

ORIGINAL ARTICLE

The activity of the Interventional Cardiology Centers in Romania: a 2015 overview

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Abstract: The article summarizes the activity of interventional cardiology centers of Romania during 2015. Data collection was based on the direct reports from the centers, representing all geographic regions of the country. The report highlights the differences in total number of PCIs, procedures, stents and drug eluting stents between 2014 and 2015.

Keywords: interventional cardiology, percutaneous coronary interventions, stents

Rezumat: Articolul prezent sintetizează activitatea centrelor de cardiologie intervențională din România în anul 2015. Datele prezentate sunt cumulate din raportările directe ale acestor centre, existând o reprezentare de la nivelul tuturor regiunilor geografice. Sunt subliniate diferențele între anii 2014 și 2015 în ceea ce privește numărul total de intervenții coronariene percutane, proceduri, stenturi și stenturi farmacologic active utilizate.

Cuvinte cheie: cardiologie intervențională, intervenții coronariene percutane, stenturi

The activity of the interventional cardiology centers from Romania is continuously increasing, requiring clear data to understand the entire phenomenon.

This report summarizes the data from 2015 provided, at the request of the Interventional Cardiology Working Group (ICWG), by 33 out of 35 public and private interventional cardiology centers of Romania (Table 1). It is a prospective observational registry study which enrolls all consecutive patients in cardiac catheterization laboratories in Romania in 2015. All public and private interventional cardiology centers have received from ICWG a questionnaire to answer specific questions about the activity in the local cath lab. The focus of the requested elements was to determine the status of the logistics (number of departments, cathlabs and interventional cardiologists), the volume of the procedures and the type of percutaneous interventions (elective or urgent, coronary or peripheral). The results collected from each center are presented in Table 1. A direct comparison of 2014 with 2015 was done, that highlight the continuous increase in the activity of the interventional cardiology centers from Romania. Figure 1, 2 and 3 highlight the total number of procedures, total number of PCIs and total

number of primary PCI in STEMI patient performed in each interventional cardiology center from Romania.

Currently, there are 35 public and private centers in Romania. In 33 centers that provided the reports, works 86 independent interventional cardiologists and 55 specialists in training. During 2015, in these laboratories were performed a total of 51697 diagnostic and therapeutic percutaneous procedures, including 17446 Percutaneous Coronary Interventions (PCI); 7841 cases of primary PCI (pPCI) were performed on patients with ST segment elevation myocardial infarction (STEMI). Comparing 2014 with 2015, in 2015 there was a 28.2% increase in total number of procedures (diagnostic and therapeutic procedures) (Figure 4), a 35% increase in total number of PCIs (Figure 5), a 111.2% increase in total number of drug eluting stents used (Figure 6) and a 31.2% increase in total number of stents implanted (Figure 7).

Although, the total number of procedures in 2015 increased with a 28.2%, when compared to the Figures from the neighboring countries, the number of procedures in Romania is significantly lower. Thus, in 2011 the number of pPCI per million population in Bulgaria was 650¹, while in 2014 in Romania there were only

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3252; the number of angioplasties per million population in 2011 in Poland was 2550^{3,4}, while in 2014 in Romania – 750². In these countries, a sound evidence-based approach using National Registry data is applied to monitor and improve interventional cardiology services⁵.

An important achievement in 2015 was the development of a new programme for TAVI (transcatheter aortic valve implantation) in public hospital. The most active centers were CC Iliescu from Bucharest, Heart Institute from Cluj Napoca and Cardiovascular Diseases Institute from Iasi.

The data analysis in this study is limited to those centers that actively responded to the request from the ICWG; There are centers that did not participate or provided poor quality data not feasible for the analysis. We emphasize the importance of participation and providing a real and good quality data from all interventional cardiology centers in Romania in order to have a better picture of the phenomenon.

The registry can help monitor the activity of different cath labs, to identify country regions not well covered by STEMI programme or with poor interventional facilities, to monitor the outcomes according to the volume of the center, number of operators and number of interventional cardiologists in training.

Another key aspect is that providing clear data of the development achieved in interventional cardiology in total number of procedures, PCIs, DES and stents can have an important impact on further funding and it can be the basis for new national programmes.

In conclusion, implementation of a Mandatory Interventional Cardiology National Registry, capable of monitoring objectively these key health care services in a standard manner, can be the avenue to guide further development of the interventional cardiology in Romania.

Conflict of interest: none declared.

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Table 1. Reported data from Interventional Cardiology Centers								
City	Bucharest							
Hospital	CC Iliescu	SUUB	Floreasca	Agrippa Ionescu	Militar	Bagdasar	Elias	Sf Ioan
Nr. of Cathlabs	3	1	3	1	2	1	1	1
Nr. Independent operators	7	5	4	2	1	2	3	1
Nr. of in training operators	6	6	4	0	x	2	2	1
Total coronary procedures (diagnostic + PCI)	5754	2902	2276	1322	2668	701	726	446
Coronarography	3932	1821	1220	1128	2054	550	539	360
Total nr. of PCI	1822	1081	1056	194	614	151	187	86
PCI without stents	142	19	43	19		4	3	9
PCI with stents	1680	1062	1015	175		147	184	77
Multiple stenting		225	650	29		64	101	11
Multivascular			800	24		38	63	17
STEMI with pPCI	722	702	835	5	184	1		21
Iib/IIla Gpl		24	215	0		0	37	21
Total nr. of stents	2508	1694	1020	233		239	461	98
Nr. of DES	1358	385	578	172		122	74	17
DES percentage	54%	22.7%	56.6%	73.8%		51%	16%	17%
BVS	0	0	0	5		0		0
Cutting, rotablation, IVUS, FFR, OCT		0	9 rota, 9 IVUS, 57 FFR	3		1	0	0
PTA	269	0		55	184	2	5	34
Renal PTA	19	0		0	6	0	0	7
Carotid PTA	19	0		16	9	1	0	0
Peripheral angiography	683	0	84	407	320	35	71	143
TAVI		0		0		0	0	0
Other procedures for SHD	0	0		0		0	0	0
Percutaneous procedures (ASD, VSD, PFO)	0	0		0		0	0	0
Noncoronary procedures		0		90		0	0	0
MACE								
Death	59	34	48	1		1	3	0
SCA		1		0		0	0	0
Stroke		2	1	0		1	0	0
Stent Thrombosis		1	3	0		0	3	0
Major bleeding		5	0	2		0	0	0

City	Bucharest			
	Sanador	Ares	Monza	Colentina
Hospital				
Nr. of Cathlabs	1	2	1	1
Nr. Independent operators	6	10	3	1
Nr. of in training operators	0	0	0	1
Total coronary procedures (diagnostic + PCI)	1020	570	1167	38
Coronarography	854		993	38
Total nr. of PCI	166	386	174	0
PCI without stents	0	2		
PCI with stents	166	384		
Multiple stenting	72	220		
Multivascular	40			
STEMI with pPCI	8	6		
IIb/IIIa Gpl	5			
Total nr. of stents	238	653		
Nr. of DES	224	543		
DES percentage	94%	83%		
BVS	13	110		
Cutting, rotablation, IVUS, FFR, OCT	0	6	5	
PTA	63	46	21	
Renal PTA	1		2	
Carotid PTA	5		8	
Peripheral angiography	425	45	287	
TAVI	1	0	6	
Other procedures for SHD	1	0	5	
Percutaneous procedures (ASD, VSD, PFO)	0	60	9	
Noncoronary procedures	5	13	5	
MACE				
Death	0	0	1	
SCA	0	0	0	
Stroke	0	0	0	
Stent Thrombosis	0	0	0	
Major bleeding	0	3	1	

City	Cluj Napoca			Iași		Timișoara	
Hospital	Institutul Inimii Cluj	SCJU Cluj	Cardioteam	IBCV Iași	Arcadia	IBCV Timișoara	Cardiotim
Nr. of Cathlabs	1	1	1	3	1	1	1
Nr. Independent operators	9	3	1	6	2	5	3
Nr. of in training operators	4	7	2	2	0	6	0
Total coronary procedures (diagnostic + PCI)	3012	1828	403	5057	571	3792	654
Coronarography	1770	1176	251	3290	387	2346	490
Total nr. of PCI	1242	652	152	1767	184	1446	164
PCI without stents	138	38	0	92	2	33	11
PCI with stents	1104	614	152	1675	182	1413	153
Multiple stenting	656	273	63	310	28	541	73
Multivascular	826	145	125	154	12	203	39
STEMI with pPCI	454	242	0	878	1	828	0
Ib/IIla Gpl	21	6	0	56	0	60	0
Total nr. of stents	1832	1067	215	2014	210	2157	230
Nr. of DES	683	691	145	1578	207	1167	220
DES percentage	37.3%	64.7%	67.4%	78.35%	98.5%	54.1%	95.6%
BVS	0	0	70	0	1	0	12
Cutting, rotablation, IVUS, FFR, OCT	12	0	2	1	0	1	0
PTA	37	88	10	47	4	30	37
Renal PTA	16	2	4	5	0	12	9
Carotid PTA	7	3	16	17	5	22	22
Peripheral angiography	432	294	21	172	25	798	191
TAVI	0		0	4	0	0	0
Other procedures for SHD	11		2	0	0	4	1
Percutaneous procedures (ASD, VSD, PFO)	7		2	23	1	0	3
Noncoronary procedures		0	5	5	40	4	2
MACE							
Death	21	33	0	86	2	45	1
SCA	24	1	1	0	0	5	0
Stroke	5	2	0	0	1	9	0
Stent Thrombosis	3	2	0	2	0	7	0
Major bleeding	12	2	1	1	1	16	0

City	Târgu Mureș			
	IBCV Tg Mureș	CardioMed	SCJU Tg Mureș	Nova Vita
Hospital				
Nr. of Cathlabs	1	2	2	1
Nr. independent operators	5	4	4	3
Nr. of in training operators	2	4	5	0
Total coronary procedures (diagnostic + PCI)	3659	592	841	1048
Coronarography	2400	174	202	978
Total nr. of PCI	1259	418	639	70
PCI without stents	74	16	24	2
PCI with stents	1185	402	615	68
Multiple stenting	233	42	59	12
Multivascular	89	228	298	9
STEMI with pPCI	391	470	470	0
IIb/IIIa Gpl	194	8	63	0
Total nr. of stents	1504	402	495	111
Nr. of DES	1069	305	55	105
DES percentage	71%	75.8%	11.11%	94.6%
BVS	5	36	0	0
Cutting, rotablation, IVUS, FFR, OCT	FFR 52, OCT 34	0	0	0
PTA	26	49	15	4
Renal PTA	2			0
Carotid PTA	15	3		2
Peripheral angiography	500	49	90	78
TAVI	0			0
Other procedures for SHD	0			0
Percutaneous procedures (ASD, VSD, PFO)	3			0
Noncoronary procedures	10	1	1	0
MACE				
Death	5	0	5	0
SCA	7	2	3	0
Stroke	0	0	1	0
Stent Thrombosis	3	2	6	0
Major bleeding	10	3	4	0

City	Braşov		Oradea	Arad	Suceava
Hospital	ICCO	Sp. Judeţean	Sp. Judeţean	Cardiolife	Suceava
Nr. of Cathlabs	1	1	2	1	2
Nr. independent operators		2	2	1	2
Nr. of in training operators		1		0	0
Total coronary procedures (diagnostic + PCI)	1751	1991	1125	772	558
Coronarography		1267	697	551	262
Total nr. of PCI	308	724	428	221	296
PCI without stents	19	126	31	13	20
PCI with stents	289	598	397	208	197
Multiple stenting		272	81	114	30
Multivascular		520	18	35	60
STEMI with pPCI	4	431	281	62	255
IIb/IIIa Gpl	2	103	60	0	36
Total nr. of stents	359	826	498	322	260
Nr. of DES	306	615	104	247	120
DES percentage	85.2%	74.4%	20.8%	76.7%	46.1%
BVS	38	0	1	0	4
Cutting, rotablation, IVUS, FFR, OCT	0	0	4	0	2
PTA	4	2	34	45	30
Renal PTA		2	1	1	0
Carotid PTA		1	0	17	5
Peripheral angiography		35	521	70	15
TAVI		0	0	0	0
Other procedures for SHD		0	0	0	0
Percutaneous procedures (ASD, VSD, PFO)		0	0	0	0
Noncoronary procedures		0	0	0	25
MACE					
Death		7	5	4	11
SCA	1	3	0	0	0
Stroke	1	3	1	0	1
Stent Thrombosis	1	6	1	1	1
Major bleeding	1	2	2	1	0

City	Baia Mare	Sibiu	Constanța	Ploiești	Pitești
Hospital	Sp. Județean	Polisano	Cardiolife	Ploiești	Pitești
Nr. of Cathlabs	2	1	1	1	1
Nr. independent operators	2	2	1	2	2
Nr. of in training operators		0	0	0	2
Total coronary procedures (diagnostic + PCI)	1125	1207	902	731	488
Coronarography	697	791	616	422	368
Total nr. of PCI	428	416	286	309	120
PCI without stents	31	16	5	22	0
PCI with stents	397	400	281	287	120
Multiple stenting	81	163	104	74	40
Multivascular	18	103	41	31	7
STEMI with pPCI	281	30	112	144	23
IIb/IIIa Gpl	60	4	0	2	5
Total nr. of stents	498	610	412	365	172
Nr. of DES	104	351	252	96	1
DES percentage	20.8%	57.5%	61.6%	26.3%	0.58%
BVS	1	0	0	0	0
Cutting, rotablation, IVUS, FFR, OCT	4	0	0	0	0
PTA	34	18	6	37	41
Renal PTA	1	3	1	0	0
Carotid PTA	0	1	5	0	0
Peripheral angiography	521	47	6	286	149
TAVI	0	1	0	0	0
Other procedures for SHD	0	1	0	0	0
Percutaneous procedures (ASD, VSD, PFO)	0	7	1	0	0
Noncoronary procedures	0	12	0	0	0
MACE					
Death	5	1	7	5	2
ACS	0	1	3	0	0
Stroke	1	0	0	0	0
Stent Thrombosis	1	3	2	1	0
Major bleeding	2	1	2	2	1

PCI – percutaneous coronary intervention, pPCI – primary PCI, Gp IIb/IIIa - IIb/IIIa glycoprotein inhibitors, DES – drug eluting stent, BMS – bare metal stent, Cutting – cutting balloon dilatation, PTA – peripheral transluminal angioplasty, SHD – structural heart disease, ASD – atrial septal defect, VSD – ventricular septal defect, PFO - persistent foramen ovale, MACE – major adverse cardiac events, TAVI – Transcatheter Aortic Valve Implantation, ACS – acute coronary syndrome

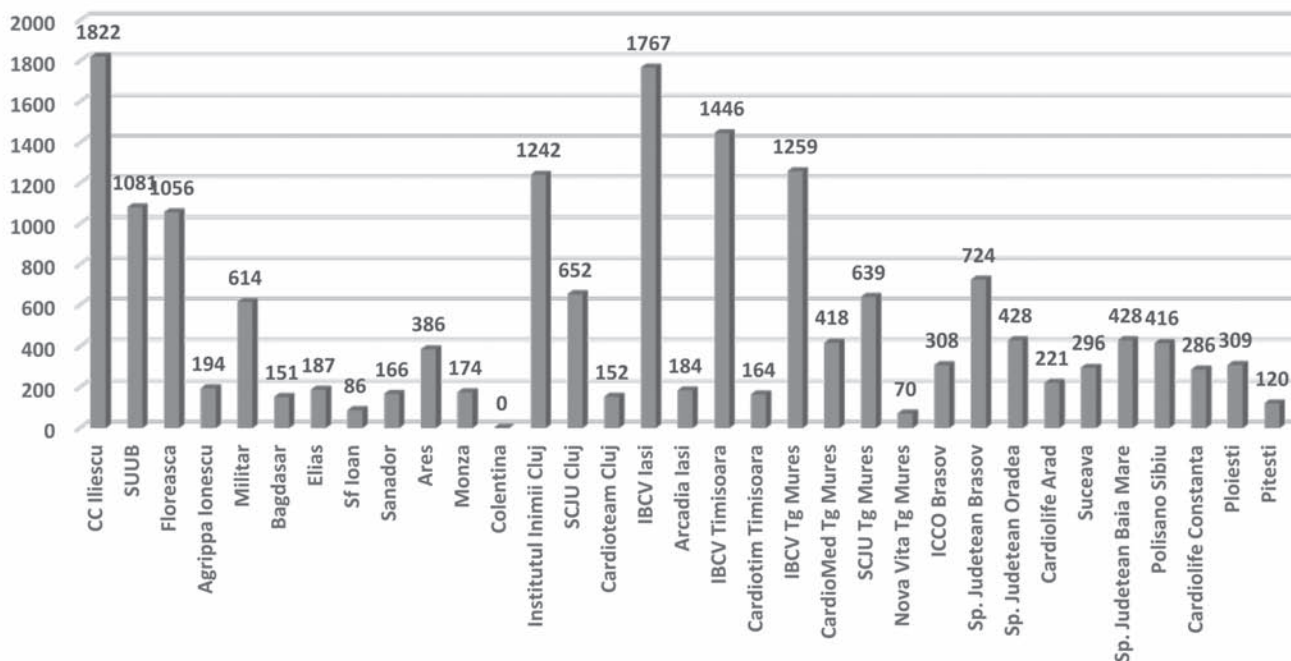


Figure 1. Total number of PCIs in 2015 in interventional centers from Romania.

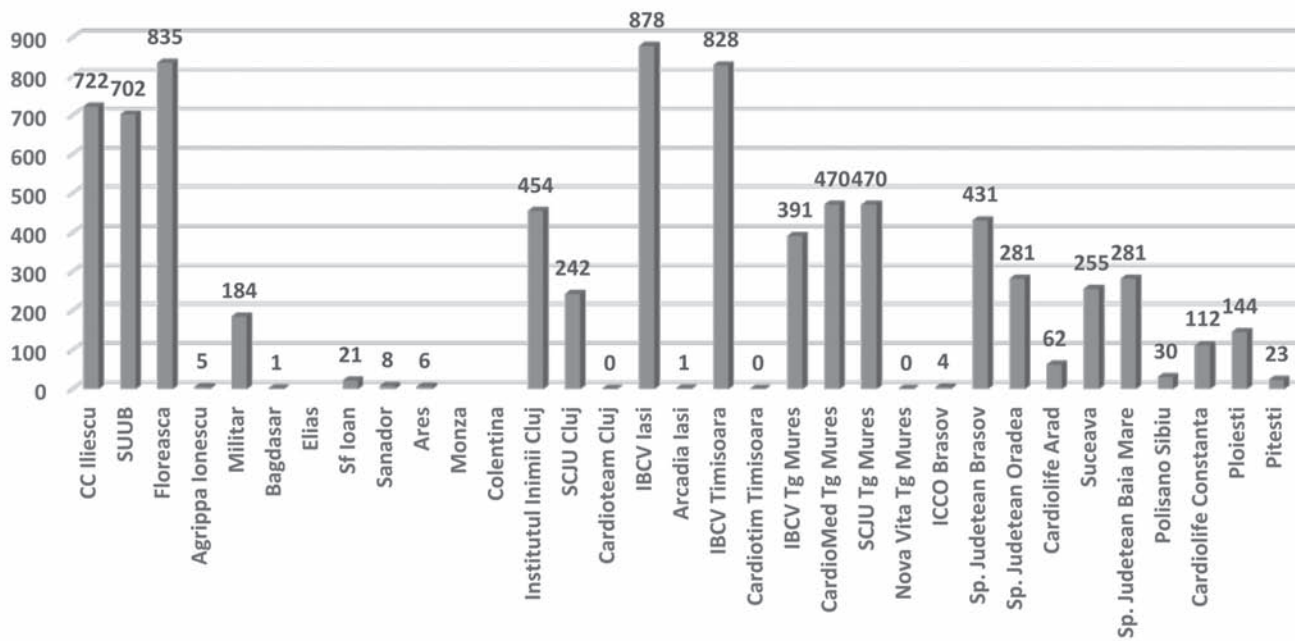


Figure 2. Total number of STEMI in 2015 in interventional centers from Romania.

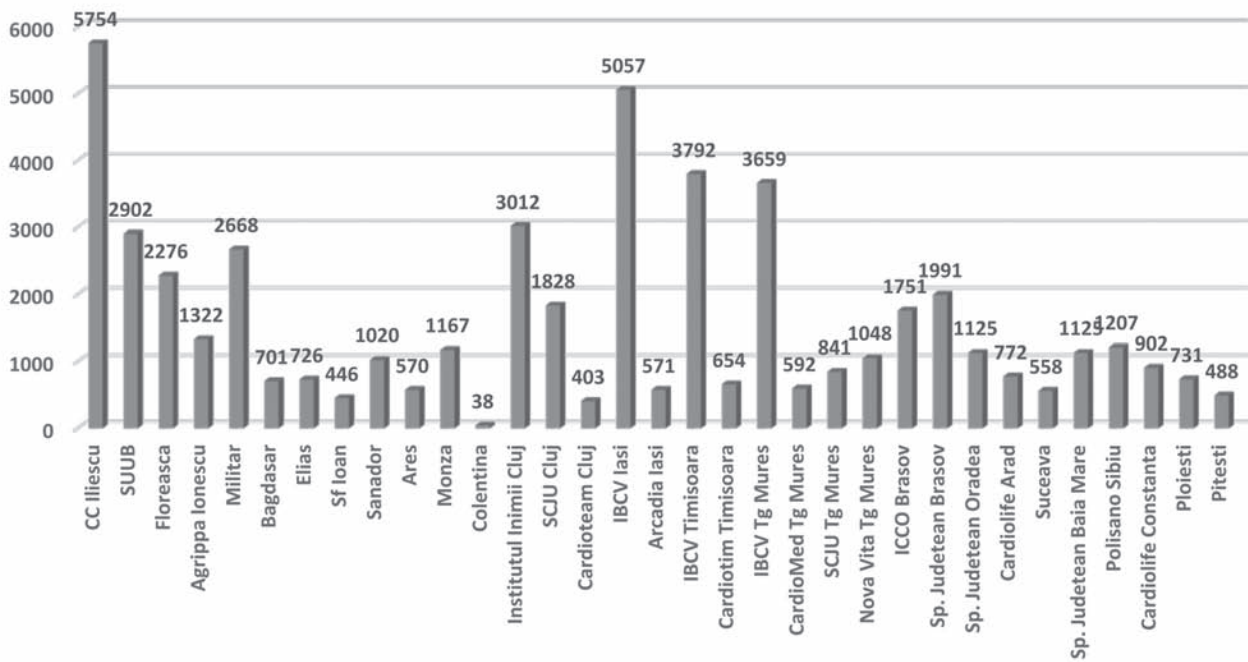


Figure 3. Total number of procedures in 2015 in interventional centers from Romania.

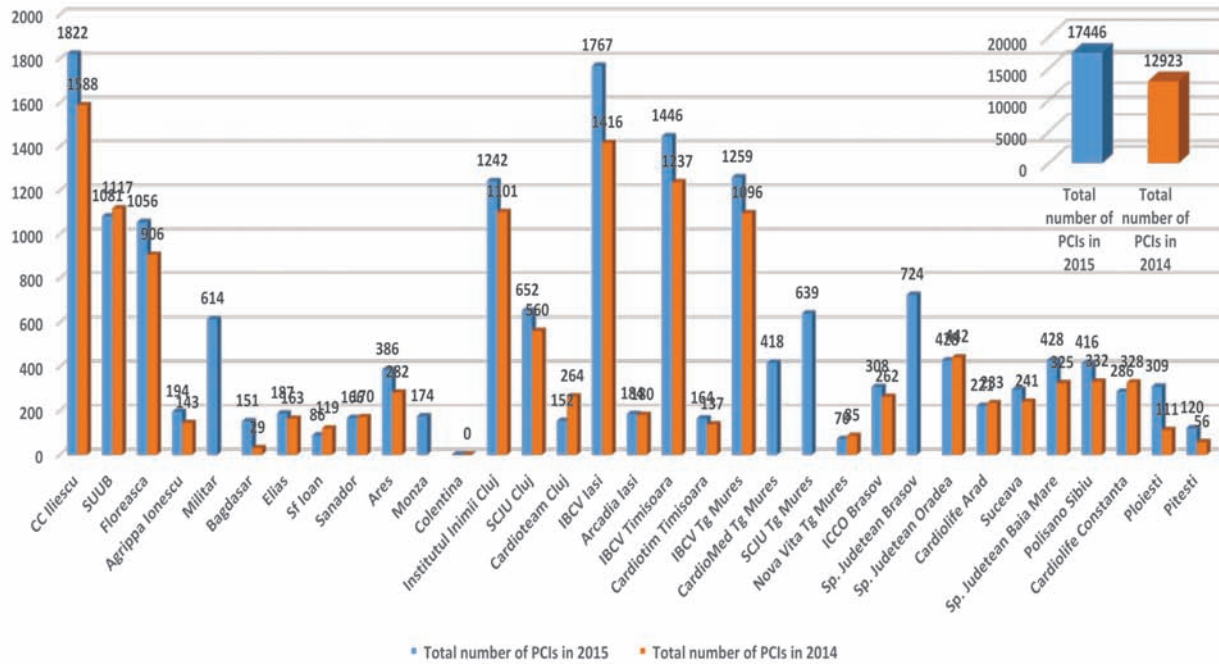


Figure 4. Total number of PCIs in 2015 vs 2014 in interventional centers from Romania.

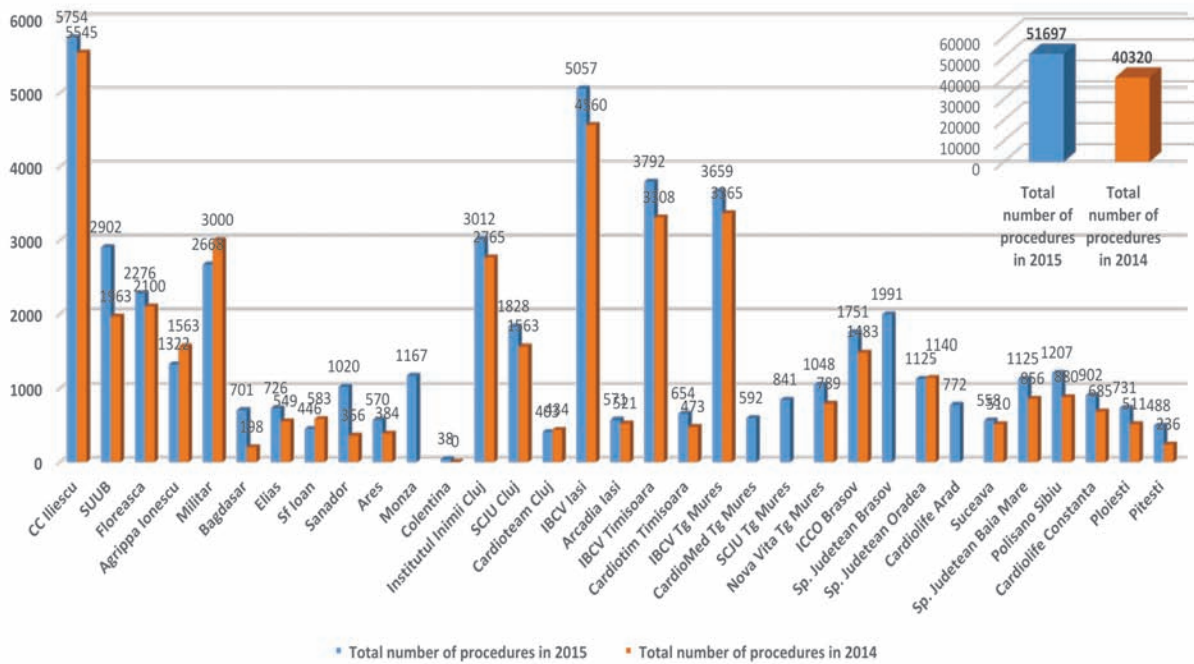


Figure 5. Total number of procedures in 2015 vs 2014 in interventional centers from Romania.

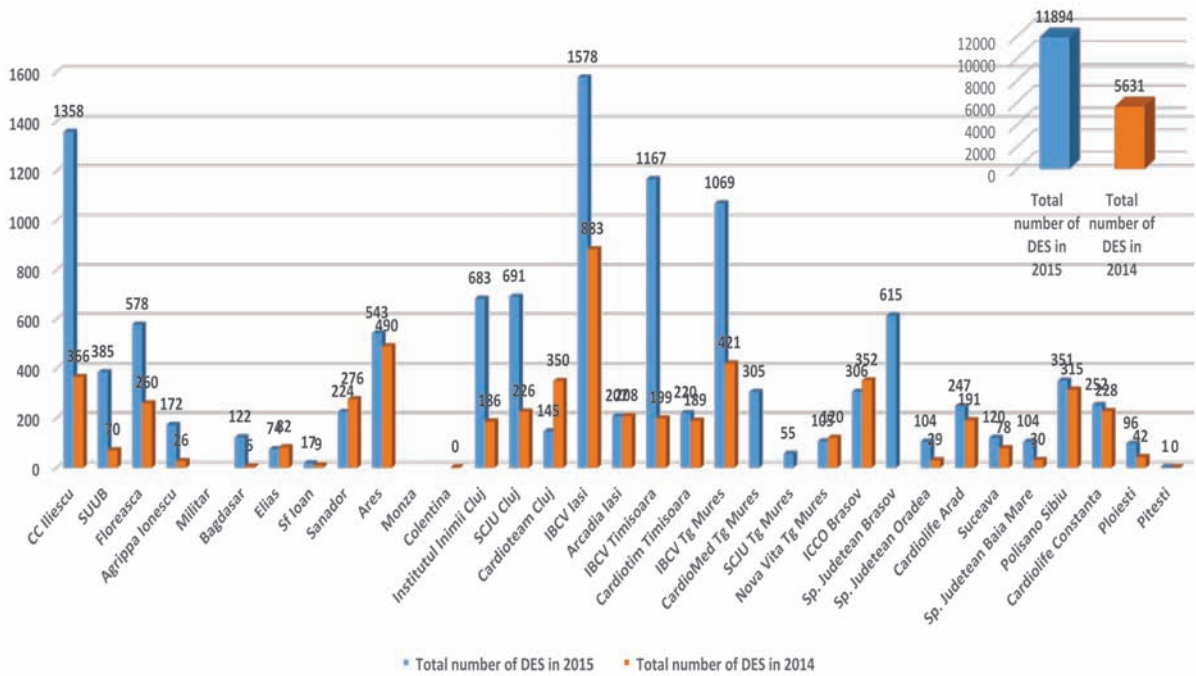


Figure 6. Total number of DES in 2014 vs 2015.

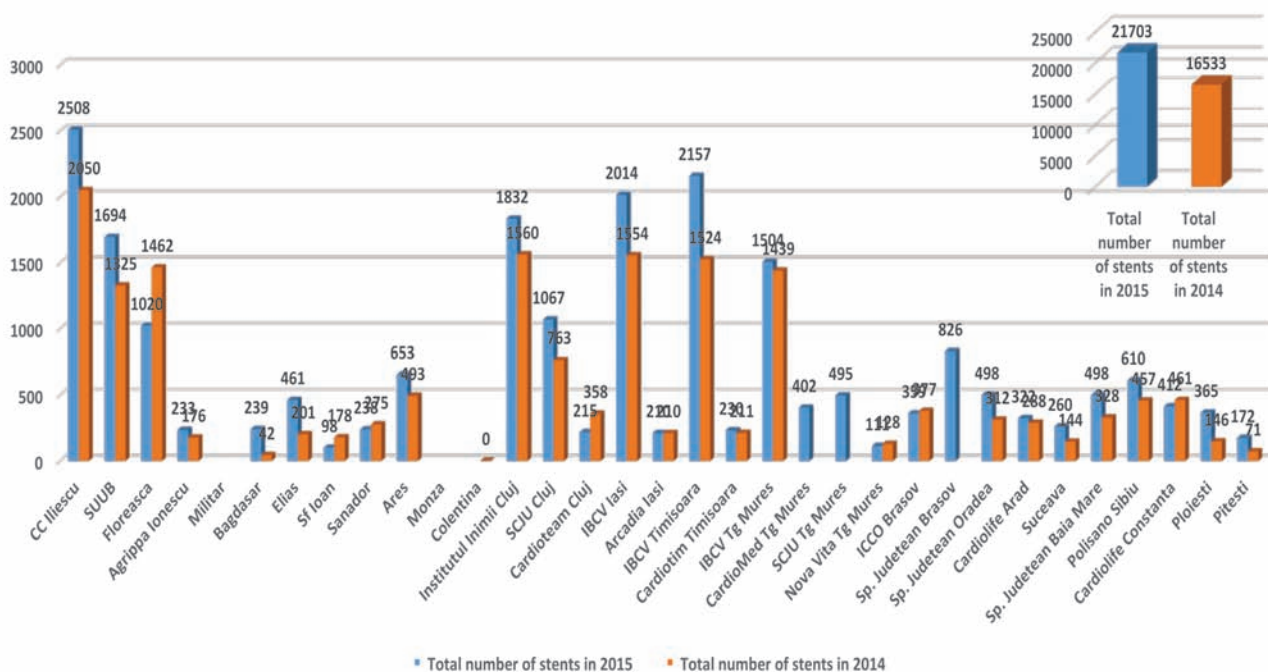


Figure 7. Total number of stents in 2015 vs 2014.