

Purpose

The purpose of the study is to describe the **treatment initiation patterns** and the **subsequent treatment changes** among heart failure (HF) patients, in the first year following an incident hospitalization for HF, in a French real-world setting.

Disclosure statement

No conflict of interest to disclose

Methods

- **Study design:** cohort of **HF patients with an incident hospitalization** for HF between 2008 and 2013.
- **Data source:** EGB (*Echantillon Généraliste des Bénéficiaires*), the 1/97 permanent random sample of the **French nationwide claims database SNDS**.
- **Study population**
 - Patients ≥40 years with incident HF hospitalization during 2008-2013, 1-year lookback period before hospital discharge date (i.e. index date) and 1-year follow-up;
 - Exclusion of patients who died during the index hospitalization or had a period of at least 3 consecutive months with no healthcare dispensing recorded.
- **Treatment exposure (1)**
 - **HF Drugs:** Beta Blockers (BB), Angiotensin-Converting Enzyme Inhibitors (ACEI), Angiotensin Receptor Blockers (ARBs), Aldosterone Antagonists (AA), digoxin, ivabradine, diuretics (loop or thiazide diuretics) and calcium channel blockers (CCB).
 - **Treatment dispensed within the 90 days following hospital discharge**
 - **Treatment changes in the 1 year of follow-up**
 - assessed quarterly using the Proportion of Days Covered (PDC);
- **Treatment exposure (2)**
 - for the following combinations:
 - no HFrEF treatment
 - diuretics alone, BB alone
 - BB/ACEI/ARB
 - BB/ACEI/ARB/AA
 - any combination with digoxin or ivabradine
- **Data analysis**
 - Descriptive analysis
 - Stratified by age used as proxy for the type of HF (40-65 years for HFrEF, ≥75 years for HFpEF).

Results

- **Description of baseline characteristics (Table 1)**
 - 7 387 patients met the inclusion criteria: mean age was 77.7 years (±12.0 years), 51.6% were female, 68.5% were ≥75 years and 15.5% were [40; 65] years;
 - The most frequent cardiovascular conditions were high blood pressure, atrial fibrillation and ischemic heart disease.

Table 1. Description of patient baseline and index hospitalization characteristics

	[40;65[years n = 1,147	≥75 years n = 5,059	Cohort n = 7,387
Comorbidities, n (%)			
High blood pressure	857 (74.7)	4,498 (88.9)	6,372 (86.3)
Ischemic heart disease	454 (39.6)	1,558 (30.8)	2,488 (33.7)
Cardiac rhythm disorders	204 (17.8)	1,012 (20.0)	1,438 (19.5)
Valvulopathy	179 (15.6)	928 (18.3)	1,317 (17.8)
Atrial fibrillation	285 (24.8)	2,268 (44.8)	2,994 (40.5)
Dilated cardiomyopathy	230 (20.1)	272 (5.4)	644 (8.7)
Dyslipidemia	456 (39.8)	2,035 (40.2)	3,112 (42.1)
Stroke	73 (6.4)	465 (9.2)	634 (8.6)
Diabetes	335 (29.2)	1,288 (25.5)	2,055 (27.8)
Chronic respiratory disease (asthma or COPD)	336 (29.3)	1,348 (26.6)	2,076 (28.1)
Cancer	115 (10.0)	686 (13.6)	971 (13.1)
Chronic renal failure	126 (11.0)	771 (15.2)	1,061 (14.4)
Within the 12 months of pre-index period			
Median number (± SD) of office visit per patient	9.0 [5.0;15.0]	13.0 [8.0;19.0]	12.0 [8.0;18.0]
≥ 1 visit at the general practitioner, n (%)	1,084 (94.5)	4,920 (97.3)	7,138 (96.6)
≥ 1 visit at the cardiologist, n (%)	280 (24.4)	1,497 (29.6)	2,150 (29.1)
Median number [IQR] of hospitalizations per patient	2.0 [1.0;3.0]	2.0 [1.0;3.0]	2.0 [1.0;3.0]
Median number [IQR] of distinct medications (level 3 of the ATC code)	15.0 [9.0;20.0]	17.0 [13.0;22.0]	17.0 [12.0;22.0]
During index hospitalization			
Median [IQR] length of stay	7.0 [3.0;11.0]	8.0 [5.0;14.0]	8.0 [4.0;14.0]
≥ 1 medical procedure performed during the stay, n (%)			
BNP dosage	164 (14.3)	796 (15.7)	1,140 (15.4)
Echocardiography	265 (23.1)	612 (12.1)	1,100 (14.9)
Cardiac implantable devices	25 (2.2)	28 (0.6)	61 (0.8)
Cardiac rehabilitation	18 (1.6)	28 (0.6)	62 (0.8)
Heart transplant	0 (0.0)	0 (0.0)	0 (0.0)
Type of hospitalization discharge, n (%)			
Home	887 (77.3)	3,749 (74.1)	5,546 (75.1)
Internal or interinstitutional transfer	259 (22.6)	1,308 (25.9)	1,838 (24.9)
Unknown	1 (0.1)	2 (0.0)	3 (0.0)

SD: Standard Deviation; COPD: Chronic Obstructive Pulmonary Disease; IQR: Interquartile Range; BNP: Brain Natriuretic Peptide

- **Description of HF treatment patterns**
 - **After hospital discharge:** 10.9% of patients died at Q1, 75.1% were not exposed to any HF treatment, and 52.0% were treated with diuretic (71.9%), BB (42.2%), ACEI (40.8%), ARB (12.9%), AA (14.4%), digoxin (10.1%) and ivabradine (2.6%).
 - **During the 1 year of follow-up (Figure 1)**
 - 24.4% of patients died, 20% were not exposed to any HF treatment, 48.3% to 43.2% had diuretics, one third BB or ACEI, 9% ARB or AA, 6% digoxin, and 2% ivabradine;
 - The main change occurred between the first and the second quarter for 53.1% of the initially untreated patients.

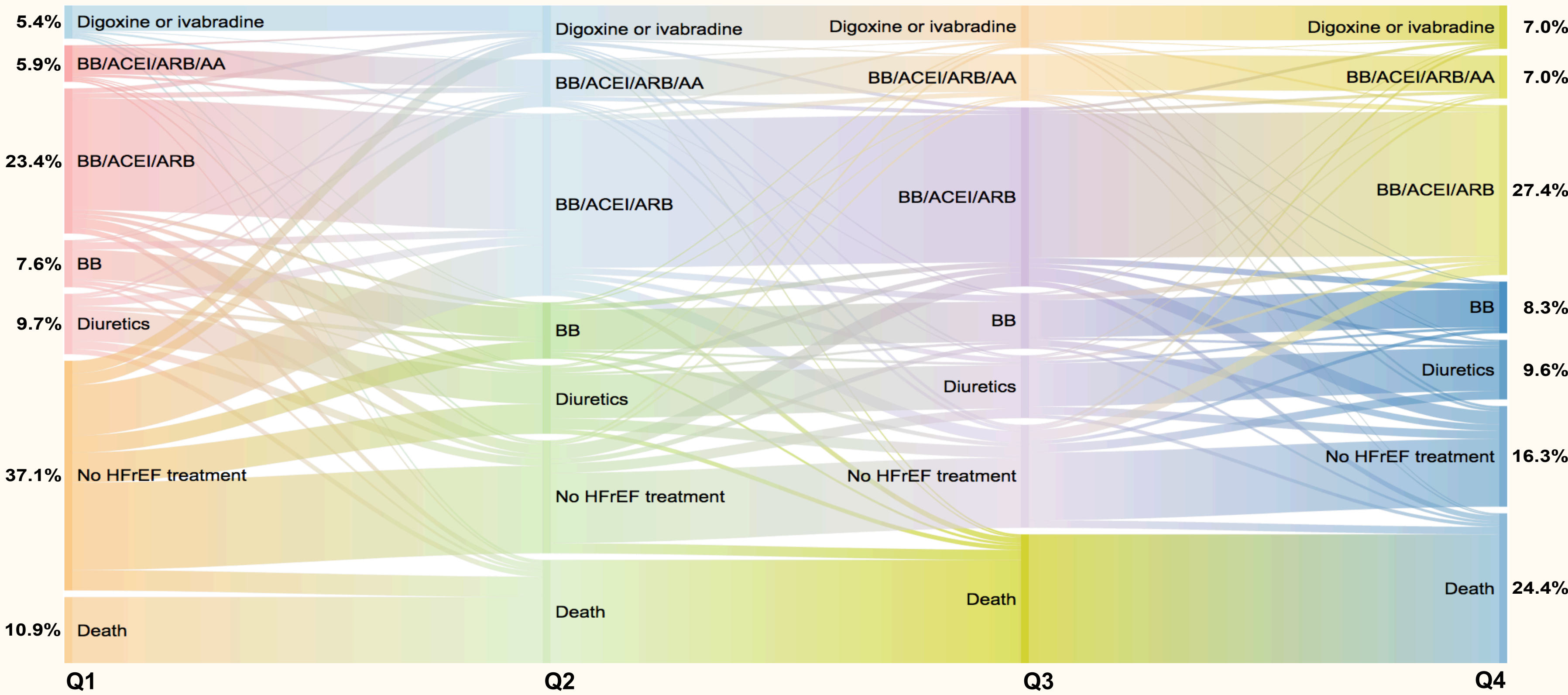


Figure 1. Sankey diagram representing modification of Heart Failure treatment over the 4 quarters of the follow-up

Conclusions

- This study provides valuable information on treatment patterns after an initial hospital admission for HF.
- Results may be used as baseline for the study of the medicinal interventions and the risk of re-hospitalisation or death from heart failure, at a time when new treatments for heart failure are emerging.