Budget Impact of Adding Corlanor® (Ivabradine) to Standard of Care in Patients with Chronic Systolic Heart Failure in the United States

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Financial support and relationship with industry: JSB, MB, IF, and MK have received scientific support, consultative fees and/or speakers honoraria from Servier and Amgen; JSB also has received consultative fees from Celladon, Pfizer, ARMGO, Cardiorentis, Novartis, and Takeda USA; ARK, EDD, SK, and YZ are employees of Evidera; HP and AK are employees of, and stockholders in, Amgen; LT has received research grants and consultation fees from Servier. This study was funded by Amgen, Inc.

ABSTRACT

Objectives: To estimate the budget impact of ivabradine from a US-commercial payer perspective.

Background: Heart failure (HF) costs $21 billion annually in direct healthcare costs, 80% of which is directly attributable to hospitalizations. The SHIFT clinical study demonstrated that ivabradine plus standard-of-care (SoC) reduced HF-related and all-cause hospitalizations versus SoC alone.

Methods: A budget impact model estimated the per-member-per month (PMPM) impact of introducing ivabradine to existing formularies by comparing a reference- (SoC) versus a new-drug scenario (ivabradine+SoC) in hypothetical 1-million member commercial and Medicare Advantage plans. In both scenarios, US claims data were used for the reference cumulative annual rates of hospitalizations (HF, non-HF cardiovascular [CV], non-CV) and hospitalization rates were adjusted using SHIFT data. The model controlled for mortality risk using SHIFT and US life table data, and hospitalization costs were obtained from US claims data: HF-related=$37,507; non-HF CV=$28,951; non-CV=$17,904. The annualized wholesale acquisition cost of ivabradine was $4,500, with baseline utilization for this new drug at 2%, increasing 2%/year.

Results: Based on the approved US indication, ~2000 commercially insured patients from a 1-million member commercial plan were eligible to receive ivabradine. Ivabradine resulted in a PMPM cost savings of $0.01 and $0.04 in Years 1 and 3 of the Core Model, respectively. After including of acquisition price for ivabradine, the model showed decrease in total costs in the commercial ($991,256 and $474,499, respectively) and Medicare populations ($13,849,262 and $4,280,291, respectively) in Year 1; this was driven by ivabradine's reduction in hospitalization rates. For the core model, the estimated pharmacy only PMPM in year 1 was $0.01 for the commercial population and $0.24 for Medicare Advantage plans.

Conclusions: Adding ivabradine to SoC led to lower average annual treatment costs. The negative PMPM budget impact indicates that ivabradine is an affordable option for US payers.

What is already known about this subject: ivabradine reduces hospitalizations in patient with HF. Per US-FDA approval, ivabradine is indicated to reduce the risk of hospitalization for worsening heart failure in patients with stable, symptomatic chronic heart failure with left ventricular ejection fraction (LVEF) ≤ 35%, who are in sinus rhythm with resting heart rate ⩾ 70 beats per minute and either are on maximally tolerated doses of beta-blockers or have a contraindication to beta-blocker use..

What this study adds: Ivabradine has only recently (April 2015) been approved in the US, and the budget impact to commercial and Medicare plans in the US is yet unknown. This is the first study to assess the budget impact of introducing ivabradine into the US from a payer perspective. The clinical relevance of these results is that addition of ivabradine to treatment regimens in patients who meet FDA-approved indication for drug use can confidently expect to generate lower costs for their projected health benefits than if they did not use ivabradine. This may reduce costs to the individual patient and certainly will reduce costs to society as a whole.

Key words: ivabradine, heart failure, heart rate, budget impact, economic modeling

INTRODUCTION

Heart failure (HF) affects approximately 5.7 million Americans (1), and the risk for developing HF increases with age (2). Prognosis for patients with HF remains relatively poor, with the 5-year survival rate estimated to be approximately 50% (3). In addition, HF is associated with a substantial economic burden, mainly because patients require frequent hospitalization, especially those with severe HF not controlled by standard medication (4). In 2010, direct medical costs associated with HF in the United States (US) were estimated to be approximately $21 billion, 80% of which was directly attributable to hospitalizations (1,5).

Relatively high resting heart rate is an indication of inadequate HF control, and is an independent predictor of cardiovascular (CV)-related morbidity (hospitalizations) and mortality in patients with left ventricular systolic dysfunction and chronic symptomatic HF (6-10). In April, 2015, the US Food and Drug Administration approved ivabradine to reduce the risk of hospitalization for worsening of HF in patients with stable, symptomatic, chronic HF with left ventricular ejection fraction (LVEF) ≤ 35%, who are in sinus rhythm with a resting heart rate ≥ 70 beats per minute (bpm), and either are receiving maximally tolerated doses of or have a contraindication to beta-blockers. Because of the economic burden of HF, the objective of this study was to estimate the budget impact of introducing ivabradine into the formulary from a US payer perspective.

METHODS

Model Overview

A Microsoft Excel-based budget impact model (**Figure 1**) was developed to compare a reference scenario, which included the current standard-of-care (SoC), with a new drug scenario in which ivabradine was added to current SoC. The analysis was based on a

hypothetical 1-million member US plan with a commercial (age 19 – 64 years) or Medicare Advantage (generally ≥ 65 years) population. Analytically, the model used the frequency and cost of hospitalizations of US patients with HF and applied an ivabradine-driven hospitalization reduction factor derived from the Systolic Heart Failure Treatment with the I(f)Inhibitor Ivabradine Trial (SHIFT)(8). The reduction in hospitalization costs and drug costs in the reference and new drug scenarios were then compared to assess the overall budget impact of ivabradine, expressed as incremental cost per member per month (PMPM). The model aimed to evaluate to what extent the cost of adding ivabradine to SoC was off-set by reductions in the cost of hospitalizations.

Two versions of the model were developed: 1) a Core Model calculated the budget impact of adding ivabradine to SoC by considering only the effect of ivabradine on costs associated with hospitalization for worsening HF and the cost of ivabradine; and 2) an Expanded Model included all of the elements of the Core Model as well as the impact of ivabradine on all-cause hospitalization and the costs of treating adverse events (AE) related to ivabradine treatment. Both version of the model included the natural death rate of patients in this population based on the SHIFT SoC arm, supplemented with data from 2010 US life tables (11) and an analysis of mortality rates in patients with HF (12). The core and the expanded model were designed to estimate budget impact up to 5 years in future. For the purpose of simplicity and balance, the manuscript reports the results for year 1 and year 3.

Model Inputs and Assumptions

Ivabradine utilization expectation

Based on projected drug utilization rates, the model used a utilization rate of 2% in Year 1 within the eligible patient population, with a 2% absolute increase for each subsequent year.

Epidemiology

The model generated separate results for the commercial and Medicare Advantage populations. A retrospective database analysis was conducted using the OPTUM™ research database (Optum, Inc., Eden Prairie, MN) to estimate demographics, annual cumulative hospitalization rates, and hospitalization costs for the two populations. In the commercial population, the mean age was 63 years and 43% were female; in the Medicare Advantage population, the mean age was 77 years and 54% were female.

The target eligible patient population for ivabradine was estimated from the literature and was defined as adults (≥ 18 years of age) with systolic chronic HF in New York Heart Association (NYHA) Class II, III, or IV, and normal sinus rhythm with a heart rate of ≥ 70 bpm. The target population sizes were calculated as the sum of prevalent and incident cases in the US commercial and Medicare populations estimated using multiple inputs (5,13-15), such as NYHA Class and heart rate (**Table 1)**. The epidemiological makeup of the target population was assumed to remain constant across the model time horizon, consistent with American Heart Association methodology (5).

Clinical Inputs

Ivabradine efficacy was derived using data from SHIFT, in which 6,505 patients with moderate-to-severe (NYHA Class II, III, or IV) HF in normal sinus rhythm, with LVEF ≤ 35% and heart rate ≥ 70 bpm, and with a HF-related hospitalization within the past year, were randomized to ivabradine or placebo in addition to maximally tolerated beta-blockers and other guideline-suggested drug therapies (8). The model had ability to utilized annualized hospitalization rates either from clinical trial data (SHIFT) or real world US claims (OPTUM claims). The results obtained using real world US hospitalization rates are reported in this manuscript. The mortality

inputs used in this model reflect natural death rates(**Table 2).** To align with ivabradine's US label, mortality benefit due to use of Ivabradine was not considered in this model**.**

To derive clinical inputs for patients treated with ivabradine in the new drug scenario, hospitalization rates from the reference case were adjusted based on treatment effect data derived from a post hoc analysis of the SHIFT trial population (incident rate ratio [IRR]= 0.75 over the duration of the entire trial [median = 22.9 months]) (10). For the Expanded Model which included all-cause hospitalization, annualized incidence rates for each type of hospitalization were calculated using the intent-to-treat set as the total number of events divided by the total number of patient-years at risk (from randomization until death or the end of study, whichever came first). The model calculated mutually exclusive hospitalization rates and costs for HF-related, non-HF CV related, and non-CV related hospitalizations to avoid double-counting of events that could occur if the overlapping categories of "all-cause" and "CV-related" were used. Mortality benefit due to adding ivabradine to SoC was not included in either model.

Cost Inputs

Because ivabradine is intended to be used as an add-on therapy and not expected to impact use of SoC, the costs of SoC drugs were excluded from the model. Hospitalization cost inputs were calculated from OPTUM research database for both populations. InGauge data that included commercial fee ranges and geographic adjustment factors were used for adverse event-related costs (16) (**Table 3)**. The hospitalization costs were estimated separately for the commercial and Medicare Advantage populations. All hospitalization cost inputs were based on insurer-paid claims (13,17) and did not include patient out-of-pocket costs or adjustment for coordination of benefits among more than one insurer. Therefore, the cost of hospitalization used in this model may not reflect the total cost. The cost for ivabradine was $4,500 per year for every patient included in the model, the wholesale acquisition cost as of April 15, 2015.

The Expanded Model included a wider scope of the additional inputs related to the cost of all-cause hospitalization and AEs. Costs associated with non-HF CV- and non-CV-related hospitalizations were estimated from the OPTUM research database. Using the SHIFT safety dataset, rates of AEs for both the reference and new drug scenarios were calculated as the total number of AEs divided by the number of patient-years at risk. AEs included in the model were asymptomatic bradycardia, symptomatic bradycardia, atrial fibrillation, phosphenes, and blurred vision. These AEs were selected because in SHIFT, they were among the most-frequent AEs overall and the incidence differed between the ivabradine and placebo arms; in addition, they are potentially related to ivabradine's mechanism of action (8). Costs of AE management included cost of outpatient physician visits or emergency department visits for cardiac events of moderate or high severity and cost of comprehensive ophthalmological services for ophthalmic events (17).

Sensitivity Analyses

Multiple one-way sensitivity analyses were conducted to understand the impact of varying core model inputs and assumptions on the results (**Table 5**). In accordance with the International Society for Pharmacoeconomics and Outcomes Research guidance on budget impact analyses (18), alternative scenarios of potential interest to payers were tested using the Expanded Model, which considered the budget impact of all-cause hospitalizations and AEs in addition to HF-related hospitalizations.

RESULTS

Core Model Results

In a hypothetical 1 million member plan, 1,913 commercially insured prevalent patients and 191 incident patients (total n= 2104)were eligible to receive ivabradine. Based on 2% utilization for

year 1, a total of 38 patients will utilize Ivabradine and this will increase to 115 patients in year 3. In the US commercial plan population, ivabradine costs at Year 3 were estimated to be $516,757. Eligible patients treated with SoC would incur an estimated total cost of $66,616,644due to HF-related hospitalizations. Patients treated with ivabradine plus SoC would incur an estimated total cost of $65,625,389due to fewer HF-related hospitalizations – a cost savings of $991,256. After accounting for the cost of providing ivabradine ($516,757), the net result was a saving of $474,499, resulting in an incremental cost savings of $0.04 PMPM compared with the SoC scenario (**Table 4**).

In the Medicare Advantage population, the introduction of ivabradine resulted in an incremental cost savings of $0.36 PMPM compared with the SoC scenario at Year 3. The larger favorable budget impact in the Medicare Advantage plan compared with the commercial plan was driven by a combination of higher prevalence and incidence of HF and the higher rates of HF-related hospitalization, which would be expected in this older population (**Table4**).

Expanded Model Results

Including the costs of AE management and all-cause hospitalization in the Expanded Model still resulted in PMPM cost savings of $0.05 in the commercial and $0.52 in the Medicare Advantage populations (**Table 4**).

Sensitivity Analyses

Results from one-way sensitivity analyses performed on the Core Model with commercial and Medicare Advantage populations are summarized in **Table 5**. The use of alternative hospitalization rates from the SHIFT study resulted in an incremental cost increase of $0.02 PMPM and $0.59 PMPM for the commercial and Medicare Advantage populations, respectively. These changes were driven by lower overall rates of hospitalization in the SHIFT study relative to US claims data, resulting in smaller cost offsets from prevented hospitalizations (**Table 5**).

Using US claims data, longer model timeframes were associated with increasingly favorable budget impacts: extending the time horizon from 3 to 5 years increased incremental cost savings to $0.07 PMPM and $0. 627 PMPM for the commercial and Medicare Advantage populations, respectively. Decreasing the time horizon to 1 year reduced cost savings to $0.01 PMPM for the commercial and $0.11 PMPM for the Medicare Advantage populations. Similarly, greater market penetration was associated with increasingly favorable cost savings: a low uptake scenario of 1% per year resulted in incremental cost savings of $0.02 PMPM for the commercial and $0. 180 PMPM for Medicare Advantage populations, whereas a high utilizationscenario of 5% per year resulted in incremental cost savings of $0.10 PMPM and $0.89 PMPM at Year 3 for commercial and Medicare Advantage populations, respectively. Decreasing the ivabradine acquisition cost by 20% increased cost savings to $0.05 PMPM and $0.52 PMPM, while an increase of 20% reduced cost savings to $0.03 PMPM and $0.22 PMPM, respectively (**Table 5**).

DISCUSSION

The results of this budget impact analysis indicate that the reduced hospitalizations associated with adding ivabradine treatment to SoC in a the eligible patient population (8) would result in overall cost savings for US commercial and Medicare Advantage plan formularies. Cost savings were primarily driven by reductions in HF-related hospitalizations, which offsets the costs of ivabradine. Cost offsets were greater in the Medicare Advantage population than in the commercial plan population, and this was because of the much greater prevalence of HF and higher rates of HF-hospitalization in the older population represented in the Medicare Advantage database. Together, these findings demonstrate a consistently favorable budget impact in both populations. These data are useful because chronic HF is associated with a relatively high economic burden, and SHIFT demonstrated that for patients with chronic HF with

moderate-to-severe systolic dysfunction, targeted reduction in heart rate with ivabradine treatment in combination with SoC resulted in significant reductions in hospitalization rates (8).

The patient populations targeted in these models were as close as possible to those covered by the approved US indication for ivabradine, including patients both with and without a previous HF-related hospital admission. This is in contrast to the SHIFT study population, which included admission within the year prior to study enrollment and LVEF ≤ 35% as inclusion criteria (8). While the model assumes similar benefits of adding ivabradine treatment in the broader population, a clear benefit of ivabradine in reducing the risk of HF-related hospitalization in patients without a previous admission has not been rigorously established in clinical trials.

Sensitivity analyses showed that for the commercially-insured population, the biggest drivers of budget impact were hospitalization rates and ivabradine utilization. Together, these results suggest that the economic benefit of adding ivabradine to SoC will be substantially influenced by access to treatment, particularly in patient populations at progressively higher risk for HF-related admissions.

This is the first study to assess the budget impact of introducing ivabradine into the US. A separate budget impact analysis by the National Institute for Health and Care Excellence (NICE) in the United Kingdom estimated the total budget impact as approximately £4,400 per 100,000 individuals (19). This moderate budget impact together with a favorable assessment of the clinical efficacy resulted in a positive recommendation for ivabradine by NICE in the UK.

The strength of the current analysis is that it used data from real-world US medical commercial claims to derive hospitalization rates and costs in both the commercial and Medicare Advantage populations, thus making the results highly relevant to the target US populations. Similarly, the natural death rates of non-CV mortality were adjusted using data from US life tables to ensure that mortality rates were as relevant to the target population as possible.

It is important to note that the cost of SoC was not included in the model, resulting in underestimation of total treatment costs. However, because ivabradine is intended to be used in addition to SoC, exclusion of these costs does not affect incremental budget impact. Due to data limitations, costs of AE management in the Expanded Model considered only those costs associated with outpatient and emergency room visits, and did not include costs of AE associated tests, procedures, or medications; this may have led to an underestimate of the total costs associated with AE management. In addition, although the analysis suggested that incremental budget impact was relatively insensitive to AE cost, some costs related to AE management may be associated with inpatient visits (e.g., for symptomatic atrial fibrillation). Although these costs would be captured as a component of all-cause hospitalization, they would not be specifically attributed to AE management.

In conclusion, inclusion of ivabradine in the formularies of US commercial and Medicare Advantage plans in the US is estimated to result in a reduction of HF-related hospitalizations that offset the cost of providing ivabradine to patients. From a US payer perspective, the favorable budget impacts associated with ivabradine treatment indicate that ivabradine will be an affordable treatment option in both populations.

ACKNOWLEDGEMENTS

Medical writing support was provided by Eric Bertelsen, PhD of Fishawack on behalf of Amgen, Inc., and editorial support was provided by Janice Carlson, PhD, of Amgen, Inc.

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FIGURE LEGENDS

Figure 1. An overview of the budget impact model for ivabradine in patients in the United States with heart failure in a commercial or Medicare Advantage plans

PMPM, per patient per month

Figure 2. Patients with heart failure in the United States who are eligible for ivabradine

* OPTUM research analysis

† STAMINA registry (data on file)

Table 1. Epidemiology Parameters for a 1-million Member Hypothetical Health Care Plan

	Commercial Population		Medicare Advantage Population	
Model Population Parameter	Frequency, %	Patients, N	Frequency, %	Patients, N
Hypothetical Plan Membership		1,000,000		1,000,000
Prevalence of chronic heart failure	1.0%*	10,000	16.0%†	160,000
Chronic HF patients with systolic chronic HF	52.9%‡	5,290	52.9%‡	84,640
With normal sinus rhythm	66.8%§	3,534	66.8%§	56,540
With normal sinus rhythm and NYHA Class II to IV	88.3%§	3,120	88.3%§	49,924
With normal sinus rhythm and NYHA Class II to IV with heart rate of >70 bpm	61.3%‖	1,913	61.3%‖	30,604
Incidence of chronic heart failure	0.1%	1,000	3.1%	31,000
Chronic HF patients with systolic chronic HF	52.9%‡	529	52.9%‡	16,399
With normal sinus rhythm	66.8%§	353	66.8%§	10,955
With normal sinus rhythm and NYHA Class II to IV	88.3%§	312	88.3%§	9,673
With normal sinus rhythm and NYHA Class II to IV with heart rate of >70 bpm	61.3%‖	191	61.3%‖	5,929
Total patients eligible for treatment (prevalent + incident populations)		2,104		36,533

bpm = beats per minute; HF = heart failure; NYHA = New York Heart Association

*(12); †(13); ‡(14); §(15); ‖STAMINA registry

Table 2. Hospitalization, Mortality, and AE Rates for Patients with Chronic Systolic HF by Data Source.

Parameter	US Claims Data		SHIFT Trial Data*		
	Commercial†	Medicare Advantage†	Placebo + SoC	Placebo + Ivabradine	Incident Rate Ratios (95% Confidence Interval)~
Hospitalizations					
HF-related (base case)	0.928	1.144	0.204	0.151^	0.75 (0.65-0.87)
Non-HF CV-related (sensitivity analysis)	0.070	0.093	0.179	0.169^	0.95 (0.84-1.07)
Non CV-related (sensitivity analysis)	0.524	0.645	0.142	0.126^	0.88 (0.75-1.04)
Mortality					
HF-related	--	--	0.026	0.019^	0.74 (0.58 – 0.94)
Non-HF CV-related	--	--	0.057	0.056^	0.98 (0.84 – 1.14)
AEs (alternative scenario analyses)					
Asymptomatic bradycardia	--	--	0.8%	3.6%	
Symptomatic bradycardia	--	--	0.6%	2.9%	
Atrial fibrillation	--	--	4.6%	5.8%	
Phosphenes	--	--	0.1%	0.4%	
Blurred vision	--	--	0.3%	1.8%	

CV = cardiovascular; HF = heart failure; SoC = standard of care

*(8); †OPTUM research data analysis; ~Incident rate ratios represent Placebo + Ivabradine vs. Placebo +SoC; ^ivabradine rates are

presented for exemplary purposes but are not used as inputs in the model

Table 3. Cost Inputs in US Dollars

Cost Input	Commercial Population	Medicare Advantage Population
Ivabradine acquisition, cost per year	$4,500	$4,500
Hospitalization, cost per event		
HF-related (Core Model)	$37,507	$22,956
Non-HF CV-related (expanded model)	$28,951	$18,127
All-cause (Expanded Model)	$17,904	$11,489
AE, cost per event (alternative scenario)†		
Asymptomatic bradycardia	$142§	$73‖
Symptomatic bradycardia	$686¶	$367#
Atrial fibrillation	$686¶	$367#
Blurred vision	$187**	$126††
Phosphenes	$187**	$126††

AE = adverse event; CV = cardiovascular; HF = heart failure

† Includes cost of a physician visit for management of CV-related event of moderate or high severity, ED visit for a CV-related event of high severity, and comprehensive ophthalmological services for an ophthalmic event

§ Physicians' Fee and Coding Guide, CPT code 99213 (InGauge Healthcare Solutions, 2014)

¶ Sum of Physicians' Fee and Coding Guide, CPT code 99213 ($142) and Physicians' Fee and Coding Guide, CPT code 99284 ($544) (InGauge Healthcare Solutions, 2014)

Sum of CMS. Physician Fee Schedule Look-Up Tool. National Payment Amount by CPT Code. CPT code 99213 ($73) CY 2014 and CMS. Hospital Outpatient PPS File. CPT code 99284 (294) CY July 2014

** Physicians' Fee and Coding Guide, CPT code 92014 ($187) (InGauge Healthcare Solutions, 2014)

†† CMS. Physician Fee Schedule Look-Up Tool. National Payment Amount by CPT Code. CPT code 92014 (126) CY 2014

Table 4. Cost Projections at Year 3 After Hospitalization for the Hypothetical One-million Member Insurance Plans in US Dollars*

	Commercial†			Medicare Advantage†		
Costs	Reference Scenario§	New Drug Scenario¶	Incremental Difference	Reference Scenario§	New Drug Scenario¶	Incremental Difference
Core Model						
Drug acquisition	$0.00	$516,757	$516,757	$0.00	$9,568,971	$9,586,971
HF-related hospitalization	$66,616,644	$65,625,389	($991,256)	$930,729,958	$916,880,696	($13,849,262)
Total costs	$66,616,644	$66,142,146	($474,499)	$930,729,958	$926,449,667	($4,280,291)
Cost PMPM	$5.55	$5.51	($0.04)	$77.56	$77.20	($0.36)
Expanded Model (Core Model + All-cause hospitalization and effect of AEs)						
Drug acquisition	$0.00	$516,757	$516,757	$0.00	$9,568,971	$9,568,971
HF-related hospitalization	$66,616,644	$65,625,389	($991,256)	$930,729,958	$916,880,696	($13,849,262)
CV-related hospitalization	$70,495,325	$69,491,735	($1,003,590)	$990,476,165	$976,436,910	($14,039,255)

All-cause hospitalization	$88,451,086	$87,320,369	($1,130,717)	$1,253,105,598	$1,237,206,927	($15,898,671)
AEs	$71,756	$75,380	$3,264	$713,815	$750,446	$36,631
Total costs	$88,522,842	$87,912,506	($610,336)	$1,253,819,413	$1,247,526,344	($6,293,069)
Cost PMPM	$7.38	$7.33	($0.05)	$104.48	$103.96	($0.52)

* No discount rate was applied
† Values in parentheses represents cost savings to the health plan
§ SoC
¶ Ivabradine + SoC

AE = adverse event; HF = heart failure; CV=cardiovascular; PMPM = per member per month; SoC = standard of care

Table 5. One-way Sensitivity Analysis

Parameter	Core model Value	SA Value	Commercial Incremental Cost (PMPM)*	Medicare Advantage Incremental Cost (PMPM)*
Data source for hospitalization rates	US-claims; commercial perspective	SHIFT trial; commercial perspective	$0.02	$0.59
Time horizon	3 years	5 years	($0.07)	($0.62)
		1 year	($0.01)	($0.11)
Ivabradine utilization	2% in Year 1 2% increase each year	1% in Year 1 1% increase each year	($0.02)	($0.18)
		5% in Year 1 5% increase each year	($0.10)	($0.89)
Ivabradine acquisition cost	$4,500	$3,600 (20% decrease)	($0.05)	($0.52)
		$5,400 (20% increase)	($0.03)	($0.20)
Hospitalization events	HF-related	CV-related	($0.04)	($0.37)
		All-cause	($0.05)	($0.53)

CV, cardiovascular; HF = heart failure; PMPM = per member per month; SA = sensitivity analysis; SHIFT = Systolic Heart Failure Treatment with the I(f) Inhibitor Ivabradine Trial

* Values in parentheses represent cost savings to the health plan

Figure 1

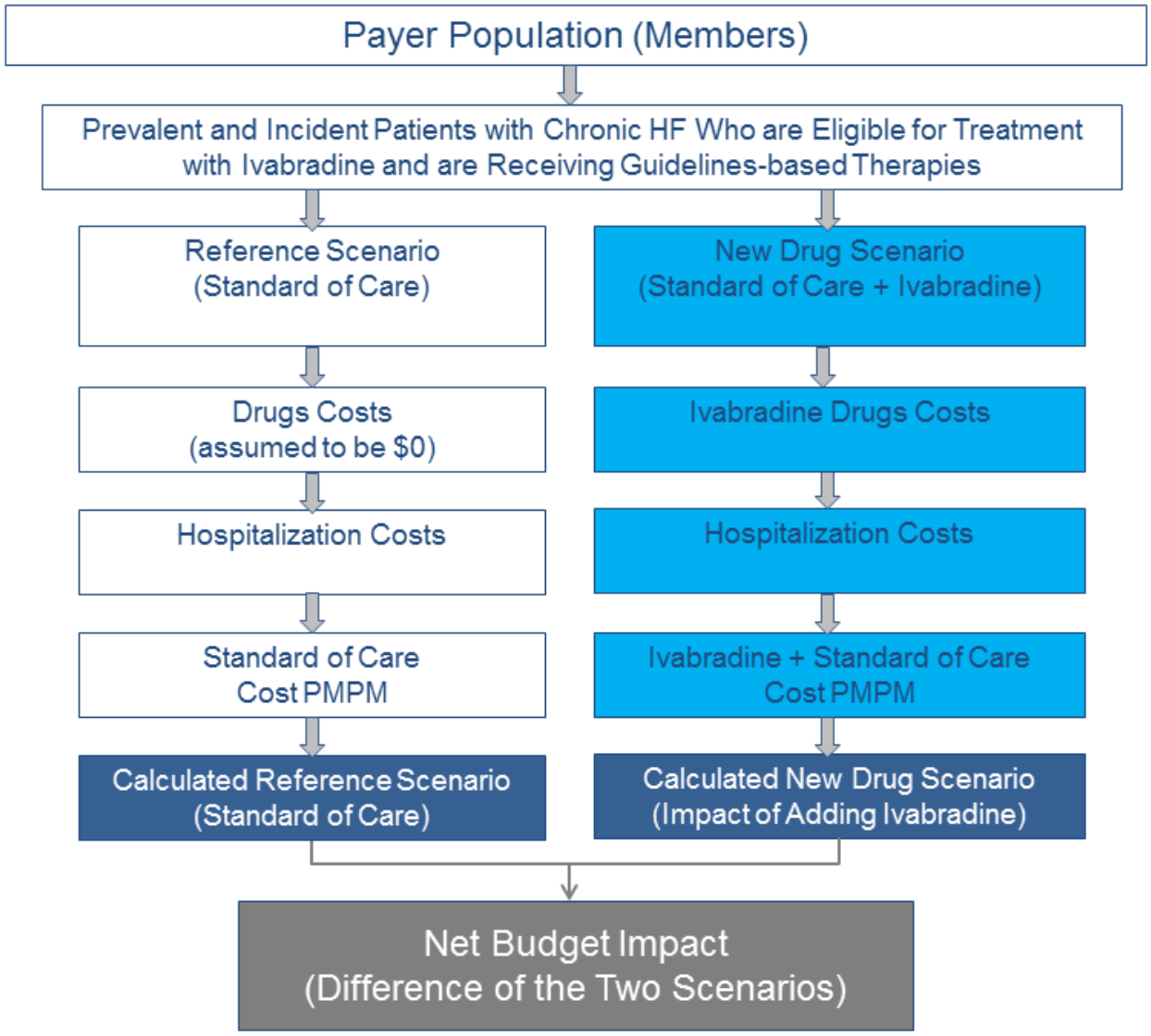
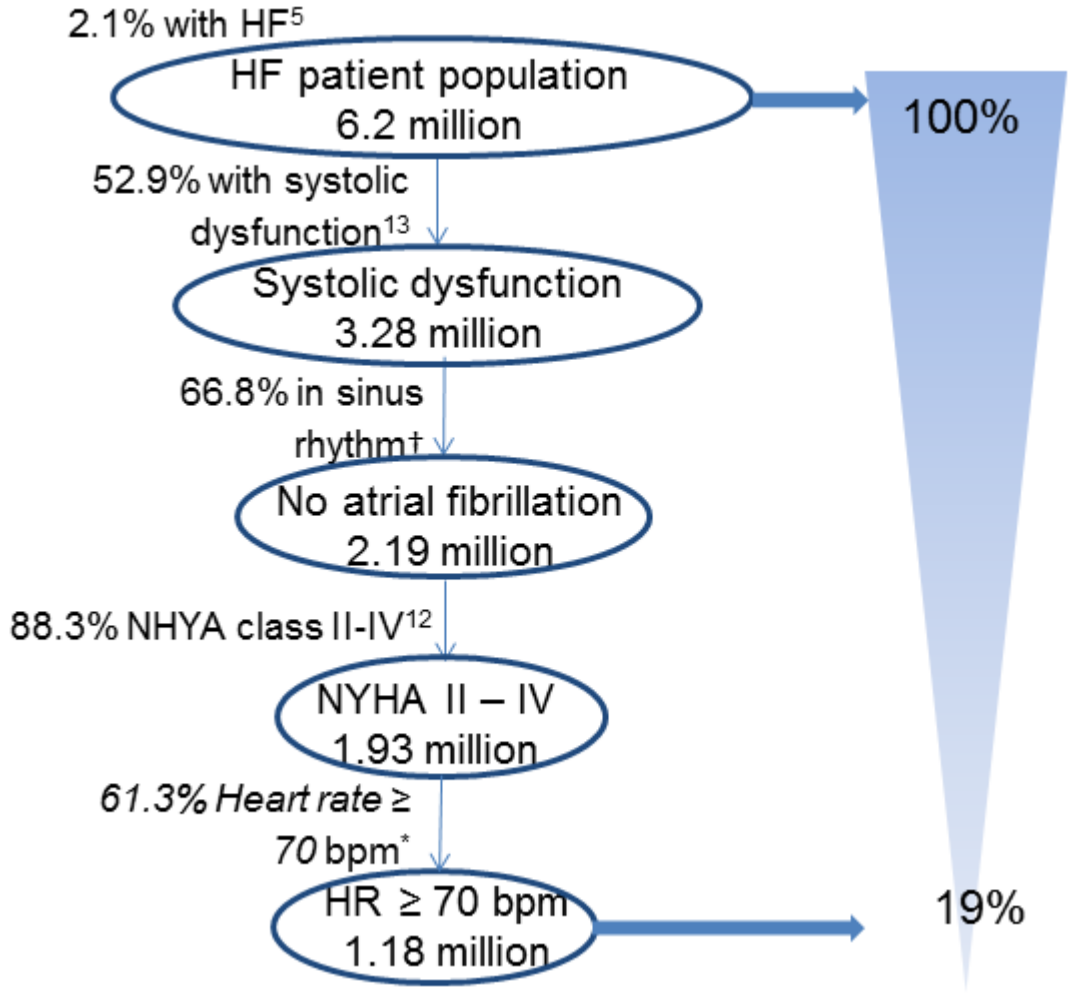

Payer Population (Members)
Prevalent and Incident Patients with Chronic HF Who are Eligible for Treatment with Ivabradine and are Receiving Guidelines-based Therapies
Reference Scenario (Standard of Care)
New Drug Scenario (Standard of Care + Ivabradine)
Drugs Costs (assumed to be $0)
Ivabradine Drugs Costs
Hospitalization Costs
Hospitalization Costs
Standard of Care Cost PMPM
Ivabradine + Standard of Care Cost PMPM
Calculated Reference Scenario (Standard of Care)
Calculated New Drug Scenario (Impact of Adding Ivabradine)
Net Budget Impact (Difference of the Two Scenarios)

Figure 2


2.1% with HF[5]
HF patient population
6.2 million
100%
52.9% with systolic dysfunction[13]
Systolic dysfunction
3.28 million
66.8% in sinus rhythm†
No atrial fibrillation
2.19 million
88.3% NHYA class II-IV[12]
NYHA II – IV
1.93 million
61.3% Heart rate ≥ 70 bpm*
HR ≥ 70 bpm
1.18 million
19%