675 (38)	0.21
Exercise Stress Test, n (%)	2406 (24)	445 (22)	1482 (24)	479 (27)	0.15
Abdominal Aorta Ultrasonography, n (%)	1453 (15)	218 (11)	943 (15)*	292 (16)*	<b>&lt;0.001</b>

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Figure 1.

Figure 1

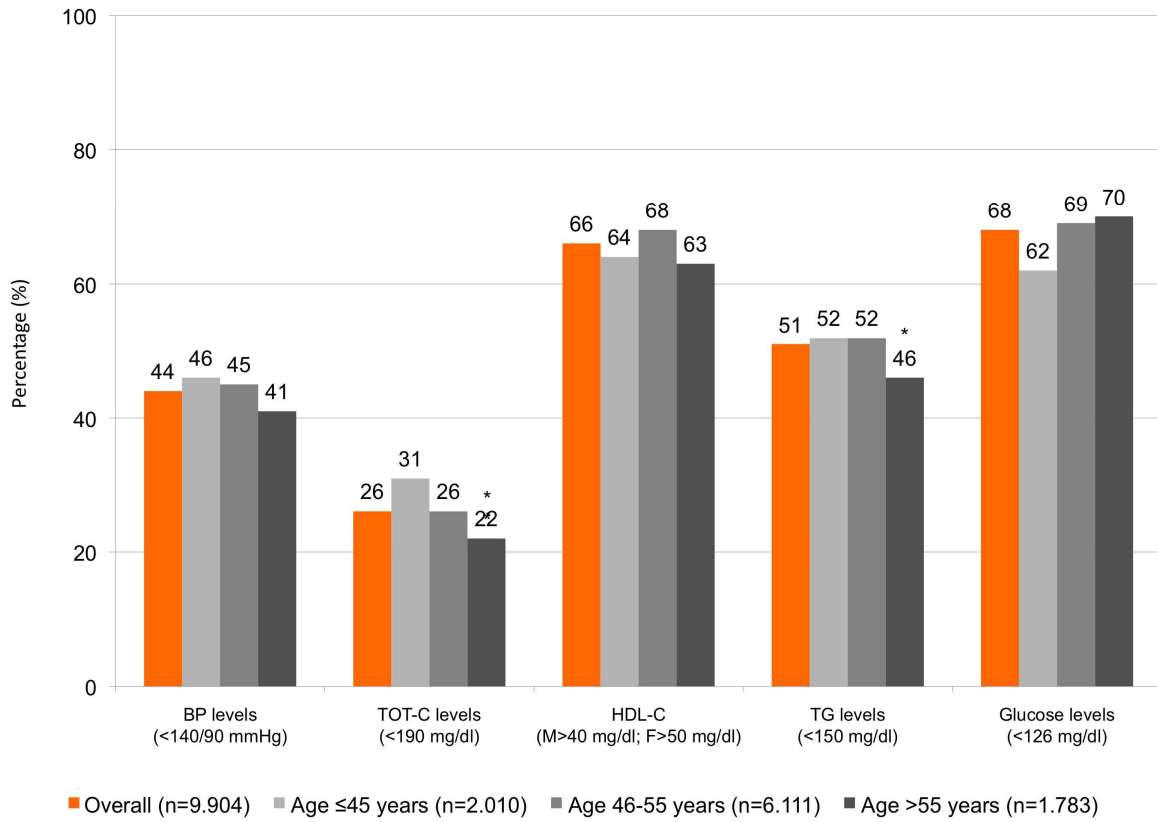


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Figure 2.

Figure 2



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**Table 1**

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**Table 2.**

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Diet, n (%)	7,091 (72)	1,412 (70)	4,427 (72)	1,252 (70)	0.46
Physical Activity, n (%)	6,528 (66)	1,271 (63)	4,115 (67)	1,142 (64)	0.19
Antihypertensive drugs, n (%)					
ACE Inhibitors, n (%)	4,825 (49)	1,061 (53)	2,883 (47)	881 (49)	0.006
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Diuretics, n (%)	3,192 (32)	677 (34)	1,931 (32)	584 (33)	0.46
Digoxin, n (%)	378 (4)	97 (5)	216 (4)	65 (4)	0.09
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- Secretagoghes, n (%)	551 (6)	148 (7)	337 (6)	66 (4)	0.17
- Others, n (%)	323 (3)	58 (3)	214 (4)	51 (3)	0.30
Lipid lowering agents, n (%)					
- Fibrates, n (%)	166 (2)	37 (2)	106 (2)	23 (1)	0.62
- Cholesterol Absorption Inhibitors, n (%)	64 (1)	15 (1)	31 (1)	18 (1)	0.62
- Omega 3, n (%)	847 (9)	185 (9)	475 (8)	187 (10)	0.013
- Statins, n (%)	3,892 (39)	849 (42)	2,330 (38)	713 (40)	0.09
Antiarrhythmic drugs, n (%)					
Antiarrhythmic drugs, n (%)	443 (4)	94 (5)	264 (4)	85 (5)	0.86
Anticoagulant agents, n (%)					
Anticoagulant agents, n (%)	446 (5)	105 (5)	258 (4)	83 (5)	0.45
Antiplatelet agents, n (%)					
Antiplatelet agents, n (%)	4,333 (44)	973 (48)	2,591 (42)	769 (43)	0.013
- Aspirin, n (%)	3,461 (35)	797 (40)	2,071 (34)	593 (33)	0.006
- Clopidogrel, n (%)	260 (3)	69 (3)	137 (2)	54 (3)	0.16
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Other Drugs, n (%)	1,728 (17)	377 (19)	1,119 (18)	232 (13)	0.005

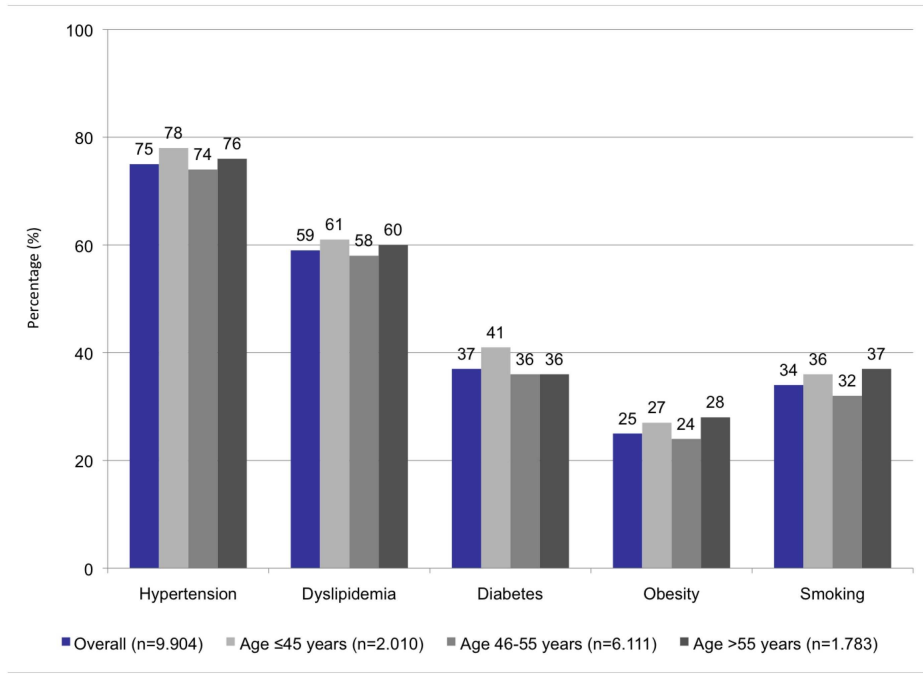
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**Electronic Table 1 (on-line available)**

	Overall	Physicians' Age (years)			P value
		≤45	46-55	>55	
	(N=9.904)	(n=2010)	(n=6111)	(n=1783)	
Electrocardiogram, n (%)	7992 (81)	1671 (83)	4888 (80)	1433 (80)	0.12
Echocardiogram, n (%)	4868 (49)	987 (49)	2971 (49)	910 (51)	0.77
Carotid Ultrasonography, n (%)	3761 (38)	814 (40)	2341 (38)	606 (34)	0.019
Microalbuminuria, n (%) @	877 (22)	193 (26)	539 (22)	145 (18)	0.005
Fundus Oculi, n (%)	3820 (39)	733 (36)	2412 (39)	675 (38)	0.21
Exercise Stress Test, n (%)	2406 (24)	445 (22)	1482 (24)	479 (27)	0.15
Abdominal Aorta Ultrasonography, n (%)	1453 (15)	218 (11)	943 (15)*	292 (16)*	<b>&lt;0.001</b>

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Figure 1

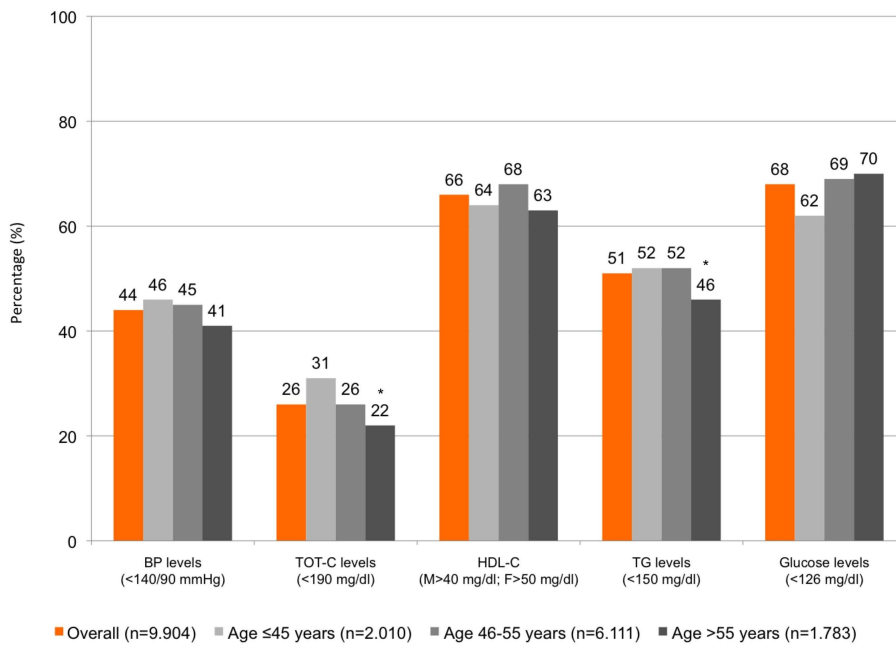


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Figure 2



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