

# Analysis of the cost–effectiveness of dronedarone versus amiodarone, propafenone, and sotalol in patients with atrial fibrillation: results for Serbia

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## Abstract

**Background:** Recent studies have shown that dronedarone is associated with significantly fewer adverse effects and treatment discontinuations, and a trend toward reduced all-cause mortality, compared with amiodarone. Introduction of dronedarone in clinical practice is limited by its higher cost than amiodarone, propafenone, and sotalol.

**Aim:** To estimate cost–effectiveness of dronedarone versus amiodarone, propafenone, and sotalol in patients with atrial fibrillation (AF).

**Methods:** We constructed a Markov model, which was then simulated by Monte Carlo simulation using 1,000 virtual patients. Costs and outcomes were estimated from the societal perspective and discounted at 3% annually. A lifetime horizon and three-month cycle length were used. The main outcome measurement was the number of years spent without stroke. Values of transition probabilities and therapy outcomes were estimated from available literature. The prices of health services and drugs were obtained from the Republic Institute for Health Insurance Tariff Book and Drug List A and from the drug developer.

**Results:** Cost–effectiveness shows that the dronedarone treatment option has the most advantageous relationship, where, for one year without a stroke, the total cost is €1,779.23. In the case of the amiodarone therapy option, for one year without a stroke €3,845.10 is needed, for propafenone €4,674.20, while for sotalol the sum is €14,973.89. Estimated annual costs for patients with first-detected AF in Serbia were €610.

**Conclusions:** The results of our model indicate that dronedarone is a cost–effective therapy compared with amiodarone, propafenone, and sotalol in patients with AF, if the outcome measurement is the number of years spent without stroke.

**Key words:** dronedarone, amiodarone, propafenone, sotalol, atrial fibrillation, cost–effectiveness

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## INTRODUCTION

Atrial fibrillation (AF) is the most common cardiac arrhythmia in the western world, which increases with increasing age and is associated with comorbidities. Its prevalence is doubled with each advancing decade of age, from 0.5% at 50–59 years to almost 9% at 80–89 years. It is primarily associated with an increased risk of stroke and heart failure, in turn leading to hospitalisation and increased mortality [1].

New onset of AF has been reported to be associated with recent hazard of stroke, suggesting that recent-onset AF is responsible for many ischaemic stroke events. However, it

has also been suggested that acute stroke might precipitate transient AF. In the Framingham Study, 115 of 656 initial strokes occurred in association with AF. Of these, 26 had their AF discovered for the first time on admission or shortly thereafter. Because 92% of persons presenting with newly discovered AF at the time of acute stroke continued to have this rhythm, it seems likely that AF was the precipitant, rather than the consequence, of the stroke [2].

Any kind of structural heart disease can trigger a slow but progressive process of structural remodelling in both the ventricles and the atria. In the atria, proliferation and dif-

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ferentiation of fibroblasts into myofibroblasts and enhanced connective tissue deposition and fibrosis are the designation of this process. Structural remodelling results in electrical dissociation between muscle bundles and local conduction heterogeneities facilitating the initiation and perpetuation of AF. This permits multiple small re-entrant circuits that can stabilise the arrhythmia [3].

The three main aims of treatment for paroxysmal AF are as follows: to suppress paroxysms of AF and maintain long-term sinus rhythm (SR); to control the heart rate during paroxysms of AF if they occur; and to prevent the complications associated with paroxysmal AF, i.e. stroke- and tachycardia-induced cardiomyopathy [4].

Drugs for AF have limited antiarrhythmic efficacy and most patients develop recurrent AF within one year despite antiarrhythmic therapy. At the same time, AF pharmacotherapy is limited by toxicities that constantly threaten patient safety and quality of life. The use of amiodarone is associated with dose-dependent end organ toxicities, including thyroid dysfunction and pulmonary fibrosis. Dronedarone has the potential for less toxicity and a shorter half-life. In the ATHENA trial (a placebo-controlled, double-blind, parallel arm trial to assess the efficacy of dronedarone 400 mg bid for the prevention of cardiovascular hospitalisation or death from any cause in patients with atrial fibrillation/atrial flutter), dronedarone therapy decreased the first hospitalisation due to cardiovascular events or death. In another trial dronedarone was associated with significantly fewer adverse effects and treatment discontinuations and a trend toward reduced all-cause mortality compared with amiodarone [5].

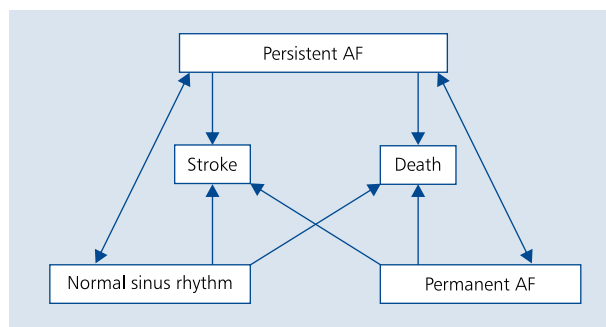
AF significantly increased the risk of new cardiovascular events compared with patients without AF. This risk was particularly increased in older patients and in those with diabetes or other cardiovascular diseases [6].

AF leads to a five-fold increased risk of stroke, and one in five of all strokes is attributed to this arrhythmia. These kinds of strokes are often fatal, and those patients who survive are left more disabled and more likely to suffer a recurrence than patients with other causes of stroke. In consequence, the risk of death from AF-related stroke is doubled and the cost of care is increased 1.5-fold [3].

The incidence of a first ischaemic stroke occurred at a rate of 21 vs. 25 events per 1,000 patient-years in paroxysmal AF and permanent AF, respectively ( $p = 0.54$ ). If recurrent strokes were included, the rates were 26 and 29 events, respectively. The standardised incidence ratio for ischaemic stroke in patients with paroxysmal AF was 2.12 (95% CI 1.52–2.71) compared with the general population [7].

The most commonly used drugs for pharmacological cardioversion in the United Kingdom in patients with AF are amiodarone, flecainide, propafenone, and sotalol [4].

The aim of this study was to compare the cost-effectiveness of dronedarone with amiodarone, propafenone, and



**Figure 1.** Schematic representation of the Markov model; AF — atrial fibrillation

sotalol for the treatment of AF in the economic environment of Serbia.

## METHODS

For the purpose of this study, we conducted a cost-effectiveness analysis, using the Markov model for patients with paroxysmal AF. The model was constructed using TreeAge Pro® software (Version 2012). Monte Carlo Simulations of the model were performed using microsimulation trials with 1,000 hypothetical patients. The four main treatment strategies, according to the National Collaborating Centre for Chronic Conditions in the United Kingdom [4] for pharmacological cardioversion in patients with AF are amiodarone, flecainide, propafenone, and sotalol. Flecainide is not licensed for marketing in the Republic of Serbia, and dronedarone was compared only with amiodarone, propafenone, and sotalol.

The model used a lifetime time horizon and included five health states: normal SR, persistent AF, permanent AF, stroke, and death. From the normal SR state people could move to persistent AF, stroke, or death or could stay in the normal SR state. From the persistent AF state they could move to permanent AF, stroke, and death or they could be healed and go in the normal SR state. State of permanent AF could become: normal SR, stroke, or death. States of stroke and death were determined as terminal states (Fig. 1).

The states of the model were defined on the basis of systematic review and cost-effectiveness evaluation of 'pill-in-the-pocket' strategy for paroxysmal AF compared to episodic in-hospital treatment or continuous antiarrhythmic drug therapy [8].

Costs and outcomes were estimated from the societal perspective and were discounted at 3% annually. The baseline time horizon of the model was assumed to be lifetime. Transitions among the health states occurred in three-month cycles (a quarter of a year) [9]. Incremental effectiveness was calculated as 0.25, which is a quarter of year, for normal SR, persistent AF, and permanent AF states, and 0 for death and stroke states (a terminal condition through which is observe the outcome of treatment). The main outcomes in our model were: the number of years spent without stroke.

**Table 1.** Transition matrix for a patient treated with dronedarone, amiodarone, propafenone, and sotalol

Transition matrix (from A to B)	B	Normal sinus rhythm	Persistent atrial fibrillation	Permanent atrial fibrillation	Stroke	Death
<b>A</b>						
Normal sinus rhythm	dronedarone	0.2671 <sup>#</sup>	0.671 [10]	0	0.0119 [11]	0.05 [12]
	amiodarone	0.685 <sup>#</sup>	0.243 [13]	0	0.022 [14]	0.05 [12]
	propafenone	0.646 [27]	0.2922 <sup>#</sup>	0	0.0118 [17]	0.05 [12]
	sotalol	0.415 [26]	0.503 [16]	0	0.032 <sup>#</sup>	0.05 [12]
Persistent atrial fibrillation	dronedarone	0.28 <sup>#</sup>	0	0.678 [14]	0.016 [14]	0.026 [20]
	amiodarone	0.46953 <sup>#</sup>	0	0.48 [21]	0.02247 [14]	0.028 [14]
	propafenone	0.66548 <sup>#</sup>	0	0.312 [22]	0.0204 [14]	0.00212 [14]
Permanent atrial fibrillation	sotalol	0.28499 <sup>#</sup>	0	0.68 [21]	0.019 [14]	0.01601 [14]
	dronedarone	0.909 <sup>#</sup>	0	0	0.044 [23]	0.047 [23]
	amiodarone	0.737 [24]	0	0	0.2403 <sup>#</sup>	0.0227 [25]
	propafenone	0.406 [26]	0	0	0.5919 <sup>#</sup>	0.0021 [14]
Stroke	sotalol	0.37 [27]	0	0	0.608 <sup>#</sup>	0.022 [27]

<sup>#</sup>Probability that the model is calculated as the difference of the probability of other possible outcomes of 100%.

**Table 2.** Total costs per cycle for one patient treated with dronedarone, amiodarone, propafenone, and sotalol (RSD)

	Dronedarone	Amiodarone	Propafenone	Sotalol
Normal sinus rhythm	3,535.12	3,535.12	3,535.12	3,535.12
Persistent atrial fibrillation	10,918.71	11,907.75	6,406.65	10,022.46
Permanent atrial fibrillation	16,047.60	25,335.27	16,162.92	18,613.34
Stroke	50,856.23	57,201.40	51,379.85	54,431.90

Transition probabilities were obtained from available published literature, which were retrieved from several searches of the MEDLINE database using the following key words: atrial fibrillation, cost-effectiveness, dronedarone, amiodarone, propafenone, and sotalol [10–27], shown in Table 1.

The data on costs are shown in Table 2; they were taken from the files of the patients in each of the health states, randomly selected from the patient population treated in the Health Centre in Gornji Milanovac, Serbia, from October 2011 to October 2012. The prices of health services were taken from the Republic Institute for Health Insurance, Serbia (RIHI) Tariff Book [28], and the prices of drugs were taken from the list of drugs issued by RIHI [29]. The costs of lost wages were calculated on the basis of the value of average monthly net salary in Serbia during the first six months of 2012 (Table 2) [30].

The costs were estimated for every health state in the model, and due to the societal perspective of our study, direct and indirect costs were analysed. In total costs for every health state we include costs of medications, costs of inpatient services, costs of outpatient services, costs of laboratory services, costs of some surgical interventions, formal/informal care, and lost earnings. Cost of stroke was estimated according to National Guidelines of Good Clinical Practice, ischaemic stroke [31].

Patients who experienced a stroke were assumed to discontinue treatment with dronedarone, due to the lack of data in the ATHENA trial [1]. According to summary of product characteristics of the drug Multaq, dronedarone is contraindicated in patients with permanent AF with an AF duration of more than six months (or duration unknown) and attempts to restore SR no longer considered by the physician [32]. Therefore, the cost of a drug was not used in the calculation of the costs of treatment of stroke and permanent AF in the branch with dronedarone.

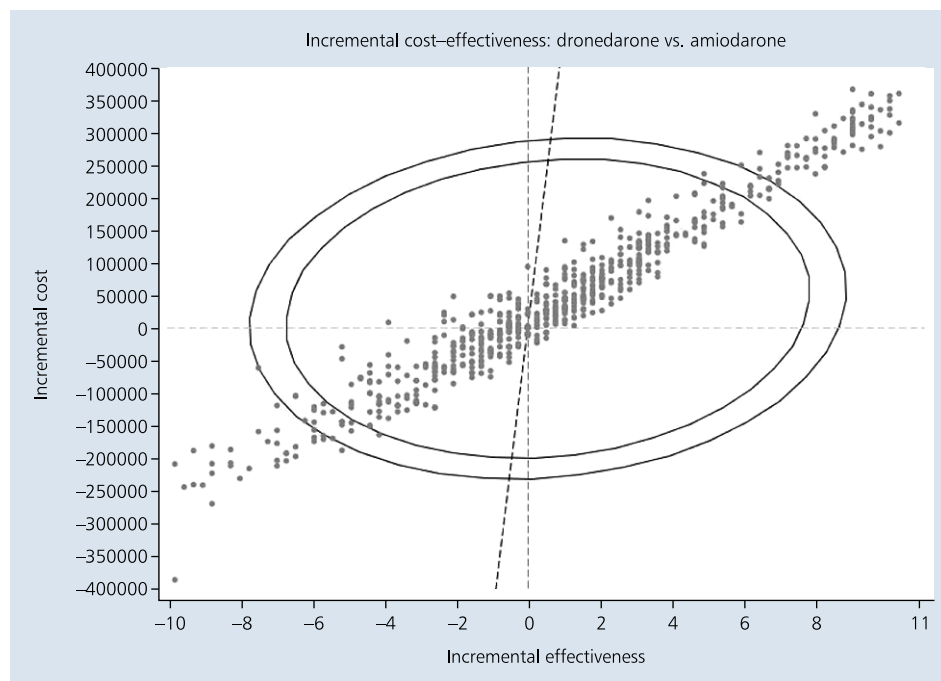
All parameters used in the model were varied simultaneously, changing their values by  $\pm 50\%$ .

The process of modelling requires definition of willingness to pay, i.e. how much a society is willing to pay for one life year gained without stroke with certain treatment of a disease. Using the willingness to pay approach, the indirect and intangible aspects of a disease can be evaluated. There is a recommendation from the World Bank for societies in socio-economic transition that the value of willingness to pay should be equal to two to three multiples of gross national income per capita (GDP/per capita); in the case of Serbia GDP/per capita was \$5,189.58 [33] or in Serbian dinars (RSD) 450,403.54 RSD (€3,968.66 [34]) during the year 2013 [34, 35].

**Table 3.** Presentation of analysis of the cost–effectiveness of therapeutic options dronedarone, amiodarone, sotalol, and propafenone

Strategy	Cost (EUR)	IncrCost	Eff	IncrEff	ICER	C/E
Dronedarone	4,498.17		3			1,779.23
Amiodarone	7,063.49	2,565.32	2	–1	–3,711.70	3,845.10
Propafenone	7,749.88	3,251.71	2	–2	–3,736.99	4,674.20
Sotalol	11,473.40	6,975.23	1	–2	–3,958.86	14,973.89

IncrCost — incremental cost; Eff — effectiveness; IncrEff — incremental effectiveness; ICER — incremental cost-effectiveness ratio; C/E — cost–effectiveness ratio

**Figure 2.** Distributions of incremental cost–effectiveness ratios calculated by Monte Carlo simulation for total costs per incremental effectiveness. Amiodarone

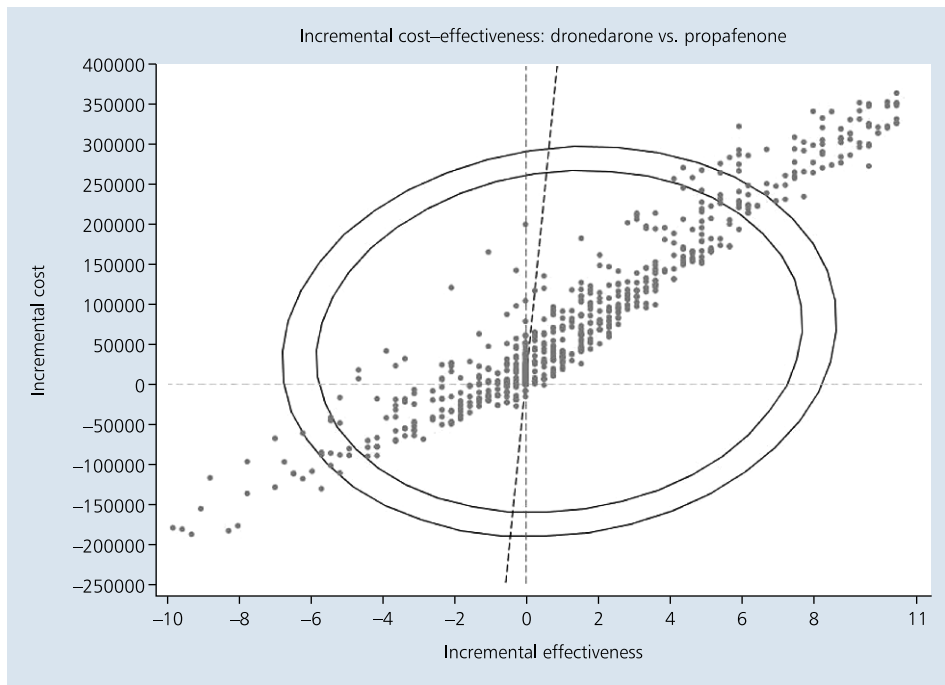
## RESULTS

Estimated annual costs for a patient with first-detected AF treated in the Health Centre in Gornji Milanovac, Serbia, from October 2011 to October 2012 were €610.

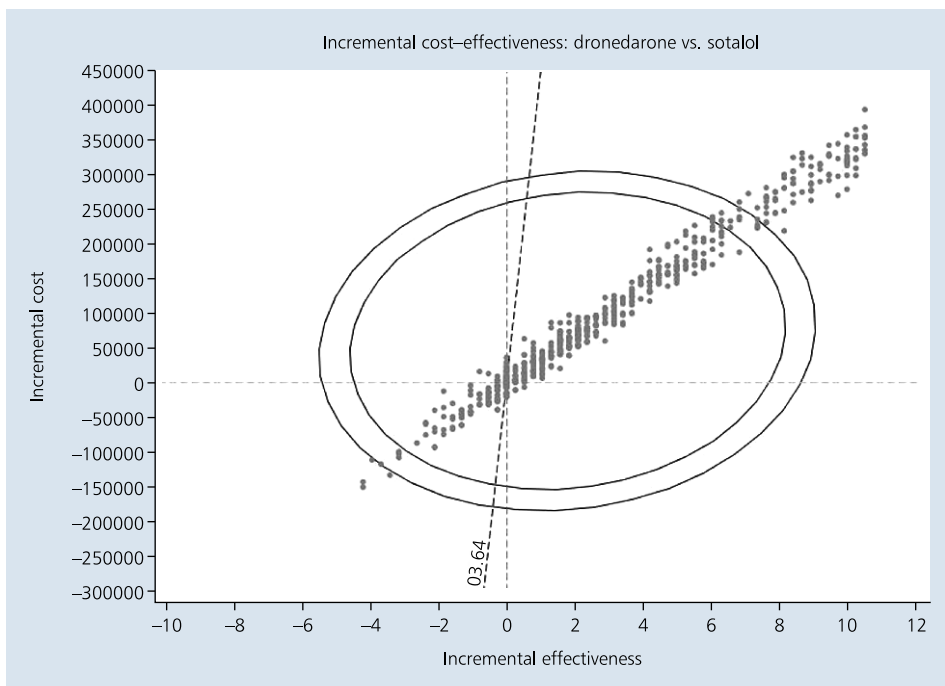
When the cost–effectiveness calculation method was used in the model, comparing total costs with the number of years spent without stroke, the simulation had the output shown in Table 3. For three years spent without a stroke, 510,000.00 RSD (approximately €4,500.00 [34]) is needed for the dronedarone treatment option, while the amiodarone treatment option is efficient in providing two years without stroke, but it costs nearly 802,000.00 RSD (approximately €7,000.00 [34]). Propafenone also provides two years without stroke, while the cost of treatment with this medicine is approximately 880,000.00 RSD (almost €8,000.00 [34]). The treatment option with the largest expenditure is sotalol, and with only one year without a stroke it is necessary to invest more than 1,300,000.00 RSD (over €11,400.00 [34]) (Table 3).

Cost–effectiveness analysis shows that the dronedarone treatment option has the most beneficial ratio, where 201,925.00 RSD (€1,779.23 [34]) should be invested for one year without a stroke. In the case of the amiodarone treatment option, 436,380.00 RSD (€3,845.10 [34]) is needed for one year without a stroke, for propafenone it is 530,475.00 RSD (€4,674.20 [34]), while the maximum amount of money for one year without stroke is required when the sotalol treatment option is administered — 1,699,387.00 RSD (€14,973.89 [34]).

Monte Carlo simulation for total costs per incremental effectiveness was used to calculate the distribution of incremental cost–effectiveness ratios (ICERs) for all therapies used in the treatment of paroxysmal AF (Figs. 2–4). For all three treatments, ICERs for the majority of virtual patients lay in the second component of incremental cost–effectiveness scatter plot graph, which means that comparator is more expensive and more effective. On the other hand, comparator (dronedarone) is recommended because the ICER does not exceed the WTP (Fig. 2–4).



**Figure 3.** Distributions of incremental cost–effectiveness ratios calculated by Monte Carlo simulation for total costs per incremental effectiveness. Propafenone



**Figure 4.** Distributions of incremental cost–effectiveness ratios calculated by Monte Carlo simulation for total costs per incremental effectiveness. Sotalol

Multiple univariate sensitivity analysis was performed using a tornado diagram. All parameters used in the model were varied simultaneously, for  $\pm 50\%$ . Even with the

most influential variable (incremental effectiveness), net monetary benefit remained positive (Fig. 5), and ranged between 57 thousand and 1.16 million Serbian dinars

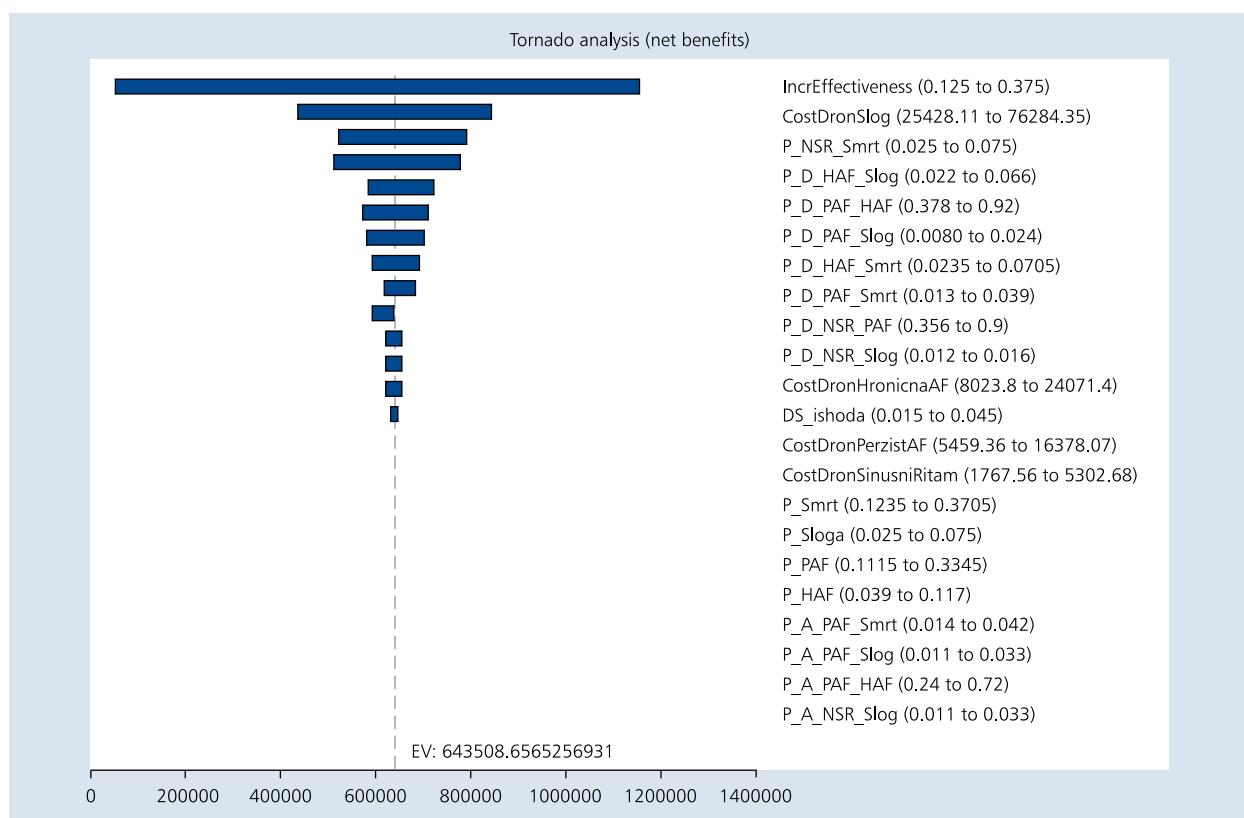


Figure 5. The multiple univariate sensitivity analysis presented by tornado diagram

(approximately €500–€10,220). A sensitivity analysis has shown that the results of Monte Carlo simulation in the model are not affected by the usual variation of variables ( $\pm 50\%$ ) (Fig. 5).

## DISCUSSION

AF increases the risk of stroke and death, and is a significant health concern. Amiodarone is widely used for the maintenance of SR in patients with AF. Amiodarone is associated with adverse events, such as pulmonary toxicity, thyroid disorders, and hepatic toxicity, which can lead to drug discontinuation and/or serious complications during long-term treatment [13]. Amiodarone, unlike most antiarrhythmic drugs, has little pro-arrhythmic potential. On the other hand, during chronic administration, amiodarone can cause potentially serious extracardiac side effects. Amiodarone is associated with dose-dependent end organ toxicities, including thyroid dysfunction and pulmonary fibrosis [21].

Dronedarone, a new drug that has been developed, is structurally related to amiodarone with several molecular modifications. The most significant structural changes are the removal of iodine and the addition of a methane sulfonyl group. These changes enable avoiding amiodarone's iodine-related organ toxicity, resulting in decreased lipophilicity, thus shortening the half-life and reducing tissue accumulation.

Dronedarone shares the electrophysiological properties and potent antiadrenergic effects of amiodarone [36].

Dronedarone has the activity of all four classes of antiarrhythmics in the Vaughan–Williams classification scheme and thus has dual rhythm and rate control properties and potential for the treatment of a broad range of AF patients. This review describes the electrophysiological profile of dronedarone and provides insight into early evidence of its clinical efficacy in the prevention of AF recurrence [37].

The number of hospitalisations with AF as a principal diagnosis increased threefold from 1,869 in 1986 to 5,757 in 1996. The number of hospitalisations with AF as a secondary diagnosis rose from 3,577 to 11,522 [38].

AF is a cause of significant morbidity and mortality because it impairs cardiac function and increases the risk of stroke. Severe strokes cost from 11% to 71% more than minor strokes, which, although not surprising, is extremely relevant since AF-related strokes tend to be more severe [39]. A recent study of more than 1,000 patients with ischaemic strokes found that 41% of those with AF were bedridden compared with only 24% of those without AF [40].

In Germany, the total annual cost of care for patients with a stroke that is a consequence of AF was estimated at \$20,613.27, while an American study estimated the annual cost of care for an AF patient at \$40,169.6. Hospitalisations



are the most important determinant of the total cost (58%). Similarly, direct costs attributable to AF in the United States, based on the findings from an insurance database, were \$15,553.00 per year in 2002, with 75% of the cost related to in-patient care. Average cost of each AF-related hospitalisation of insured patients was \$11,085.00 (2004–2007). To make matters worse, 50% of the AF patients may be readmitted within a year, leading to further rising costs [41].

The estimated direct annual costs for a patient with first-detected AF and no co-morbidities at baseline were €698 in Poland [42] and are comparable with results from Serbia, especially when it is known that costs of health care services are much lower in Serbia than in other European Union countries.

The results of cost-effectiveness analysis of dronedarone based on the ATHENA trial show that the higher costs of treatment are to some extent offset by reduced costs for cardiovascular hospitalisations, examinations and procedures, and other concomitant medications. Cardiovascular hospitalisations were the main cost driver, which is also reflected in the relative sensitivity of the ICER to changes in case mix group costs. In the dronedarone arm, cardiovascular hospitalisations accounted for 55.3% of the total mean costs per patient and 75.5% of the total. These cost–effectiveness analyses were based on resource utilisation and effectiveness for patients from all study countries, using separate unit costs for Canada. All analyses were performed on an intention-to-treat basis. The study indicates that dronedarone is cost–effective from a Canadian health care perspective in the treatment of AF patients over the duration observed in the ATHENA trial [43].

In our study, the Markov model was developed to compare the cost–effectiveness of the four treatment options in the treatment of AF — in the new one (dronedarone) and current ones (amiodarone, sotalol, and propafenone). Since stroke is the most serious and the most difficult side effect of AF, we evaluated the efficacy of these drugs through the number of years spent without a stroke [3].

The results of our study indicate that the greatest efficacy, expressed in number of years spent without stroke, was achieved with dronedarone as a treatment option, resulting in three years without a stroke. Three other treatment options were less efficient than dronedarone: two years in case of amiodarone and propafenone, and one year spent without a stroke in the case of sotalol as a treatment option.

The results of the model when a time horizon of 40 years was used show that 510,497.00 RSD (€4,498.17) [34] should be invested in dronedarone therapy, 801,635.00 RSD (€7,063.49 [34]) in amiodarone therapy, 879,534.00 RSD (€7,749.88 [34]) in propafenone therapy, and 1,302,116.00 RSD (€11,473.40) in sotalol therapy.

Cost–effectiveness analysis has shown that dronedarone as a treatment option has the most favourable ratio, with 201,925.00 RSD (€1,779.23 [34]) invested for one year spent

without a stroke. In the case of amiodarone, 436,380.00 RSD (€3,845.10 [34]) should be paid for one year spent without a stroke. An amount of 530,475.00 RSD (€4,674.20 [34]) should be paid for propafenone, while the largest amount of money should be paid for sotalol as a treatment option, at 1,699,387.00 RSD (€14,973.89 [34]) for one year spent without a stroke. These results indicate that the treatment option sotalol is the least favourable in pharmacoeconomic terms, when AF has been evaluated through the number of years spent without stroke. Cost–effectiveness analysis is a very important part of comprehensive economic evaluation of new health technologies.

In a recently published study conducted in Canada, Italy, Sweden, and Switzerland, it was found that patients treated with dronedarone live two years longer than those treated with sotalol, which is more than a year longer compared to patients on amiodarone and flecainide. A similar pattern is observed in all countries. Due to higher costs of dronedarone and no initiation and no monitoring expenses for sotalol, the net cost of dronedarone, when compared to sotalol, is higher in Canada than in the other countries. Dronedarone versus amiodarone ICERs, when comparing dronedarone with amiodarone, are generally low, with €5,340.00, €4,620.00, €3,850.00, and €5,630.00 per quality adjusted life-year (QALY) gained for Canada, Italy, Sweden, and Switzerland, respectively. There is a tendency for dronedarone to be more cost-effective in Sweden than in the other two countries, due to the slightly longer survival for patients on dronedarone in Sweden (LYG — life year gained of 1.24, 1.22, 1.44, and 1.33 years in Canada, Italy, Sweden, and Switzerland, respectively) [44].

The health system in the Republic of Serbia is still state owned, and prices of health services are administratively controlled by state-owned health insurance funds. While drug and medical device prices in Balkan countries are similar to prices in developed European countries, prices of health care services are much lower. This results in a different economic environment where the health care system is concerned, and could produce significant differences in cost–effectiveness of the same medical procedure or drug in high-income European countries and Balkan countries [45].

### *Limitations of the study*

The results of our pharmacoeconomic study are limited to the situation where dronedarone reduces the risk of stroke. Currently there is ongoing debate whether this preventive effect of dronedarone really exist or not, and final conclusions still await results from new clinical trials or observational studies. The readers should be aware of this limitation and take the results with reserve.

### **CONCLUSIONS**

The model in pharmacoeconomics enables us to create a vision of the virtual health care system, where everyone knows exactly what the input parameters are. It is possible to push

the “cohort” of patients through them, and then obtain and compare the costs and effectiveness of different treatment options. The convenience of this method is that certain medical conditions can be repeated within the stipulated time frame. Results derived from the model can serve as a key argument in making the final decision. The results of these models serve as a guide for decision makers in systems with limited resources allocated to health care and with the need for efficient and rational use of the existing resources of a developed system.

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**Conflict of interest:** none declared

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# Analiza efektywności kosztowej terapii dronedaronem w porównaniu z leczeniem amiodaronem, propafenonem i sotalolem w grupie chorych z migotaniem przedsionków: wyniki badania przeprowadzonego w Serbii

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## Streszczenie

**Wstęp:** Dane z najnowszych badań wskazują, że stosowanie dronedaronu wiąże się z istotnie mniejszą liczbą działań niepożądanych i przypadków przerwania terapii, a także trendem w kierunku zmniejszenia śmiertelności całkowitej w porównaniu z leczeniem amiodaronem. Wprowadzenie dronedaronu do praktyki klinicznej ograniczają koszty terapii, które są wyższe niż w przypadku amiodaronu, propafenonu i sotalolu.

**Cel:** Badanie przeprowadzono w celu analizy efektywności kosztowej terapii dronedaronem w porównaniu z amiodaronem, propafenonem i sotalolem u chorych z migotaniem przedsionków.

**Metody:** Autorzy przygotowali model Markova, a następnie przeprowadzili symulację Monte Carlo, wprowadzając dane 1000 wirtualnych pacjentów. Koszty i efekty leczenia oszacowano z perspektywy społecznej i pomniejszono o 3% rocznie. Przyjęto horyzont czasowy życia i cykle 3-miesięczne. Głównym punktem końcowym były lata bez udaru mózgu. Wartości prawdopodobieństwa zmiany i efekty leczenia oszacowano na podstawie dostępnych publikacji. Koszty usług medycznych i leków uzyskano z taryfikatora wyceny procedur (*Republic Institute for Health Insurance Tariff Book*) oraz informacji na temat leków udostępnionych przez producenta (lista A).

**Wyniki:** Analiza efektywności kosztowej wykazała, że terapia dronedaronem charakteryzowała się najkorzystniejszym stosunkiem nakładów do uzyskanych korzyści. Koszt zapobiegania wystąpieniu 1 udaru mózgu przez rok wynosił 1 779,23 euro. W przypadku leczenia amiodaronem, aby zapobiec wystąpieniu 1 udaru przez rok, trzeba wydać 3 845,10 euro, w przypadku stosowania propafenonu kwota ta wynosi 4 674,20 euro, a w przypadku sotalolu koszty są największe i wynoszą 14 973,89 euro. Szacunkowy roczny koszt leczenia pacjenta z wykrytym po raz pierwszy migotaniem przedsionków wynosi w Serbii 610 euro.

**Wnioski:** Wyniki analizy w modelu autorów wskazują, że u pacjentów z migotaniem przedsionków efektywność kosztowa terapii dronedaronem jest większa niż leczenia amiodaronem, propafenonem i sotalolem, jeśli jako punkt końcowy przyjmuje się liczbę lat bez udaru.

**Słowa kluczowe:** dronedaron, amiodaron, propafenon, sotalol, migotanie przedsionków, efektywność kosztowa

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